Fisher&Paykel
appliances
Service Diagnostics

SMARTDRIVE® WASHING MACHINE

517769

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SPECIFICATIONS

Electric Supply

Operating Voltage	220/240V AC 50Hz
Maximum Current	2.8 amps

Wash Motor

Electronically commutated direct drive 3 Phase brushless DC Motor.
Motor Resistance:

	Per Winding	Phase to Phase
Phase 1	1.3 ohms @ 20ºC	2.6 ohms @ 20ºC
Phases 2 to 4	6.1 ohms @ 20ºC	12.2 ohms @ 20ºC
Phases 5 and 6	16 ohms @ 20ºC	32 ohms @ 20ºC

Pump Motor 230V AC 50Hz

Thermal cut-out fitted
Pump motor resistance:

Compreci	26 ohms @ 20ºC
Selini	33 ohms @ 20ºC

Water Valves

Phases 1 to 4	12 volts DC	Resistance 15 ohms @ 20ºC
Phases 5 and 6	24 volts DC	Resistance 64 ohms @ 20ºC
Operating pressures	Maximum 1034 kPa (150PSI) Minimum 20 kPa (3 PSI)	

Thermistor

Phase 1 to 4 this part is not serviceable and is mounted within the Motor Control Module.
Phases 5 and 6:

NTC-type temperature sensor	Resistance 10,000 ohms @ 25ºC
	Resistance 12,500 ohms @ 20ºC

Diverter Valve

Operating Voltage	230V
Resistance Range	between 0.7kΩ and 2.5kΩ, values are dependent on ambient temperature and when it was last actuated.

Lid Lock

Resistance range	73 ohms +/- 5 ohms Normally low voltage, potentially 230V if harness is grounded on the cabinet.

GW / MW / LW MODELS

Size Setting

It is important to set the size switch setting into the Motor Control Module's memory whenever a replacement Motor Control Module and or IW Display Module is fitted to SmartDrive. Setting the size switch tells the module what size SmartDrive it is in. Failure to do this will result in SmartDrive faulting with fault code 9.

Phases 1 to 3 sizes are determined by two switches on the Display Module that are activated by protrusions on the console when the Display Module is fitted. When replacing a Display Module or Motor Control Module, enter the Option Adjustment Mode to set these sizes in EEPROM. To enter Option Adjustment Mode, with the SmartDrive turned on at the wall and with the LEDs off, press and hold the **START/PAUSE** button, then press the **POWER** button. To check the size setting of Phases 1 to 3 SmartDrives, use the Diagnostic Mode. Enter Diagnostic Mode. All LEDs will illuminate for 5 seconds. The display will then change to show switch status. If the Short Wash LED is on the size switch is not set, if the Rinse LED is on the size switch is set for a 5/5.5kg SmartDrive, if the Final Rinse LED is on the size switch is set for a 6.5kg SmartDrive, and if the Spin LED is on the size switch is set for a 7.5kg SmartDrive.

To set the size switch on Phases 4 to 6 SmartDrives, turn the power on at the power point and off at the console. Press and hold the **TEMPERATURE UP** button then press the **POWER** button. SmartDrive will give 4 short beeps and the pattern of LEDs will change.

One of the following buttons needs to be pushed to lock the size into memory.

- Press **WASH TEMP UP** button, the Cold LED is on for **5.5kg** (560mm wide).
- Press **WATER LEVEL UP** button, the Low Water LED is on for **6.5kg/7.0kg** (600mm wide).
- Press **SPIN SPEED UP** button, the Spin Hold LED is on for **7.5/8.0kg** (650mm wide).
- Press **POWER** to confirm the setting and also exit this mode.

If the size setting is wrong, SmartDrive will have the following settings incorrect:

- The Auto Water Levels chosen by SmartDrive may be wrong.
- The High Water Level may be wrong by as much as 40mm.
- The flow rate for inlet water, normally 3 litres per minute, may be set incorrectly.
- The wash profile controls the strength of the agitator stroke. This could result in poor wash performance or splash over.
- Water saver settings.

DIAGNOSTIC MODE

Turn the power on at the power point but off at the machine. Press and hold the **WASH TEMP DOWN** button and then the **POWER** button until the machine gives 2 short beeps and lights up. Release buttons when the beeps indicate diagnostic mode has been entered.

The SmartDrive is now in diagnostic mode. To obtain the last fault code, (**Phases 1, 2 and 3 only**, press the **ADVANCE** button once, then) press the **SPIN SPEED UP** button three times so that the Hold and Slow LEDs are illuminated. The eight wash progress LEDs will now show the last fault in a binary code. On LW models, there is no window for the Long Wash LED, but the LED is still visible under the panel for diagnostic purposes. The value of each LED is shown below. Add up the value of the LEDs illuminated to obtain the fault code number, then refer to the Detailed Fault Codes section of this manual.

WASH PROGRESS	15 Min. Long Wash ●	12 Min. ●	9 Min. ●	6 Min. ●	3 Min. Short Wash ●	Rinse ●	Final Rinse ●	Spin ●
VALUE	**128**	**64**	**32**	**16**	**8**	**4**	**2**	**1**

Data Download

Enter diagnostic mode. Press **START/PAUSE**. The Spin LED (Lid Locked LED on Phase 6 machines) will now be on. Place the download pen over this LED and follow the instructions supplied with the data download programme.

Lid Switch / Out of Balance SwitchTest

Enter Diagnostic Mode. Phase 3 only, press the **ADVANCE** button once. Phases 4 to 5 only, press the **SPIN SPEED UP** button until the Medium Spin LED is on. Opening and closing the lid will turn on and off the 9 minute wash LED (Phases 1 and 2) or the 12 minute wash LED (Phases 3 to 6).

Activating the out of balance lever will cause the 6 minute LED to turn on. The out of balance lever can be activated by moving the inner bowl towards the right hand rear corner of the wrapper. It takes 1 second for the LED to respond after the out of balance lever has been activated.

Drain Pump Test

Enter Diagnostic Mode. Phase 3 only, press the **ADVANCE** button once. Pressing the **REGULAR** button will turn the pump on and off. The Regular LED is on when the pump is on.

Water Valve Test

When in Diagnostic Mode, the **WASH TEMP UP** button turns the hot water valve on. The Hot LED is on when the hot valve is on. The **WASH TEMP DOWN** button turns the cold water valve on. The Cold LED is on when the cold valve is on.

Restart Feature

If a problem occurs in SmartDrive, it will attempt to correct the problem and restart. SmartDrive will rectify any problems of a temporary nature. If there is a continuous problem SmartDrive will retry several times. This process may take up to 10 minutes depending on the type of problem. If SmartDrive still cannot resolve the problem, the fault code is displayed and SmartDrive will beep continuously. RESTART on is the default state. This forces SmartDrive to retry when a problem occurs. **While servicing SmartDrive, turn RESTART off. This will allow any fault in the system to show up immediately**.

To turn RESTART off, enter diagnostic mode. Phase 3 only, press the **ADVANCE** button once. Use the **WATER LEVEL DOWN** button to turn the RESTART on or off.
Low Water Level LED off = RESTART off.
Low Water Level LED on = RESTART on. (Default setting.)

If a situation is encountered with a Phase 1.4, 4, 5 or 6 module where the restart feature is permanently programmed off, follow the following steps to return the machine to normal operation:

- Enter diagnostic mode as normal.
- Press and hold the **ADVANCE** button. (When this button is first pressed, the beep tone will sound. This is O.K.)
- While pressing the **ADVANCE** button, press the **WATER LEVEL DOWN** button to toggle the RESTART feature on. A long beep will acknowledge the setting has been retained in EEPROM. Press **POWER** to retain selection.

The RESTART status can be identified when SmartDrive is first turned on at the wall:
- If the 5 leftmost wash progress LEDs are off, RESTART is on.
- If the **5 leftmost wash progress LEDs are flashing**, RESTART is off.

RESTART is a service aid only and should be left ON in the customer's home. To return to normal operation, and to reset the RESTART feature to the default setting, disconnect SmartDrive from the power supply.

Recycle Feature

After servicing, SmartDrive may require an extended test where it can be left to complete a number of wash cycles. By turning on RECYCLE SmartDrive will continuously repeat the selected wash cycle until RECYCLE is turned off.

To turn RECYCLE on, enter diagnostic mode. Phase 3 only, press the **ADVANCE** button once. Use the **WATER LEVEL UP** button to turn the RECYCLE on or off.
Medium Water Level LED on = RECYCLE on.
Medium Water Level LED off = RECYCLE off. (Default setting.)

The RECYCLE status can be identified when SmartDrive is first turned on at the wall:

- If the 3 rightmost rinse and spin LEDs are off, RECYCLE is off.
- If the **3 rightmost rinse and spin LEDs are flashing**, RECYCLE is on.

RECYCLE is a service aid only and should be left OFF in the customer's home. To return to normal operation, and to reset the RECYCLE feature to the default setting, disconnect SmartDrive from the power supply.

If a situation is encountered with a Phase 1.4, 4, 5 or 6 module where the recycle feature is permanently programmed on, follow the following steps to return the machine to normal operation:

- Enter diagnostic mode as normal.
- Press and hold the **ADVANCE** button. (When this button is first pressed, the beep tone will sound. This is O.K.)
- While pressing the **ADVANCE** button, press the **WATER LEVEL UP** button to toggle the RECYCLE feature off. A long beep will acknowledge the setting has been retained in EEPROM. Press **POWER** to retain selection.

Option Adjustment Mode

Smartdrive can be adjusted to operate under a number of different conditions OPTION ADJUSTMENT MODE may be used to customise Smartdrive. Some of this information is available to the user in the 'Use and Care Manual'. The features that can be adjusted in this mode are:-

a) Water Temperature
b) Rinse Options
c) Number of End of Cycle Warning Beeps GW (only)
d) Auto out of Balance Recovery – GW and MW (only)
e) Auto Water Level Adjustment - GW (only)
f) Water saver Rinse Volume Adjustment - GW (only)

NB. Phase 1-3. Entering Option Adjustment mode sets the size of Smartdrive into EEPROM

To Select the OPTION ADJUSTMENT MODE

1. With Smartdrive powered on at the wall and with the LEDs off, press and hold the **START/PAUSE** button. Then press the **POWER** button. Two quick beeps will sound and the LEDs on the front panel will change. The controls and LEDs on the front panel will now serve different functions from the normal wash functions.
2. Smartdrive can now be adjusted to suit the owners preference.
3. To return Smartdrive to Normal operation, press the **POWER** button.

Wash Water Temperature – All Phases

It is possible to adjust the water temperature of each of the wash temperature settings, i.e. Cold, Cold/Warm, Warm, Warm/Hot, Hot. Phase 5 MW can only adjust warm. Phase 5 LW & AW are not adjustable.

Do not use the household water taps or water heater controls to vary the wash temperature. The automatic water temperature control system fitted will compensate for variations in household water temperature and pressure. Adjusting the water pressure or water flow with the household taps, or adjusting the water heater temperature, WILL NOT alter the wash temperature. The method described below is the only method by which the water temperature can be altered. If Smartdrive is used in an installation where only a cold water supply is available, then the cold temperature range must be selected and the "cold water only" setting must be chosen in the option adjustment mode. If the temperature is set at any other level, Smartdrive will expect hot water when filling Smartdrive. As it will not detect any hot water, it will eventually display USER WARNING that there is no hot water, but it will not pause. It is recommend that the hot water temperature setting on the household water heater does not exceed 65oC, for personal safety and product reliability. This is especially important for Phase 5 MW, LW & AW where the 'Hot' setting corresponds to hot water only.

Method of Setting the Wash Temperature

1. Select the OPTION ADJUSTMENT MODE by pressing and holding the START/PAUSE button, then pressing the POWER button.
2. Use WASH TEMPERATURE buttons and LEDs to select the temperature setting to be adjusted, i.e. Cold, Cold/Warm, Warm, Warm/Hot, Hot.

3. Use the ADVANCE button and WASH PROGRESS LEDs to increase or decrease the temperature. Each time the ADVANCE button is pressed, the WASH PROGRESS LEDs will advance one position to the right. This increases the temperature by approximately 1oC. When the spin LED is on and the ADVANCE button is pressed, the spin LED will go off and the left hand (long wash) LED will turn on. This is the coldest setting. The setting can then be advanced through again to achieve the required temperature.
4. Select the next temperature range to be changed with the WASH TEMPERATURE button. Repeat Step 3. Each Temperature range can be adjusted using this method.
4. To return the machine to Normal operation, press the POWER button.

Approximate Temperature Range	15 min Long Wash LED on	12 min Wash LED on	9 min Wash LED on	6 min Wash LED on	3 min Short Wash LED on	Rinse LED on	Final Rinse LED on	Spin LED on
Hot	55	56	57	58	59	**60**	61	62
Warm/Hot	46	47	48	49	**50**	51	52	53
Warm	36	37	38	39	**40**	41	42	43
Cold/Warm	31	32	33	34	**35**	36	37	38
Cold	***C**	20	21	22	23	24	25	26

Water Temperature Settings

***C** Cold water only. Underlined figures are the default settings.

All temperatures are expressed in ^{o}C. Phase 1 and 2 temperatures are lower.

NB. If the temperature of the cold water supply is above the setting, a cold water user warning will sound because the machine will be unable to control the water temperature down to the required temperature. Readjust cold temperature to cold only or a temperature that is above the cold water supply.

Rinse Options – All Phases

Smartdrive may be used in a large number of different installations where the water supplies can vary. In some areas the water may be contaminated, in others areas the water supply may be limited. Also the user may have particular preferences as to the type of rinse they use. To cater for these variations the Rinse type can be changed.

FIRST RINSE OPTION (1) First Rinse is Spray Rinse. (Default setting.) Gives the best performance in suds removal and water usage. In areas where the water supply contains solid contaminates, i.e. bores, the spray rinse action can result in these contaminates being deposited on the fabrics. In this case it would be better to use Option (2) or (3).

FIRST RINSE OPTION (2) Spin only. Does not give as good a suds removal as Option (1) but uses less water than Option (3).

FIRST RINSE OPTION (3) Deep Rinse. Gives better suds removal but increases water usage.

The first rinse is always followed by a final deep rinse and spin. Method of selecting RINSE OPTIONS:

1. Select the OPTION ADJUSTMENT MODE by pressing and holding the **START/PAUSE** button, then pressing the **POWER** button.
2. Press the **SPIN SPEED** buttons to select Rinse options. Hold LED ON, OPTION (1). Slow LED ON, OPTION (2). Med LED ON, OPTION (3).
3. To return Smartdrive to normal operation, press the **POWER** button.

End of Cycle Warning Beeps (GW Only) – All Phases

Smartdrive finishes each cycle by sounding a series of warning beeps. These beeps are designed to be noticeable. In some circumstances, e.g. shift workers, new baby in the house, etc, the user may wish to increase the number of beeps or eliminate them altogether. They may be adjusted as follows:-

Select the OPTION ADJUSTMENT MODE by pressing and holding the **START/PAUSE** button, then pressing the **POWER** button. Use the WASH OPTIONS button and LEDs to select the required option. Pressing the WASH OPTIONS button will cause the LEDs to change.

Phase 1 and 2

- Wash & Soak LED on (Top), 15 beeps
- Time Saver LED on (Bottom), 5 beeps (default)
- No LEDs on, 0 beeps

Phase 3 to 5

- Time Saver LED on (Top), 15 beeps
- Soak LED on (Middle), 5 beeps (default)
- Water Saver LED on (Bottom), 0 beeps

To return Smartdrive to Normal operation, press the **POWER** button.

Adjusting the Volume of Water Used in the Water Saver Option (GW only) – Phase 3 to 5

The volume of water added during the shower rinse on the Water Saver option can be increased or decreased. Enter the Option Adjustment Mode. Use the WATER LEVEL buttons to select the volume of water to be used in the shower rinse.

- HIGH WATER LED ON, more water.
- MED WATER LED ON, Default set water volume.
- LOW WATER LED ON, less water.

Press **POWER** to return to normal mode.

Auto Water Fill Level Adjustment (GW only) Phase 3-5

If the user is not satisfied with the level that Smartdrive fills to on auto water level, they can increase or decrease the fill level that auto will select.

NB. If there is not enough water for the load, we recommend you check by pausing Smartdrive and pushing the clothes down to see how much spare water is at the bottom of the bowl. Clothes often float and Smartdrive can sense the water under the clothes. Enter the Option Adjustment Mode. Use the cycle buttons to increase or decrease the amount of water selected.

- FAVOURITE LED on, less water
- PERM. PRESS LED on, default set level
- WOOL LED on, more water +
- DELICATE LED on, more water ++
- REGULAR LED on, more water +++

Out Of Balance Recovery Adjustment (GW and MW only)

Phase 3 to5

When Smartdrive is spinning it senses if the wash load is out of balance. It stops and retries to spin. If Smartdrive still senses an unbalanced load it will stop, give a short burst of beeps every five seconds and the RINSE or SPIN light will flash. The load must be redistributed more evenly. However, GW and MW models have an option where Smartdrive will try to automatically correct the out of balance load. If it detects an unbalanced load, it will fill with water and agitate to redistribute the load before trying to spin up again. Smartdrive has this option turned off to conserve water. To programme Smartdrive to automatically try and correct out of balance loads follow the instructions below.

1. Enter the Option Adjustment Mode.
2. Use the HEAVY DUTY button to select the Out of Balance recovery option preferred.
   - HEAVY DUTY light on = automatic.
   - HEAVY DUTY light off = stops.
3. Press POWER to return to normal mode.

IW MODELS

IW Size setting

To set the size, turn the power on at the power point and off at the console. Press and hold the **FABRIC CARE** button, then press the **POWER** button. This will bring up a set of options in the LCD screen.

For Phase 5 SmartDrives, push the button alongside the appropriate machine size on the display. This will select and highlight the size figure. Push the **POWER** button to lock this into memory.

For Phase 6 SmartDrives, push the **ADJUST** button to highlight the appropriate machine size in the display. Push the **POWER** button to lock this into memory.

DIAGNOSTIC MODE

To enter the Diagnostic Mode, turn the power on at the power point and off at the console. Press and hold the **LIFECYCLES** button (**SPECIAL** button on Phase 5) and then the **POWER** button. The SmartDrive will give 2 short beeps and the LCD screen will go blank.

Note: Make sure that the buttons are released after the beeps, or the

SmartDrive will turn itself out of the diagnostic mode.

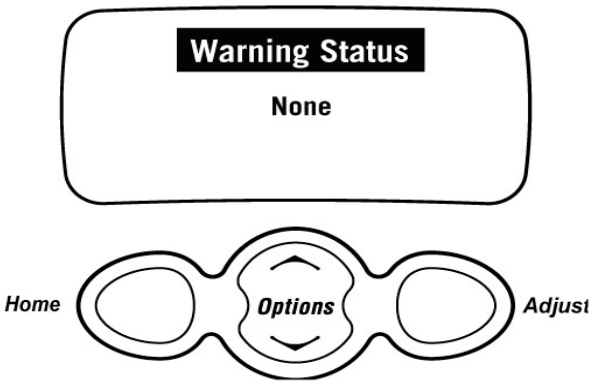
Data Download

Enter diagnostic mode. Press **START/PAUSE**. The top How Dirty LED will now be on. Place the download pen over this LED and follow the instructions supplied with the data download programme.

Data Display

To enter the **DATA DISPLAY** screens, push the **LIFECYCLES** button again (**SPECIAL** button on Phase 5). This will enable the out of balance switch to be tested, as well as giving access to the Detailed Fault Codes and User Warning Faults. One of three displays will appear in the screen. Use the **OPTIONS** up or down buttons to the bottom of the display screen to toggle between these displays (use the buttons to the right of the display on Phase 5).

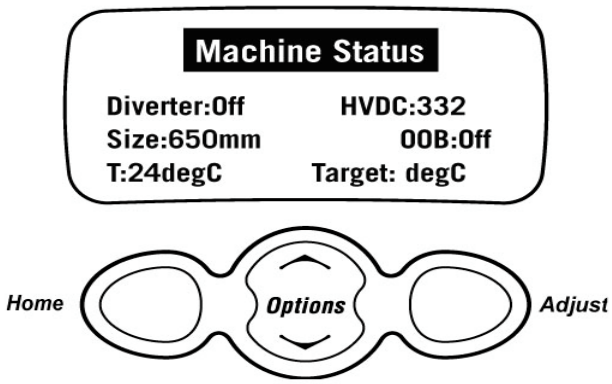
The **Warning Status** screen will display the last USER WARNING FAULT that occurred and will show at what part of the cycle it occurred.



The User Warning Faults are as follows:

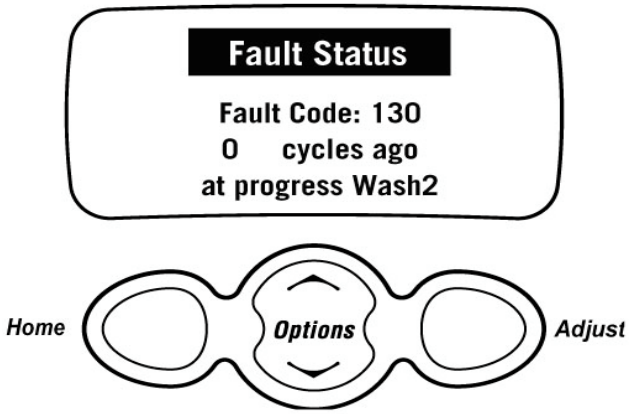
- No Taps
- Overloaded
- Out Of Balance
- Over Suds or water still in the SmartDrive during spin
- No Hot Water
- No Cold Water
- Agitate Overloaded

On Phase 5, the **Machine Status** screen displays the thermistor temperature and the status of the out of balance switch and the lid switch. It also displays the Size setting of the SmartDrive and the water level.



On Phase 6, the **Machine Status** screen displays the status of the diverter and the out of balance switch. It also displays the Size setting of the SmartDrive and the thermistor temperature.
HVDC is for on line testing in the factory.
Target temp is the temperature selected.
T is the actual temp of the inlet chamber water.

The **Fault Status** screen will display a code for the last fault that has occurred in the SmartDrive. It will also display how many cycles ago the fault occurred and at what part of the cycle.



See Detailed Fault Codes for servicing tips.

The fault code number can now be checked in the detail fault codes, to ascertain what repairs may be necessary.

Lid Switch Test (Phase 5 Only)

Enter the Diagnostic Mode and bring up the Machine Status display. Activating the lid switch by opening and closing the lid will change the display between “Lid closed” and “Lid Open”.

Drain Pump Test

On IW models, the pump test is activated by the **FABRIC CARE** button when in diagnostics.

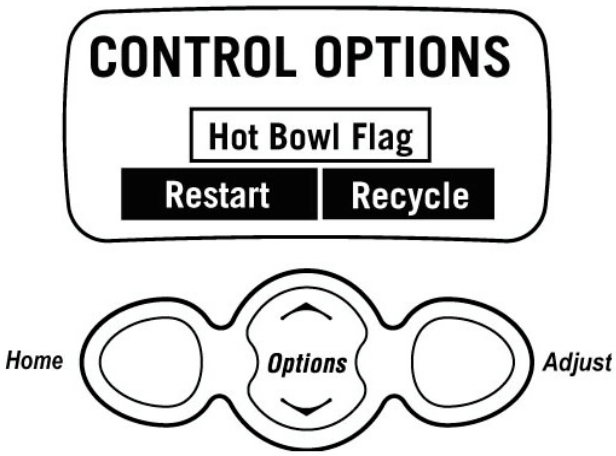
Water Valve Test

When in diagnostic mode on IW SmartDrives, pressing the **HOW DIRTY** down button will turn the cold water valve on. Pressing the **HOW DIRTY** up button will turn the hot water valve on. The buttons have to be held down to keep the valves activated.

Restart Feature

IW Restart setting can be accessed when in diagnostic mode. Pressing the **OPTIONS** button will bring up the **CONTROL OPTION** screen. The LCD screen will display the following:

The SmartDrive leaves the factory with the RESTART set to the ON position (as shown here), which is indicated in the screen by the word **RESTART** highlighted. To turn the RESTART feature OFF, push the **Adjust** button (Phase 5, push the button alongside the word). This will remove the highlight from the word **RESTART**. When the SmartDrive is being serviced, it is more convenient to turn the RESTART feature OFF. This will allow any fault in the system to show up immediately.



With the RESTART feature on:

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

Whether or not the RESTART feature is on is indicated during normal use of the SmartDrive when power is on at the power point and off at the console as follows:

1. If none of the 5 green **HOW DIRTY** LEDs are on, the RESTART feature is on.
2. If the 5 green **HOW DIRTY** LEDs are flashing, the RESTART 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 RESTART feature to the factory setting, switch the SmartDrive off at the wall or disconnect from the mains supply.

Recycle Feature

In the Control Options mode (as for setting the RESTART feature), pushing the **ADJUST** button (Phase 5, push the button alongside the word) to highlight the word RECYCLE will toggle this feature on and off. At the end of servicing, the SmartDrive may require an extended test where the SmartDrive can be left to complete a number of wash cycles. By turning on the RECYCLE feature the SmartDrive will continuously repeat the wash cycle until the RECYCLE feature is turned off.

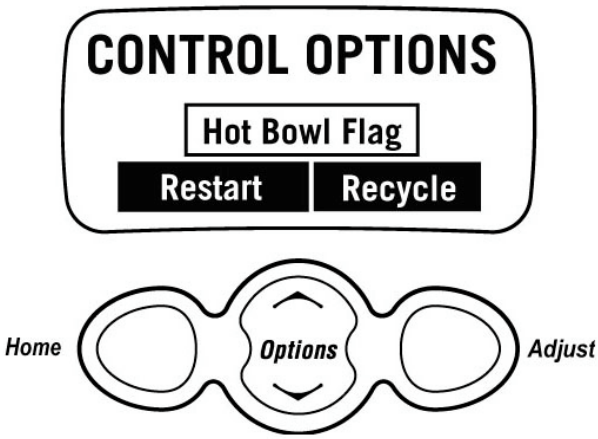
Whether or not the RECYCLE feature is on is indicated during normal use of the SmartDrive when power is on at the power point and off at the console as follows:

1. If none of the **FABRIC CARE** LEDs are on, the recycle feature is off.
2. If all of the **FABRIC CARE** LEDs flash, the recycle 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 recycle feature to the factory setting, switch the SmartDrive off at the wall or disconnect from the mains supply.

Hot Bowl Flag

If the SmartDrive has been filled with the hot water valve utilised (ie. warm or hot fill) and has not had a cold rinse, the electronics will not allow the SmartDrive to spin up to its full speed of 1000 RPM. It will only allow the spin speed to reach 700 RPM.



To remove this flag, enter the Control Option mode and push the **ADJUST** button (Phase 5, push the button alongside the word) to take the black shading out of the box Hot Bowl Flag, or put the SmartDrive through a complete final rinse.

NOTE: The drain pump test, water valve test, restart, recycle and hot bowl flag features can be accessed from any level in the diagnostic mode.

Other Option Adjustments

Phase 5:

- Turn the machine on.
- Press and hold the **OPTIONS** button for 4 seconds.
- The Adjust Options Menu will be displayed.
- Push the small button next to the option to be adjusted. The display will change to the choices available for that option.
- To set the option, push the small button next to it. The display screen will highlight the selection made before returning to the main screen.

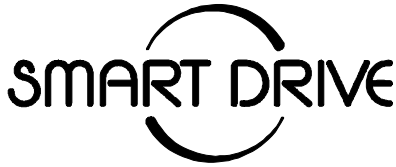
Phase 6:

- Turn the machine on.
- Press and hold the **OPTIONS UP** button for 3 seconds until a beep is heard.
- The Adjust Options Menu will be displayed.
- Press the **OPTIONS UP** button to scroll through the options to the option to be adjusted.
- Press the **ADJUST** button to set the option.
- Press the **HOME** button to return to the main screen.

The options that can be adjusted are:

- Wash Temperature. On Phase 5 each increment is approximately 1^{o}C, while on Phase 6 each increments is approximately 2^{o}C.
- Auto Water Level. This increases or decreases the fill level that auto will detect.
- Default Rinse. The default rinse can be set to either spray and deep, single deep, double deep or shower.
- Creasable Spin Speed. The spin speed for the Creasables cycle can be set at either slow (300rpm on Phase 5, 330rpm on Phase 6) or medium (700rpm on Phase 5, 670rpm on Phase 6).
- Out of Balance Recovery. The out of balance recovery action can be set to be either automatic, where the machine will fill with water and agitate to redistribute the load, or it can be turned off, where the machine will stop and beep.
- End of Cycle Beeps. These can be set to zero, five or fifteen.

DETAILED FAULT CODES



DETAILED FAULT CODES

FOR MODELS

Phase 1 GW050 GW060 GW070 GW500 GW600 GW700 GW650

Phase 2 GW501 GW601 GW701 MW051 MW061 MW071 W015

Phase 3 GW503 GW603 GW703 LW035 MW053

Phase 4 AW085 GW508 GW608 GW708 GWC08 GWL08 GWM08 LW085 MW058 THL08 THM08 W508

Phase 5 AW095 GW509 GW609 GW709 GWC09 GWL09 GWM09 IW509 IW609 IW709 IW710 IW810 IWC09 IWL09 IWM09 IWL10 IWM10 LW095 MW059

Phase 6 GW511 GW611 GW711 GW512 GW612 GW712 GWC11 GWC12 GWL11 GWL12 GWM11 GWM12 IW511 IW512 IW611 IW612 IW711 IW712 IW812 IWL11 IWL12 IWM11 MW511 MWC11

INTRODUCTION

The format for fault description in this booklet follows the Primary, Secondary, Tertiary and Quaternary 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 code shows the last recorded fault. Always confirm fault.

FAULT DESCRIPTIONS

1. (00000001) Phase 1 - Display Module Fault
Phase 2 to 6 - Motor Control Module Fault

The Motor Control Module (Display Module for Phase 1) has encountered an error when writing to an EEPROM address.

Primary Source: Motor Control Module. (Display Module for Phase 1.)

Action: Replace Motor Control Module. (Display Module for Phase 1.)

2. (00000010) Phase 1 - Display Module Fault
Phase 2 to 4 - Motor Control Module Fault

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

Primary Source: Motor Control Module. (Display Module for Phase 1.)

Action: Replace Motor Control Module. (Display Module for Phase 1.)

3. (00000011) Phase 1 to 6 - Motor Control Module Fault

The Motor Control Module has found a memory error.

Primary Source: Motor Control Module.

Action: Replace Motor Control Module.

4. (00000100) Phase 1 - Communications Fault

The Motor Control Module has had difficulty communicating with the Display Module.

Primary Source: Motor Control Module.

Action:

1. Turn off at the wall and on again after 5 seconds and try again.
2. If still faulty, replace the Motor Control Module.
3. Replace Display Module. If the new Display Module corrects the fault, then refit the original Motor Control Module.

5. (00000101) Phase 1 - Communications Fault

The Display Module has had difficulty communicating with the Motor Control Module.

Primary Source: Display Module.

Action: Turn off at the wall and on again after 5 seconds and try again.

1. Check connections of the 12 way harness for bad contacts, corrosion etc.
2. Check for moisture in the console area. Dry out if necessary.
3. If still faulty, replace the Display Module.
4. If still faulty, replace the Motor Control Module. If the new Motor Control Module corrects the fault, then refit the original Motor Control Module.

6. (00000110) Phase 1 - Display Module Fault Phase 2 to 4 - Motor Control Module Fault

The Motor Control Module (Display Module for Phase 1) has received an incorrect signal from the pressure sensor.

Primary Source: Motor Control Module. (Display Module for Phase 1.)

Action: Replace Motor Control Module. (Display Module for Phase 1.)

7. (00000111) Phase 1 to 6 - Display Module Fault

The Display Module has found a memory fault.

Primary Source: Display Module.

Action: Replace Display Module.

8. (00001000) Phase 1 - Display Module Fault

The Display Module micro has not been able to start up correctly.

Primary Source: Display Module.

Action: Turn off at the wall and on again after 5 seconds and try again. If still faulty replace the Display Module.

9. (00001001) Phase 1 to 6 - Size Switch Error

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

Primary Source: Display Module Phase 1,2 & 3.

Action: If the Display Module for Phase 1, 2 or 3 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 SmartDrive, check for condensation damage, check the size switch or replace the Display Module.

Secondary Source: Motor Control Module.

Action Phase 1, 2 &3:

If the Motor Control Module has been changed from one size SmartDrive 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 the **POWER** button.

Action Phase 4 Series 8, Phase 5 Series 9 & Phase 6 Series 11:

Reselect the size of the SmartDrive 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 SmartDrive, push the TEMPERATURE UP button until the cold LED is on for 5kg SmartDrives, push the WATER LEVEL UP button until the low water level LED is on for the 6kg SmartDrives, push the SPIN SPEED UP

button until the hold LED is on for 7kg SmartDrives.

IW SmartDrives, Phase 5 and 6:

To access Size Setting Mode, push and hold the **FABRIC CARE** button and then press the **POWER** button. Select the correct size on the display by pushing the **White** button next to the correct size (Phase 5) or using the **ADJUST** button to highlight the right size (Phase 6). Size setting is then set by pressing the **POWER** button. Powering off will set the size into the memory. Check the size is set before starting a cycle.

10. (00001010) Phase 1 to 6 - Temperature Sensor (Thermistor) Error

The temperature sensor may be open circuit or the ambient temperature is below minus 10ºC. This fault is only applicable in the Intuitive Washer and the GW models.

Primary Source: Thermistor.

Action: Replace Thermistor.

11. (00001011) Phase 1 to 6 - Pressure Sensor Fault

While measuring the water level, the Motor Control Module micro has detected a negative pressure. Reconnecting the pressure tube to the pressure sensor while the bowl has been partly filled with water may have caused this.

Primary Source: Pressure Tube.

Action:

1. Check bowl is fully pumped out. Remove pressure tube from pressure sensor, clear pressure tube of any water and reconnect tube.
2. If fault is still present, replace the Motor Control Module. (Display Module Phase 1.)

12. (00001100) Phase 1 to 6 - Flood Protection Error

The Motor Control 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 SmartDrive may overfill 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 have 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 SmartDrive).

Secondary Source: Pump system.

Action: Check pump for blockage and drain hose for correct height and kinking.

Tertiary Source: Motor Control Module. (Display Module Phase 1.)

Action: If water valves are being driven on electrically, replace Motor Control Module. (Display Module Phase 1.)

13. (00001101) Phase 1 - Pump Fault

The Display Module has detected that the pump is on when it should be off.

Primary Source: Pump.

Action:

1. The pump is fitted with a thermal cut out device. Check if this device has been activated. If it has, wait until the pump cools down before restarting. Check for any pump blockage and condition of pump before attempting to restart, i.e. pump seizure.
2. Check for open circuit pump windings. Check the resistance of the pump.
3. Check the pump harness or the connectors for an open circuit.
4. Replace the Display Module.

14. (00001110) Phase 1 - Pump Connection Fault

The Display Module has detected that the pump is not on when it should be.

Primary Source: Pump.

Action:

1. The pump is fitted with a thermal cut out device. Check if this device has been activated. If it has wait until the pump cools down before restarting. Check for any pump blockage and condition of pump before attempting to restart, i.e. pump seizure.
2. Check for open circuit pump windings. Check the resistance of the pump.
3. Check the pump harness or the connectors for an open circuit.
4. Replace the Display Module.

15. (00001111) Phase 1 - Display Module Fault

The Display Module has read an incorrect voltage on the pump circuit.

Primary Source: Display Module.

Action: Replace the Display Module.

Note: If SmartDrive is running at well below its rated supply voltage and the pump has operated for more than 4 seconds at the voltage, this fault will also appear.

17 – 20. (00010xxx) Phase 1 - Display / Motor Control Module Out of Sequence

22 – 23. (000101xx) Phase 1 - Display / Motor Control Module Out of Sequence

Primary Source: The Display Module and Motor Control Module are running out of sequence.

Action: Turn the SmartDrive off at the wall and then back on again in 5 seconds. Restart. If the fault persists, disable auto restart feature and retest. A new fault code will appear. Carry out actions necessary to fix this new fault.

25. (00011001) Phase 5 IW - LCD Initialisation Error

The Intuitive Display Module has detected a problem with the LCD.

Liquid Crystal Display.
Primary Source: IW Display Module.
Action: Replace IW Display Module.

28 – 30. (000111xx) Phase 1 - Display / Motor Control Module Out of Sequence

Refer to fault code 17

32. (00100000) Phase 1 - Pump Circuit Error

The Display Module has detected that the pump is on when it is off.
Primary Source: Display Module.
Action: 1. Check for moisture in the console area.
2. Replace the Display Module.

33. (00100001) Phase 1 - Water Valve Fault

The Module has detected a water valve fault.
Primary Source: Water valve connection.
Action: Check that both valves are connected up properly.
Secondary Source: Water valve coil faulty.
Action: 1. Check the valve coils are not open circuit.
2. Replace Display Module if the valve coils are not faulty.

34. (00100010) Phase 1 - Brake Resistor Fault

The circuit that controls the braking of the motor is faulty.
Primary Source: Motor Control Module.
Action: Replace Motor Control Module.
Secondary Source: Display Module.
Action: Replace the Display Module.
If the Display Module corrects the fault, then refit the original Motor Control Module.

35. (00100011) Phase 1 - Motor Control Module Reset Error

The Display Module has sent a false signal to the Motor Control Module.

Primary Source: 12 way Harness Connection.

Action: Check the 12 way harness connection between the Display Module and the Motor Control Module.

Secondary Source: Display Module.

Action: Replace the Display Module.

36. (00100100) Phase 1 to 6 - Water Leak Fault

The Motor Control 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 SmartDrive is siphoning. The other alternative is that the SmartDrive has developed a leak.

Primary Source: Pump System.

Action:
1. Check the height of the drain hose outlet. Minimum 850mm, maximum 1200mm.
2. Check that the hose guide is fitted and check that the hose does not protrude more than 20mm beyond the guide.

Secondary Source: Mechanical.

Action:
1. Check the pressure tube connections on the outer bowl and Motor Control Module.
2. Check that the drive shaft seal and the pump housing seal have not developed a leak.

Tertiary Source: Motor Control Module. (Display Module Phase1.)

Action: Replace Motor Control Module. (Display Module Phase 1.)

37. (00100101) Phase 1 to 6 - Pump Blocked Error (No Change in the Water Level)

While draining, the water level reading from the pressure sensor has not changed for over 3 minutes. There are three likely reasons for this fault. One is that the drain hose or the pressure switch 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 Control Module, wiring or pump failure. This fault could also appear if the SmartDrive is pumping to an unusually high head of drain hose or into an extended length of drain hose. The fourth possibility is a diverter valve fault or blockage. The water level is not altering as the diverter is stuck in the recirculation mode, giving the module the appearance the pump is not lowering the water level.

Primary Source: Pump System.

Action:

1. Check that the drain hose has not been kinked.
2. Check the length of the drain hose and try to reduce the 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. Check for open circuit windings in the pump. (**Note:** Pumps are fitted with a thermal cut-out that will reset on cooling.)
4. If the bowl is empty of water, remove the pump from the pump housing and check that it is not blocked. Also check the drain hose is not blocked.
5. If the bowl contains water, then service the pump from the top of the SmartDrive by removing the top deck and inner bowl. Bail out the water, remove the pump cap and hood and clear the restriction.

Secondary Source: Wiring.

Action:

1. Check the pump harness is connected correctly to the pump.
2. Check continuity of the pump harness.

Tertiary Source: Motor Control Module.

Action: Activate the pump by operating the SmartDrive in spin mode. Check the pump is rotating. If it is not operating, and Primary and Secondary checks have been performed, then replace the Motor Control Module.

Note: Consider fitting Pump Hood Kit (Technical Bulletin WM013). If 5kg SmartDrive, fit splash guard to pump.

Quaternary Source: Diverter Valve failure (Phase 5 and 6 Eco's).

Action: Check the diverter valve, see fault code 51.

38. (00100110) Phase 1 to 6 - Pressure Sensor Fault

The Motor Control Module has recorded a water level of empty while it is agitating. The water level must have been greater than empty for the SmartDrive 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 Control Module. (Display Module Phase 1.)

Action: Replace the Motor Control Module if the pressure tube shows no sign of being faulty. (Display Module Phase 1.)

39. (00100111) Phase 1 to 6 - 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 or dirt and is not kinked.

Secondary Source: Motor Control Module. (Display Module Phase 1.)

Action: Replace the Motor Control Module. (Display Module Phase 1.)

40. (00101000) Phase 1 to 6 - Bowl Dis-engage Fault

While carrying out a bowl check, the Motor Control Module has found that the bowl is not engaged even though the pressure sensor indicates that the bowl is empty. The Motor Control 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 Control Module.

Primary Source: Mechanical.

Action:
1. Check that there are no clothes or other foreign objects preventing the clutch from re-engaging. Excessive suds can stop the bowl rotating.
2. If the SmartDrive 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 Control Module. (Display Module Phase 1.)

Action: Replace Motor Control Module. (Display Module Phase 1.)

41. (00101001) Phase 1 to 6 - Temperature Sensor Fault (Thermistor)

The temperature sensor is measuring temperatures above 110ºC. The fault is probably due to a short circuit in the sensor line. (Only in the Intuitive Washer and the GW Models.)

Primary Source: Thermistor (Phase 5 and 6) Motor Control Module (Phase 1 to 4).

Action: Phase 1
1. Check connections of the 12 way harness.
2. Check for moisture in the console area.
3. Replace Motor Control Module.
4. Replace Display Module. If the new display fixes the fault then refit the original Motor Control Module.

Phase 2 to 4 Change Motor Control Module.

Phase 5 and 6
1. Check the connection from the thermistor to the Motor Control Module.
2. Check the resistance of the thermistor. It

should read 12.5k ohms at 20 degrees C. Replace if faulty.
3. Replace the Motor Control Module.

42. (00101010) Phase 1 - Rotor Fault

Primary Source: The Motor Control Module has had some confusing information feedback.

Action: Turn off SmartDrive at the wall and back on again after 5 seconds. Restart.

43. (00101011) Phase 1 to 6 - OOB Switch Fault

The Motor Control 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 that the switch operates correctly when activated. Replace the switch if suspect.
4. If the out of balance micro switch shows signs of corrosion, replace the switch and switch harness, and fit a condensation kit to the console area if not incorporated in the top deck.
5. Check that the SmartDrive is level and also that the bias spring is in place.

Secondary Source: Wiring.

Action: Check the harness to the out of balance 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 and switch.

Tertiary Source: Motor Control Module. (Display Module Phase 1.)

Action: Replace Motor Control Module. (Display Module Phase 1.)

44. (00101100) Phase 2 to 6 - Water in Bowl During Spin

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

Primary Source: Pump System.

Action:

1. Check that the drain hose is not squashed or kinked.
2. Check the length of the drain hose and try to reduce the 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 the pump from the pump housing and check that it is not blocked. Also check that the drain hose is not blocked.
4. If the bowl contains water, then service the pump from the top of the SmartDrive by removing the top deck and inner bowl. Bail out the water, remove the pump cap and hood and clear the pump of any obstruction.
5. Check that water is not siphoning back into the SmartDrive when the pump turns off when the spin speed reaches 600 rpm.

Secondary Source: Motor Control Module.

Action: Replace Motor Control Module.

45. (00101101) Phase 5 - 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.

46. (00101110) Phase 5 IW - Display EEPROM Check

The Intuitive Display has detected a problem with its internal EEPROM.

Primary Source: IW Display Module.
Action: Replace IW Display Module.

47. (00101111) Phase 2 and 3 - Bowl Dis-engage Fault

While carrying out a bowl check, the Motor Control Module has found that the bowl is not engaged even though the pressure sensor indicates that the bowl is empty. The Motor Control 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 Control 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 Control Module.
Action: Replace Motor Control Module, if the above checks out without fault.

48. (00110000) Phase 2 to 6 - Hot and Cold Valve Faulty

The Motor Control Module has measured voltages from the valve diagnostic circuit that indicate both the hot and cold valves 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 the valve harnesses are correctly fastened to the valves or the pins are not bent backwards.
Secondary Source: Water Valves.
Action: Check the valve coils are not faulty (open circuit).
Tertiary Source: Motor Control Module.
Action: Replace the Motor Control Module.

49. (00110001) Phase 2 to 6 - Cold Valve Faulty

The Motor Control 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 valve is open circuit. See fault 48 for service procedure.

50. (00110010) Phase 2 to 6 - Hot Valve Faulty

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

Note: Phase 5 can give a fault code 50 when the SmartDrive powers off while spinning. There will actually be no fault if this has happened.

51. (00110011) Phase 5 and 6 Eco - Diverter Valve Fault

Primary Source: The Motor Control Module has registered a drop in water level in the recirculation phase of the wash cycle, water is being drained instead of recirculated. Or water has been sprayed onto the Valve from an external source and caused the solenoid to blow.

Action: Turn the power off at the SmartDrive but leave the power on at the wall, then measure the voltage across the terminals of the wax actuator. If a reading of 230V is achieved, the Motor Control Module has failed due to the valve and both will need to be replaced.

Secondary Source: Check for blockage in the valve itself or a broken hinge mechanism.

52. (00110100) Phase 5 and 6 Eco - Diverter Top-up Fault

More than 6 attempts to top-up the water level in the bowl. This then signifies the valve has not closed and is diverting to drain, or the top-up was not increasing quickly enough, suggesting the valve has a blockage and is also draining.

Primary Source: Diverter valve.

Action: Remove the diverter valve and check for blockages or broken hinge mechanism.

Secondary Source: Wax Solenoid.

Action: Check the resistance of the wax solenoid. Also look for corrosion on the terminals (greenie deposit). Resistance range will be between 0.7kΩ and 2.5kΩ. Values are dependant on ambient temp and when the valve was last actuated. Anything outside of these values and the diverter valve should be automatically replaced.

53. (00110011) Phase 2 to 6 - Rotor Position Sensor Step Fail

The Motor Control 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 fitted to the Rotor Position Sensor and the Motor Control Module.
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 Control Module.
Action: Replace the Motor Control Module, as the sensing circuitry may be faulty.

54. (00110110) Phase 2 to 6 - Motor/Motor Control Module Step Fail

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

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

Tertiary Source: Motor Control Module.

Action: Replace Motor Control Module.

55. (00110111) Phase 3 to 6 - System Step Fail

Primary Source: Rotor Position Sensor.

Action:
1. Check Motor and Rotor Position Sensor wiring.
2. Check Rotor Position Sensor with RPS Tester.

56. (00111000) Phase 4 to 6 - 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.

Phase 4 & 6

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 bowl, or select a higher water level. If the load was to one side of the bowl or too heavy it can be possible for the agitator to bind in one direction when trying to sense bowl 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. 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.

Phase 5

Primary Source: Rotor Position Sensor.

Action: Replace the Rotor Position Sensor.

Secondary 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 bowl, or select a higher water level. If the load was to one side of the bowl or too heavy it can be possible for the agitator to bind in one direction when trying to sense bowl float.

Tertiary 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.

Quaternary Source: Motor Control Module.

Action: Replace the Motor Control Module

57. (00111001) Phase 4 to 6 - Brown Out During Display EEPROM Write Fault

The Display has requested the Motor Control Module to perform an EEPROM write. Prior to writing, the Motor Control 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. This may be due to transients at the time of writing or due to a faulty Motor Control Module.

Primary Source: Motor Control Module.

Action: Replace Motor Control Module.

58. (00111010) Phase 4 to 5 - Pressure Transducer at Maximum Adjustment Fault

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

Primary Source: Motor Control Module.
Action: Replace Motor Control Module.

59. (00111011) Phase 4 to 5 - I D Out of Range Fault

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

Primary Source: Display Module.
Action: Replace Display Module.

60. (00111100) Phase 4 to 6 - Motor Control Module Memory Check Fault

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

Primary Source: Motor Control Module.
Action: Replace Motor Control Module.

61. (00111101) Phase 4 - Brown Out During Motor Control Module EEPROM Write Fault

The Motor Control Module has been attempting to perform an internal EEPROM write. Prior to writing, the Motor Control 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.

Primary Source: Motor Control Module.
Action: Replace Motor Control Module.

62. (00111110) Phase 5 - Pump Over Current

The Motor Control Module has detected an excessive pump current.

Primary Source: Pump.
Action: Replace Pump.
Secondary Source: Motor Control Module.
Action: Replace Motor Control Module.

63. (00111111) Phase 5 - Pump Comms Error

The Motor Control Module has detected an internal communications problem between its main control system and the pump control system.

Primary Source: Motor Control Module.
Action: Replace Motor Control Module.

64. (01000000) Phase 5 and 6 - Pressure Transducer (Ptx) Error - Frequency < 66 kHz

The Motor Control Module has received signals from the water level sensor (Ptx) below normal frequency values.

Primary Source: Motor Control Module.
Action: Replace Motor Control Module.

65. (01000001) Phase 5 and 6 - Pressure Transducer (Ptx) Error - Frequency > 90 kHz

The Motor Control Module has received signals from the water level sensor (Ptx) above normal frequency values.

Primary Source: Motor Control Module.
Action: Replace Motor Control Module.

66. (01000010) Phase 6 - Pressure Transducer (Ptx) Error - Frequency > 90 kHz

Note: this supersedes Fault code 65 from V41 Motor Control Module code onwards.

The Motor Control Module has received signals from the water level sensor (Ptx) above normal frequency values.

Primary Source: Motor Control Module.
Action: Replace Motor Control Module.

81. - 95. (0101xxxx) Phase 2 to 3 - Display/ Motor Control Module. See Fault Code 106

104. (01101000) Phase 2 to 6 - See Fault Code 106

105. (01101001) Phase 2 to 6 - Comms Error Time Out

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

Note: If the product is an IW, the wrong Motor Control Module may have been fitted. Replace with a compatible part.

Phase 2 to 4 and Phase 6

Primary Source: Display Module.
Action: Replace Display Module.
Secondary Source: Motor Control Module.
Action: Replace Motor Control Module.
Tertiary Source: Rotor Position Sensor (Phase 5 and 6).
Action: Replace Rotor Position Sensor. If this corrects the fault, refit the original Display Module or Motor Control Module.

Phase 5

Primary Source: Pump
Action: Measure resistance of pump. If resistance is less than 33 ohms, replace pump.
Secondary Source: Display Module.
Action: Replace Display Module.
Tertiary Source: Motor Control Module.
Action: Replace Motor Control Module.
Quaternary Source: Rotor Position Sensor.
Action: Replace Rotor Position Sensor. If this corrects the fault, refit the original Display Module or Motor Control Module.

106. (01101010) Phase 2 to 3 and 5 - Display to Motor Control Module Communications Errors (Phase 6 IW Also)

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

Phase 2 to 3

Primary Source: Display Module.
Action: Replace Display Module.
Secondary Source: Motor Control Module.
Action: Replace Motor Control Module. If the new Motor Control Module corrects the fault, refit the original Display Module.

Phase 5
Primary Source: Pump
Action: Measure resistance of pump. If resistance is less than 33 ohms, replace pump.
Secondary Source: Display Module.
Action: Replace Display Module.
Tertiary Source: Motor Control Module.
Action: Replace Motor Control Module. If the new Motor Control Module corrects the fault, refit the original Display Module.

107. (01101011) Phase 2 to 6 - Motor Control Module Reset Error

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

Primary source: Motor Control Module.
Action: Replace Motor Control Module.

108. (01101100) Phase 6 IW - Coms CRC Error Display. See Fault Code 106

127. (01111111) Phase 5 - Machine Set up Error

The Display Module has been fitted to the wrong model, size and or phase of SmartDrive, eg. Phase 5 Display Module cannot be fitted to a Phase 4 Motor Control Module. The colour of the module is a good indicator. Part numbers are also very important.

130. (10000010) Phase 1 to 6 - Single Rotor Position Sensor Error

The Motor Control Module 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 Control 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 Control 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 Control Module.

Action: Replace Motor Control Module.

131. (10000011) Phase 1 to 6 - 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) Phase 1 to 4 - Single Current Trip

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

Primary Source: Wiring.

Action: Check the wiring connections from the Motor Control Module to the Stator and the Rotor Position Sensor.

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 Control Module end. Nominal resistance should be approximately 2.6 ohms for Phase 1, 12.2 ohms for Phases 2, 3 and 4, and 32 ohms for Phases 5 and 6.
2. Check the Rotor Positional Sensor, Stator brass bridge terminal point and associated harness for water, mechanical damage or corrosion.

Tertiary Source: Motor Control Module.

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

133. (10000101) Phase 1 to 4 - Repetitive Current Trip

The Motor Control Module has detected excess current in the motor or electronic switches. This fault is a more severe occurrence than fault code 132 but has identical fault sources and fault service procedure.

134. (10000110) Phase 4 - Single Current Trip & Rotor Position Error

The Motor Control Module has detected an excessive motor current AND a Rotor Position Sensor error simultaneously. See fault codes 130 and 132 for service procedure.

136. (10001000) Phase 1 to 6 - Motor Stall

The Motor Control 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 Control 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 Control Module end. Nominal resistance should be approximately 2.6 ohms for Phase 1, 12.2 ohms for Phases 2, 3 and 4, and 32 ohms for Phases 5 and 6.

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 Control Module.

Action: If the primary and secondary checks pass inspection, then replace the Motor Control Module.

144. (10010000) Phase 1 - Motor Control Module Software Trap

The Motor Control Module has developed a fault.

Primary Source: Motor Control Module.

Action:

1. Power off for 5 seconds and try again.
2. Check connections between the Display Module and the Motor Control Module.
3. Replace Motor Control Module.

160. (10100000) Phase 1 to 6 - Bowl Engaged

The bowl has re-engaged itself during agitate. Possible causes for this are a leak in the air bell, the 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 that the clutch teeth are not locked together with dirt, 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 Control Module. (Phase 1 to 4 only.)

Action: If the SmartDrive 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 Control Module to display this fault. Replace Motor Control Module.

161. (10100001) Phase 2 to 6 - Hardware / EEPROM Supply Mismatch

The Motor Control Module checks the hardware configuration (ie. 110v or 230v) against its EEPROM table on power up. Should there be a mismatch, this error is flagged.

Primary Source: Motor Control Module.

Action: Replace Motor Control Module.

162. (10100010) Phase 3 to 5 - Brake Deceleration Time-out Fault

During the brake mode, the Motor Control Module 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) Phase 4 to 6 - Valve Reset Pin Connect Fault

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

Primary Source: Motor Control Module.
Action: Replace Motor Control Module.

164. (10100100) Phase 4 to 5 - Brake Function Time-out Fault

This fault indicates that the Motor Control 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 bowl stopping in time.

Primary Fault: Wiring.
Action: Measure / check the motor harness, connectors and motor for continuity. This can be done by taking a resistance measurement between phases of the motor harness at the Motor Control Module end. Nominal resistance should be approximately 2.6 ohms for Phase 1, 12.2 ohms for Phases 2, 3 and 4, and 32 ohms for Phases 5 and 6.
Secondary Source: Motor Control Module (Phase 4), RPS (Phase 5).
Action: Replace Motor Control Module (Phase 4), or Rotor Position Sensor (Phase 5).

192. (11000000) Phase 4 to 5 - Motor PMW Reset Pin Connect Fault

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

Primary Source: Motor Control Module.
Action: Replace Motor Control Module.

230. (11100110) Phase 6 - EEPROM Value Out of Range

Wrong version detected.

Primary Fault: Motor Control Module is the wrong version.
Action: Change Motor Control Module.

231. (11100111) Phase 6 - MW GW Link Error

Component has failed on the display board.

Primary Fault: Display Module fault.
Action: Replace Display Module.

232. (11101000) Phase 6 - COMMS Timeout 5 Seconds

IW only problem, either the Display or Motor Control Module has not responded in time.

Primary Fault: Display Module.
Action: Replace Display Module.
Secondary Fault: Motor Control Module.
Action: Replace Motor Control Module.

233. (11101001) Phase 6 - EEPROM Read Error

Problem reading the EEPROM data coming from the Motor Control Module.

Primary Fault: Motor Control Module faulty.
Action: Replace Motor Control Module.

234. (11101010) Phase 6 - Lid Lock Open Circuit

Check Harness to Lid Lock and connections at the Motor Control Module and lid lock ends.

Primary Fault: Connector to the harness. Either end could be at fault.
Action: Replace Harness.
Secondary Source: Lid Lock has failed to be activated.
Action: Replace Lid Lock housing.
Tertiary Source: Motor Control Module has not responded to the Lid Lock being activated.
Action: Check the lid has a Tang and is fitted correctly to activate the Lid Lock. If this is all in order, the Motor Control Module must be at fault and needs to be replaced.

235. (11101011) Phase 6 - Lid Lock Short Circuit

Lid Lock fault, not activated when instructed to by the Motor Control Module.

Primary Fault: Lid Lock mechanism has jammed or failed.

Action: Check resistance across the connections, should be around 73 ohms. If not within 5 ohms, replace the Lid Lock.

236. (11101100) Phase 6 - Incompatible EEPROM Version

Failure to start and fault immediately displayed.

Primary Fault: Motor Control Module is the wrong one.

Action: Replace Motor Control Module.

237. (11101111) Phase 6 - Temperature Sensor Error

The electronics have picked up a continuity problem, same as fault code 10 or 41.

Primary Fault: The sensor has failed either in the harness or connection to the thermistor.

Action: Replace the Thermistor (temperature sensor).

Secondary Source: Motor Control Module has failed to read the temperature. Check connections.

Action: Replace Motor Control Module if connections look fine and the fault still occurs.

238. (11101110) Phase 6 - Lid Lock Fail In-line Test (1)

Final on line tests, final check before going to the field.

239. (11101111) Phase 6 - Lid Lock Fail In-line Test (2)

Final on line tests, final check before going to the field.

240. (11110000) Phase 6 - Hall Out of Order. RPS Fault

Same as previous Hall Error faults, just an extra fault code for Phase 6. See fault codes 130 and 131 for directions.

241. (11110001) Phase 6 - Function Time Out

Display crashed.

Primary Fault: Display has failed.
Action: Replace Display Module.
Secondary Fault: Motor Control Module has failed.
Action: Replace Motor Control Module.

242. (11110010) Phase 6 - OOB Hit Greater Than Max for 5 Seconds

Out Of Balance warning to the user. Additional fault code for Phase 6.

Primary Fault: SmartDrive has detected the bowl movement to be excessive or the Micro switch is permanently on or harness to it is disconnected.
Action: See fault code 43 for details.

243. (11110011) Phase 6 - Stepper Test Failure

Rotor Position Sensor Fault. The Motor Control Module has attempted a motor step test and found the motor has not stepped to the correct position.

Primary Fault: Wiring.
Action: See fault codes 53 and 54.