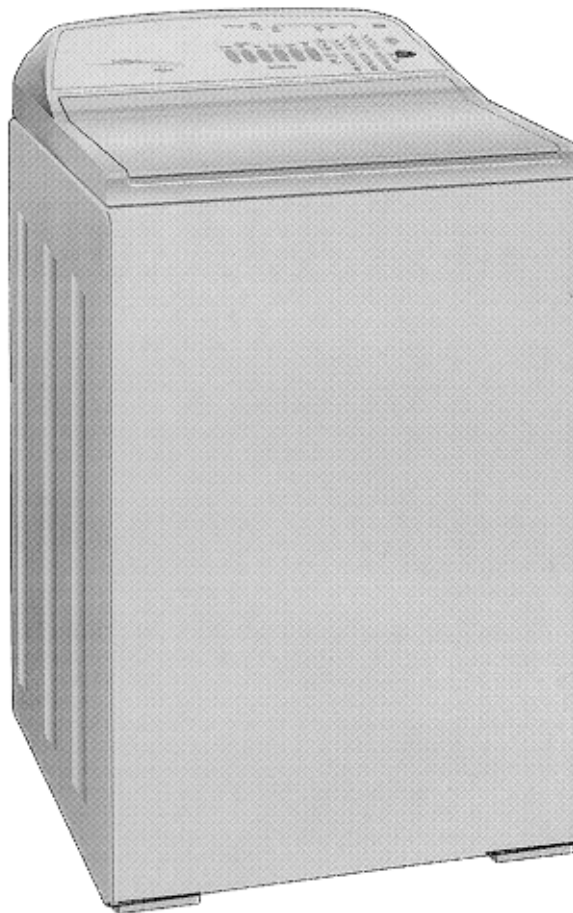


# SMART DRIVE ELECTRONIC WASHING MACHINE

**MODEL GWL08US**



**Service Supplement to be used in conjunction with GWL03US  
Service Manual Part Number PM912**

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# 1.0 INTRODUCTION

## MODEL GWL08US

This Service Supplement contains information on the Product Specifications, Diagnostic Mode and the Detailed Fault Codes. For all other Service and Option Adjustment information please refer to your GWL03 Service Manual part number 426348.

**Note:** The water temperature adjustment in the Option Adjustment mode is only available on model GWL03. Model GWL08 has 5 preset temperatures which are factory set and are non adjustable.

The detailed fault codes in this service supplement can also be used for Model GWL03 Smart Drive™ Washing Machines.

## PERFORMANCE CHANGES

The introduction of model GWL08 sees changes to the way the Smart Drive™ senses and reacts to what is going on in the basket.

The Smart Drive™ Washing machines has two load sensing methods to ensure the right wash action is used for the type and size of the wash load.

- **LSD - Load Sensing Detection** is used to continually sense the load and automatically adjust the agitation profiles to suit the wash load. It is also used to determine when a maximum capacity profile needs to be used. If the machine is operating on the high water level, regular cycle, with a very large heavy load, then the load sensing detection will activate the Maximum Capacity Profile.
- **MCP - Maximum Capacity Profile** is in the high water level regular cycle only. It is clearly noticeable as the machine will stop agitating and restart with a perceivably different profile. It usually occurs 3-6 minutes into the wash and will, of course, only occur if the machine is extremely heavily loaded.

## MACHINE SIZE SETTING CHANGES

With model GWL08 we have made changes to the way the size setting is set into the Motor Controller Module's memory. There is no longer a size switch in the Display Module and the Size Setting has to be manually entered. See Machine Size Setting Mode on page 5. Failure to do this will result in the machine faulting to detailed fault code 9.

## ELECTRONIC MODULES

Electronic Modules are not inter-changeable between models.

The different modules for the different models can be identified by their colour. GWL03 modules are green and the latest GWL08 modules are yellow.

It is important not to mix the different colored modules as there is different sensing between the models and you will find that the washing machine will not work. It will automatically display a fault code and beep if the modules have been mismatched.

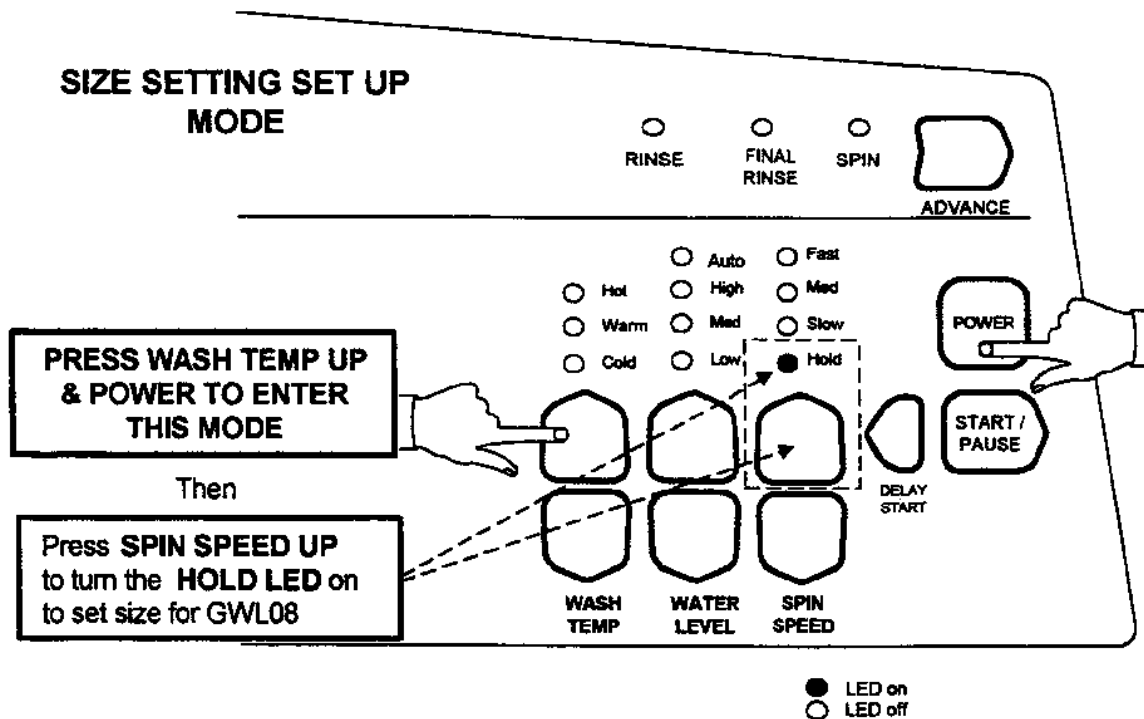
## 2.0 MACHINE SIZE SETTING MODE

It is important to set the size setting into the Motor Controller's memory whenever a replacement Motor Controller or Display Module is fitted to the washing machine. Failure to do this will result in the machine faulting to detailed fault code 9.

The size setting procedure for GWL08 differs from the previous GWL03 Smart Drive™ washing machine.

To enter the Machine Size Setting Mode:

1. Turn the power on at the power point and off at the console.
2. Press and hold the **WASH TEMP UP** button then press the **POWER** button. The machine will give 4 short beeps and the pattern of the LED's will change.
3. Press the **SPIN SPEED UP** until the **SPIN HOLD** LED turns on.
4. Press the **POWER** button to exit this mode and return to normal operation.



## 3.0 DIAGNOSTIC MODE

The **DIAGNOSTIC MODE** for mode GWL08 now incorporates both the switch test mode and the data display mode. You no longer have to use the advance button to toggle between them.

To enter the **DIAGNOSTIC MODE**:

1. Turn the power on at the power point and off at the console.
2. Press and hold the **WASH TEMPERATURE DOWN** then press the **POWER** button. The machine will give 2 short beeps
3. The different levels of information can now be extracted by using the **SPIN SPEED UP** or the **SPIN SPEED DOWN** buttons.

### DATA DISPLAY

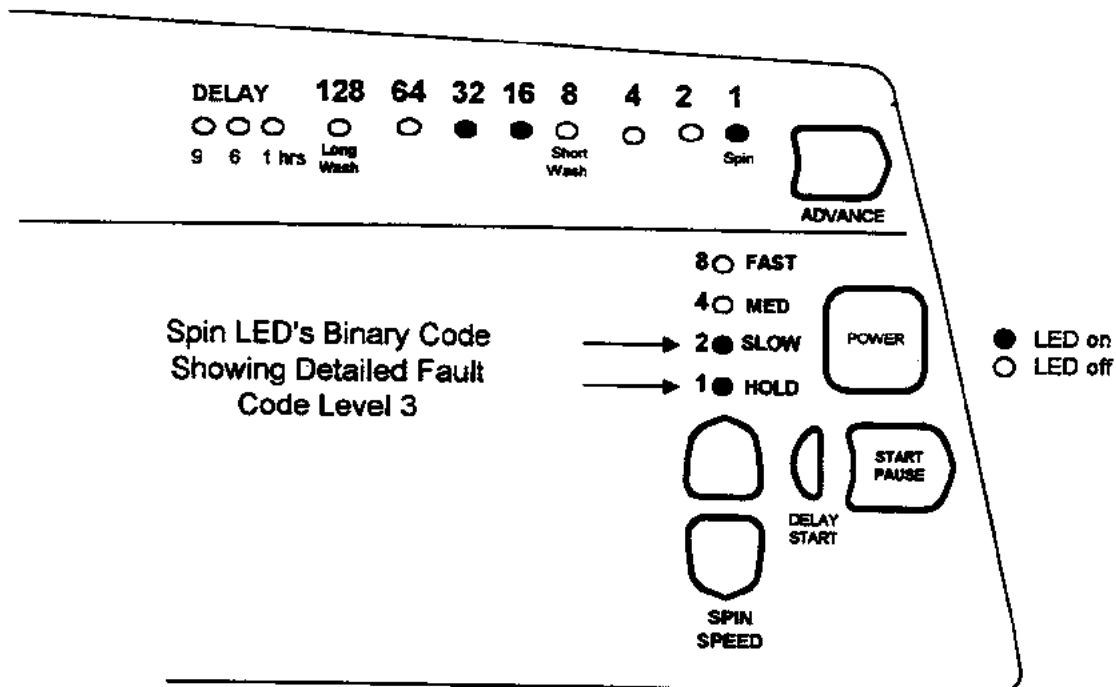
Press the **SPIN SPEED UP** button until the **HOLD** and **SLOW SPIN** LED's are on, (Binary count 3). The **WASH PROGRESS** LED's will now display the fault code.

By using a **BINARY NUMBERING SYSTEM** each unique fault code can be given a number.

### 3.1 EXAMPLES OF BINARY CODE

#### Wash Progress LED's Binary Code

Detailed Fault Code  $32+16+1=49$



**Note:** The detailed fault code will only be displayed for 1 cycle after the fault has been rectified.

DIAGNOSTIC MODE cont:

The following tests can be carried out in the diagnostic mode.

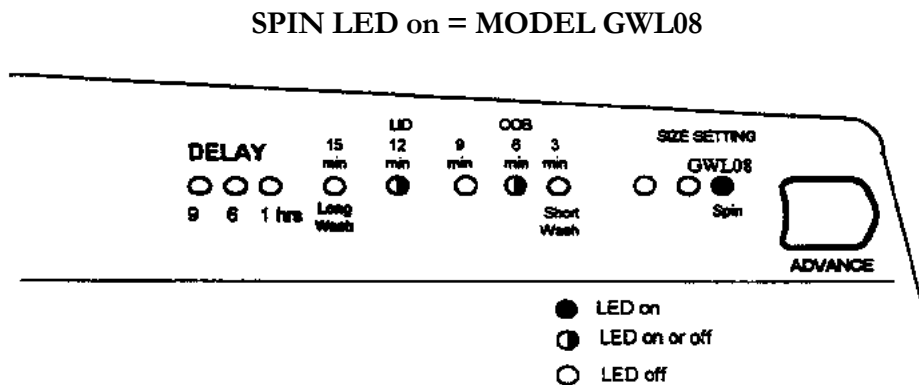
### 3.2 LID SWITCH & OUT OF BALANCE SWITCH TEST

Press the **SPIN SPEED UP** button until the **MEDIUM SPIN** LED is on, (binary count 4).

When the Lid is open the 12 minute wash LED will be on.

Activating the Out of Balance lever under the top deck will cause the 6 minute LED to turn on. The Out of Balance lever can be activated by moving the inner basket towards the right hand corner of the cabinet. It will take up to 1 second for the LED to respond after the Out of Balance has been activated.

Also when in this mode with the **MEDIUM SPIN SPEED** LED on, the **SPIN LED** will display the **SIZE SETTING**.



### 3.3 DRAIN PUMP TEST

The **REGULAR CYCLE** button turns the drain pump on or off. The **REGULAR LED** will turn on when the pump is on. This feature can be used to drain the tub.

### 3.4 WATER VALVE TEST

Press the **WASH TEMPERATURE DOWN** button to turn the Cold Water Valve on. The Cold Water LED will also turn on.

Press the **WASH TEMPERATURE UP** button to turn the Hot Valve on. The Hot Water LED will also turn on.

#### NOTE:

The drain pump test, water valve test, restart and recycle features can be used on any level in the diagnostic mode.

### 3.5 RE-START FEATURE

**WATER LEVEL DOWN** button turns the RE-START feature on/off.  
LOW WATER LEVEL LED ON = RE-START ON. (Factory setting).  
LOW WATER LEVEL LED OFF = RE-START OFF.

1. If a fault occurs in the machine, the diagnostic system will detect it. However, instead of displaying a fault code immediately, the machine will try to RE-START.
2. If the fault was only of a temporary nature, the machine will re-start.
3. If there is a continuous fault the machine will try to RE-START a number of times. This process could take up to 8 minutes depending on the type of fault. After this, if the machine still cannot restart, the fault code is displayed and the machine will beep continuously.

The machine leaves the factory with the RE-START feature turned on. When the machine is being serviced it is more convenient to turn the RE-START feature OFF. This will allow any fault in the system to show up immediately.

Whether the RE-START feature is on or off can be easily identified without going into the DIAGNOSTIC MODE.

When the machine is first turned on -

- (a) If none of the 5 green wash progress LED's are on, the RE-START feature is on.
- (b) If the 5 green wash progress LED's are flashing, the RE-START feature is off.

**NOTE:-** This feature is designed as a service aid only and should be left ON in the customer's home. To return to normal operation, and to reset the RE-START feature to the factory setting, switch the machine off at the wall or disconnect from the mains supply

### 3.6 RE-CYCLE FEATURE

**WATER LEVEL UP** button turns the RE-CYCLE feature on/off  
MEDIUM WATER LEVEL LED ON = RE-CYCLE ON.  
MEDIUM WATER LEVEL LED OFF = RE-CYCLE OFF. (Factory setting).

At the end of servicing, the machine may require an extended test where the machine can be left to complete a number of wash cycles. By turning on the RE-CYCLE feature the machine will continuously repeat the wash cycle until the RE-CYCLE feature is turned off.

Whether the RE-CYCLE feature is on or off can be easily identified without going into the DIAGNOSTIC MODE.

When the machine is first turned on:

- (a) If the 3 orange/red rinse and spin progress LED's are on, the re-cycle feature is off.
- (b) If the 3 orange/red rinse and spin LED's flash, the re-cycle feature is on.

**NOTE:-** This feature is designed as a service aid only and should be OFF in the customer's home. To return to normal operation, and to return the re-cycle feature to the factory setting, switch the machine off at the wall or disconnect from the mains supply.

### 3.7 HOT TUB FLAG

If the machine has been filled with hot water and has not had a cold rinse the electronics will not allow the machine to spin up to it's full speed of 1000 RPM. It will only allow the spin speed to reach 700 RPM.

The **WATER SAVER** LED will be on when the **DIAGNOSTIC MODE** is selected if the spin speed is restricted to 700 RPM. To clear this flag press the **WASH OPTION** button.

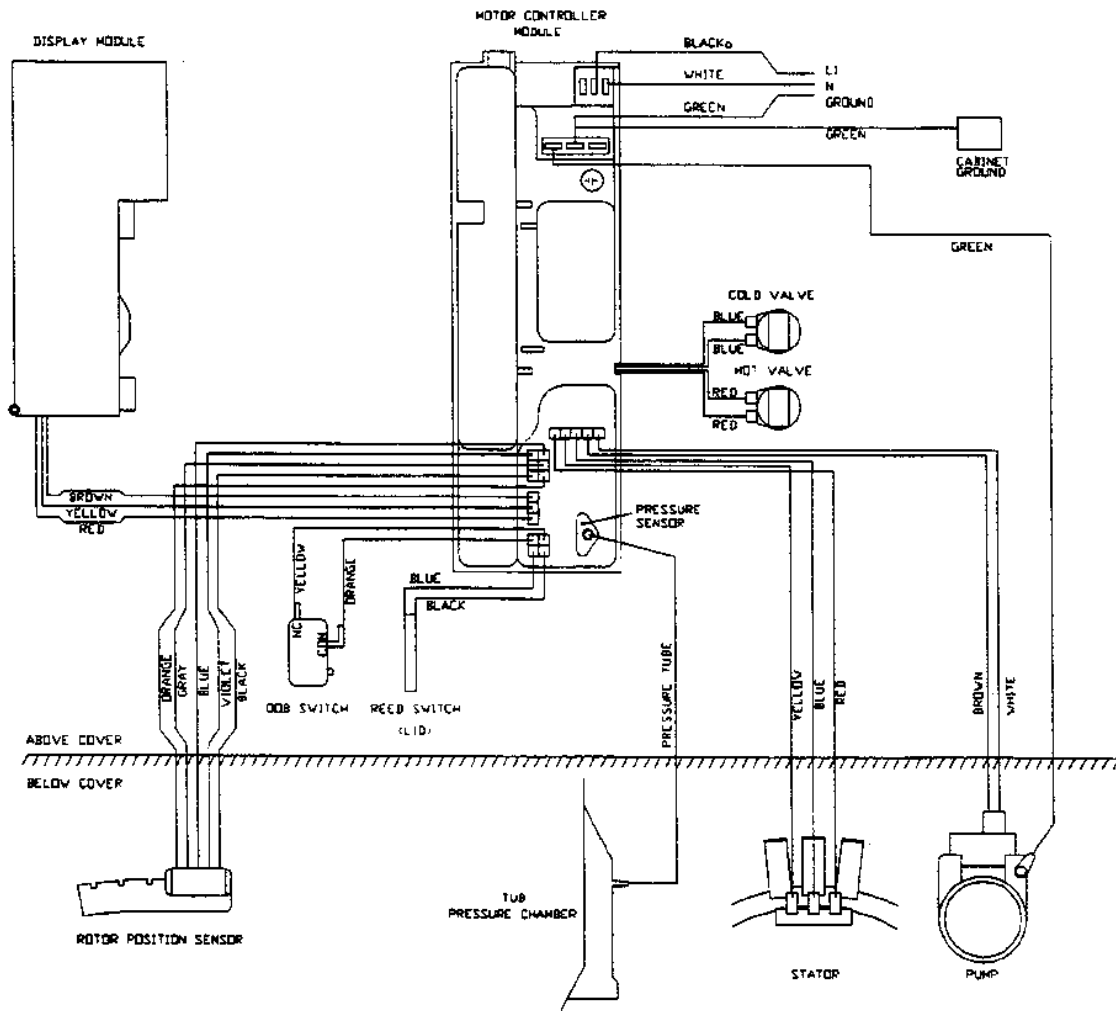
DIAGNOSTIC MODE cont.:

### 3.8 FAULT DISPLAY

If the machine enters a fault mode during normal operation, the machine will display the detailed fault code on the wash progress LED's and beep continuously. The hold and slow spin LED's will also be displayed.

During the above process the beeper will sound continuously. It is advisable to switch the machine off at the wall, switch it on again and select the last fault details by entering the diagnostic mode.

## 4.0 WIRING DIAGRAM





## 5.0 DETAILED FAULT CODES



### DETAILED FAULT CODES FOR MODEL GWL08US

#### **INTRODUCTION**

The format for fault description in this booklet follows the Primary, Secondary and Tertiary fault source system. These sources have mostly been arranged in order of most likely source of fault but in some cases the sequence has been modified to aid the servicing procedure.

It should be noted that the fault source Pump System includes the pump and drain hose assembly.

## FAULT DESCRIPTIONS

1. **(00000001) Motor Controller Module Fault**

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. **(00001001) Size Switch Error**

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

**Primary Source** - Display Module model GWL03.

**Action**

If the Display Module for model GWL03 has just been inserted into a console housing, then 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.

**Secondary Source** - Motor Controller Module.

**Action GWL03**

If the Motor Controller Module has been changed from one size machine to another, then the size switch settings 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 GWL08**

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 SPIN SPEED UP button until the HOLD LED turns on.

**10. (00001010) Temperature Sensor Error**

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

**Primary Source** - Motor Controller Module.

**Action** - Replace the 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 basket has been partly filled with water.

**Primary Source** - Motor Controller Module.

**Action**

- 1) Check tub 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 that is higher than the pump can handle or the pump is blocked and can't 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 siphoning. 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 33 ½" (850mm) max 47" (1200mm.)
- 2) Check hose guide is fitted and check hose does not protrude more than ¾" (20mm) beyond the guide.

**Secondary Source** - Mechanical.

#### **Action**

- 1) Check pressure tube connection on outer tub 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 possibility is that the pump is partially or fully blocked. The third is that 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 into an extended length of 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 length if excessively long. A 39" (1 metre) extension hose of the same diameter fitted to the existing drain hose is the maximum allowable length.
- 3) If basket 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 basket 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 basket.
- 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 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 or kinked or has fallen off completely. Alternatively the pressure sensor may be faulty.

**Primary Source** - Mechanical.

**Action** - Check that the pressure tube is intact and not blocked with water, dirt or kinked.

**Secondary Source** - Motor Controller Module.

**Action** - Replace the Motor Controller Module.

**40. (00101000) Basket Dis-engage Fault**

While carrying out a basket check, the Motor Controller Module has found that the basket is not engaged even though the pressure sensor indicates that the basket is empty. The Motor Controller Module continues to check for 2 minutes after which time it displays this 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 230°F (110°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 show signs of corrosion then fit a new harness.

**Tertiary Source** - Motor Controller Module.

**Action** - Replace Motor Controller Module.

44. **(00101100) Water in Basket during Spin**

The Motor Controller has sensed a water level in the basket during spin. This may be caused by a slow pump out rate due to pump hose or pump partial 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 39" (1 metre) extension hose of the same diameter fitted to the existing drain hose is the maximum allowable length.
- 3) If basket 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 basket 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 basket.

**Secondary Source** - Motor Controller Module.

**Action** - Replace 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) Basket Dis-engage Fault**

While carrying out a basket check, the Motor Controller Module has found that the basket is not engaged even though the pressure sensor indicates that the basket 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 basket status and so displays this fault. This fault differs from fault 40 in that a valid basket 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 faulty (open circuit).

**Tertiary Source** - Motor Controller Module.

**Action** - Replace the 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.

**Primary Source** - Wiring.

**Action** - Check the Rotor Position Harness for continuity and that the connectors are correctly to the Rotor 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 not 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 drive 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) Basket Check No Valid Fault**

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

**Primary Source:** Loading.

**Action:** Remove items until the remaining ones can move freely, or rearrange the load so that the clothes are evenly distributed around the basket, or select a higher water level. If the load was to one side of the basket or too heavy it can be possible for the agitator to bind in one direction when trying to sense basket float.

**Secondary Source:** Mechanical.

**Action:**

1. Check the machine is not syphoning.



2. Check that there are no clothes or other foreign objects preventing the clutch from re-engaging, and that there aren't any defects with the clutch mechanism.
3. Next check that the pressure tube has not come off and that it is not kinked.

**Tertiary Source:** Rotor Position Sensor.  
**Action:** Replace the Rotor Position Sensor.  
**Quaternary Source:** Motor Control Module.  
**Action:** Replace the Motor Control Module.

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

The Display Module has requested the Motor Controller Module to perform an EEPROM write. Prior to writing the Motor Controller Module 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 Module. 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 Motor Controller Module.

**58. (00111010) Pressure Transducer at Maximum Adjustment Fault**

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

**Primary Source** - Motor Controller Module.  
**Action** - Replace Motor Controller Module.

**59. (00111011) ID Out of Range Fault**

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

**Primary Source** - Display Module.  
**Action** - Replace 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 Module 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 Module.

81-95. **(0101xxxx)** See fault code 106

104. **(01101000)** 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 the new Motor Controller Module corrects the fault, refit the original Display Module.

**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 Module, 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 Position Sensor with an R.P.S. 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 Module 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 Module and fix the leak before replacing with new Motor Controller Module.

**133. (10 00101) 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 procedure.

**136. (10001000) Motor Stall**

The Motor Controller Module 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 basket 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) Basket Engaged**

The basket has re-engaged itself during agitate. Possible causes for this are a leak in the air bell, basket 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 basket assembly is not jammed to the agitator with any foreign object that may be caught under the agitator skirt.
- 2) Check that the clutch teeth are not locked together with dirt, lint, etc.
- 3) Make sure the basket 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 basket 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 basket 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 Module 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 Module has detected that the basket 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 Module 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 Module 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 basket stopping in time.

**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 12.5 ohms.

**Secondary Source** - Motor Controller Module

**Action** - Replace Motor Controller Module.

**192. (11000000) Motor PMW Reset Pin Connect Fault**

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

**Primary Source**- Motor Controller Module.

**Action** - Replace Motor Controller Module.