Appendix E: IW SMARTDRIVE SERVICING

E.1 IW Quick Reference Guide

- The Intuitive Washer can display the most recent user warning and fault.
- The Intuitive Washer uses the motor to detect the fabric type.
- The Intuitive Washer uses the same motor, bowl and wrapper as Phase 5 Smartdrive.
- Two types, Intuitive Washer (IW) without recirculation and Intuitive Eco (IWECO) with recirculation. The display clearly identifies this at power up.
- IW ECO. Hot water is only used during recirculation. This results in greater energy efficiency.
- IW ECO. Due to the reduced amount of water used during recirculation, extra care must be taken not to use too much detergent. This could result in over sudsing.
- IW ECO. The time to turn the diverter valve on is 1 minute, and 3 minutes to turn it off. So there could be a delay before draining starts.
- The button 'Specials' in IW has been renamed 'LifeCycles' in IWECO.
- If **LEDs are flashing** Restart may be off or Recycle may be on. These are not the default states.
- **Option Adjustment Mode.** Hold the 'Options' button down for 4 seconds.
  Diagnostic Mode. Hold down the 'Specials'/'LifeCycles' button and press Power. Use the 'Specials' /'LifeCycles' button and buttons on the right of the LCD to toggle product status. Or use the 'Options' button to turn restart & recycle ON or OFF.
  Size Setting Mode. Hold down the 'Fabric Care' button and press Power.
- Display, 426961 not for IWECO. Motor Controller, 426520 not for any IW.
- **Smarttool** may be used to extract more service information. To download data use the 'Start/Pause' button from fault mode or diagnostic mode.

IW Models	**IW509, IW609, IW709**
IWECO Models	**IWC09, IWM10, IW710, IWL10, IW810**

E.2 Specifications for IW

Models	Size	Width		Wash Load Capacity
Compact	5	560mm	IW509 IWC09	5.5kg
Medium	6	600mm	IW609 IWM10 IW710	6.5 / 7kg
Large	7	650mm	IW709 IWL10 IW810	7.5 / 8kg

Water consumption per fill with clothes load

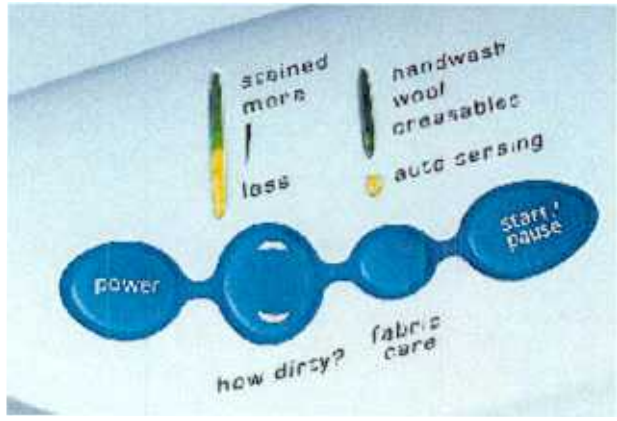
	Compact	Medium	Large
High	65 litres	82 litres	90 litres
Medium high	58 litres	65 litres	76 litres
Medium	47 litres	52 litres	61 litres
Medium low	33 litres	38 litres	47 litres
Low	22 litres	25 litres	32 litres

Recirculating Valve: 1.5Kohms @ 20 °C Only fitted to IWM10 IW710 IWL10 IW810
Pump, Water Valves, Stator, Rotor, RPS, all as Phase 5 Smartdrive.

E.3 INTRODUCTION to IW

This Service Supplement contains specifications, size setting and diagnostic mode.

The first Intuitive Washer(IW) was introduced in Phase 5 Smartdrive in 1999. Three models were released, IW509, IW609 and IW709. These products were upgraded in 2000 to include recirculation, these products are called Intuitive ECO. These products were IWC09 (non recirc), IWM10, IW710, IWL10 and IW810.



PERFORMANCE CHANGES

The Eco Active wash with Recirculation - Only IWM10 IW710 IWL10 IW810
The Eco Active wash of the Intuitive / Eco is a 2 step wash process that combines top loader and front loader washing technologies.

Wash 1: **DETERGENT ACTIVATING WASH** *(Front loader type wash)*
Smartdrive fills the bowl with just enough water, at the selected wash temperature, so that the clothes are 100% saturated. Smartdrive stops filling and the water in the bowl is pumped up through the recirculating hose and back into the bowl onto the clothes, with a fan-like spray pattern. As the water recirculates, the bowl stirs, pausing every 16 seconds. Short top-ups may occur as garments absorb water, keeping the water level constant. This recirculating wash action thoroughly dissolves and activates the detergent. The concentrated solution of detergent and water rapidly targets stains and soils at the fibre level, boosting soil removal and accelerating the wash process.

Wash 2: **AGITATION WASH** *(Top loader type wash)*
After re-circulating the sudsy water through the clothes for 2 to 5 minutes, Smartdrive fills with just enough cold water to suspend the clothes in solution. Smartdrive then senses the fabric type of the load and begins the agitation wash.

The are 2 load sensing methods to ensure the right wash action is used for the type and size of wash load;

LSD - Load Sensing Detection is used to continually sense the load and automatically adjust the agitation profiles to suit the wash load. If additional garments are added during the wash Smartdrive will adjust accordingly.

MCP – Maximum Capacity Profile is selected immediately when fabric detection selects 'heavy duty' at high water level.

ELECTRONICS

The electronics are similar to Smartdrive Phase 5. Electronic Modules are **not inter-changeable** between models. The different modules for the different models can be identified by their colour. Phase 2 modules are blue, Phase 3 modules are green, Phase 4 modules are yellow and the latest Phase 5 and IW modules are grey. **IMPORTANT:** Motor Controller part no. 426520 should not be used with IW. It will appear to function correctly but will give fault code 105 at the start of Agitate. Display Module 426961 should not be used on products with recirculation, the product will appear to work satisfactorily but the

recirculation will not work. It is important not to mix the different coloured modules as they are not compatible and Smartdrive will not work. It will normally display a fault code and beep if the modules have been mismatched. Delay start is 1 to 9 hours, (IW) or 18 hours (IWECO) in increments of 1 hour.

WATER TEMPERATURE SENSING

The thermistor for sensing the water temperature in Smartdrive is located in the inlet chamber and is available as a separate spare part, part number 479164P. Hot water is only used at the start of the cycle when Smartdrive is recirculating. Some hot water may be used in the first fill if the inlet water temperature is low, below 18°C.

WATER VALVES

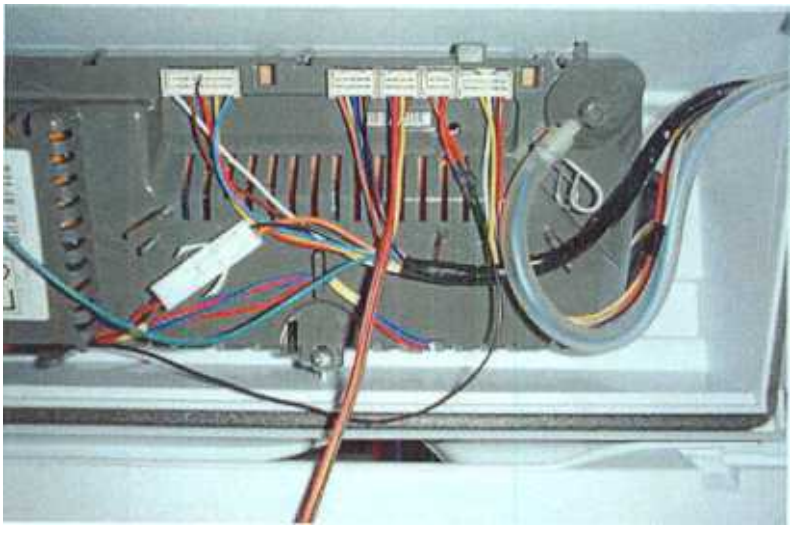
The water valves are the same as Phase 5 GW Smartdrive. A proportional valve is fitted on the cold and a digital valve on the hot. Resistance 64 ohms.

STATOR & ROTOR

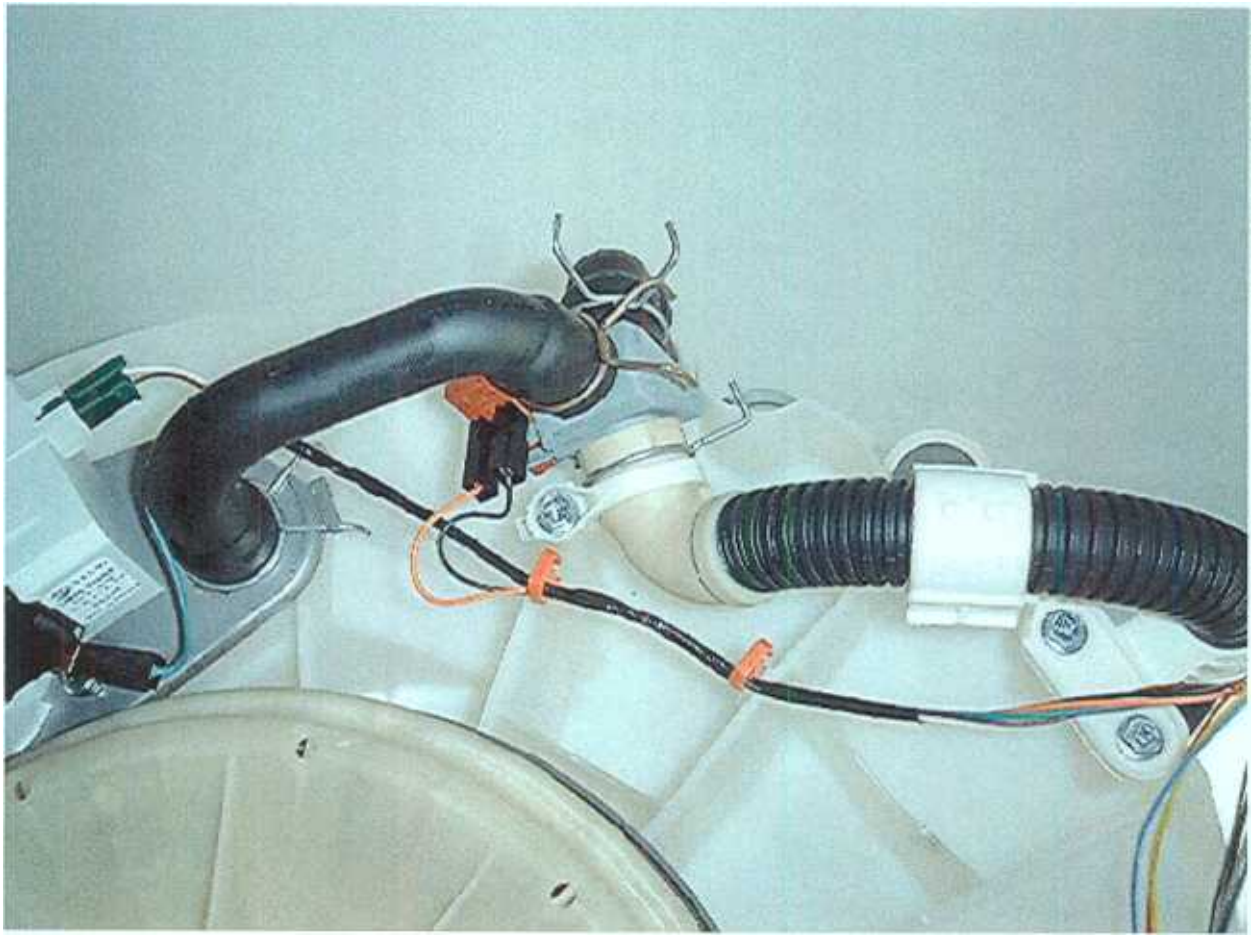
The stator & rotor are the same as Phase 5. Stator resistance is 16 ohms per winding, (32 ohms phase to phase).

RECIRCULATING VALVE - Only fitted to IWM10 IW710 IWL10 IW810

The Recirculating valve is situated at the bottom of the bowl beside the pump. If the valve requires service, remove the hose clips connecting the hoses to the valve, and remove the screwed clamp around the inlet hose to the valve. The valve now can remove for cleaning or checking. This is best achieved by working from underneath Smartdrive. The valve relies on element heating to open. The picture below shows the connector for the Recirculating valve in the motor controller module. The valve can be tested in the DIAGNOSTIC mode within the Machine Status screen. **NB: The valve takes approx. 1 minute to activate and approx. 3 minutes to cool down and return to it normal position.** It will make no sound during activation.



RECIRCULATING VALVE



PUMP

The pump is the same as Phase 5. The pump forms part of the power supply. If it not connected Smartdrive will appear to have no power. The pump resistance is 33 ohms.

E.4 OPTION ADJUSTMENT MODE for IW

In Option Adjustment Mode the following adjustments may be made: -

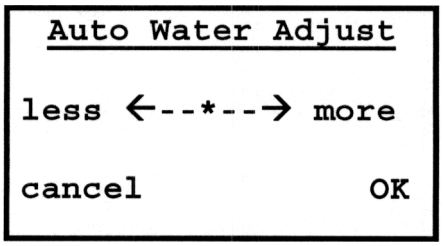
The fill level selected by Auto Water Level.
The type of rinse.
The temperature of the wash.
The spin speed for Creasables.
The recovery routine selected when a load goes out of balance.
The number of beeps at the end of the cycle.

Adjust Options Menu	
auto water	temp
auto rinse	other

With Smartdrive powered on **push the OPTIONS button and hold down 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 before returning to the main screen.

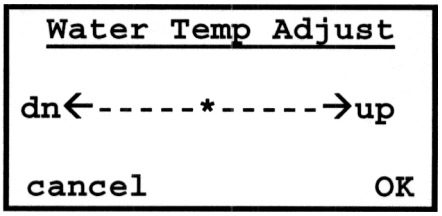
AUTO WATER - Auto Water Level Adjustment

The water level that Smartdrive fills to on auto water level may be adjusted. Select AUTO WATER. Use the MORE or LESS buttons to decrease or increase the fill level. **NB:** If there is not enough water for the load, 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 sensethe water under the clothes.



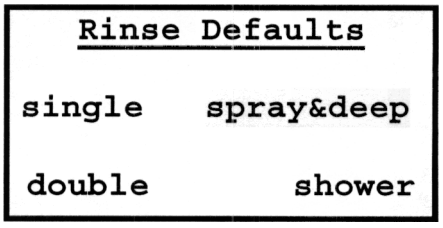
TEMP - Wash Water Temperature Adjustment

The wash temperatures can be adjusted. Select TEMP. Use the DOWN or UP buttons to decrease or increase the wash temperature. Select OK to save the new temperature settings. Each move up or down is approximately 1°C.



AUTO RINSE - Rinse Default Options

This menu changes the rinse option to which Smartdrive defaults. (Spray and deep is the standard rinse default). It may be desirable to change the type of rinse selected for a number of reasons. If there is problem with impurities in the water supply a better wash may be attained by changing the rinse option to 2 deep rinses. To conserve water select a single deep rinse or a shower rinse.



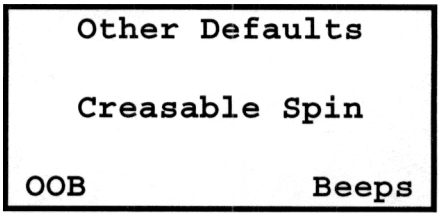
Single - Short spin followed by 1 deep rinse.
Double - 2 deep rinses.
Spray & Deep - Spray rinse followed by deep rinse.
Shower - Shower rinse.

Shower rinse alternately showers the clothes with water and spins them to remove the sudsy water. It is not designed to be used with fabric softener as a shower rinse does not use a deep rinse so it cannot dispense fabric softener correctly.

OTHER OPTIONS

Creasable Spin Speed

The Creasables fabric care option defaults to a slow spin speed (300rpm). However, a medium spin speed (700rpm) may be selected. Select OTHER. Select CREASABLE SPIN. Select MEDIUM.



OUT OF BALANCE Recovery

While Smartdrive is spinning, if it senses the wash load is out of balance it stops. It retries spinning up to three times. If an unbalanced load is detected there are two recovery options.

Automatic Recovery Option. Smartdrive tries to automatically correct the out of balance load. It fills with water and agitates to redistribute the load before trying to spin up again. 'OOB' on the LCD is highlighted.

Machine Stops Option (default). Smartdrive will stop, give a short burst of beeps every five seconds, and display a message to let you know to redistribute the load more evenly. Use this option to conserve water.

End of Cycle BEEPS

The number of beeps at the end of the cycle can be set to zero, five (default) or fifteen. Use the DOWN and UP buttons to decrease or increase the number of beeps. The LCD will display the number of beeps selected.

E.5 DIAGNOSTIC MODE for IW

DIAGNOSTIC MODE incorporates tests for the pump, diverter valve, water valves, and also the data display mode. To enter DIAGNOSTIC MODE, turn the power on at the power point and off at the console. **Press and hold the 'SPECIALs' / 'LifeCycles' button and then the POWER button.** Smartdrive will give 2 short beeps and the LCD screen will go blank.

NB: Make sure that the buttons are released after the beeps, or Smartdrive will take itself out of diagnostic mode.

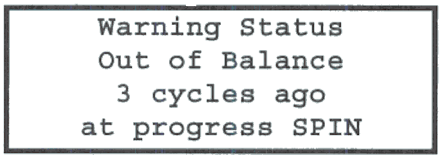
STATUS DISPLAY

To display the status **push the 'SPECIALs' / 'LifeCycles' button again.** This will display the status of the lid switch and the out of balance switch.. It will display the last fault and last User Warning. One of 3 displays will appear in the LCD. **Use the buttons to the right of the LCD to toggle these display options.**

WARNING STATUS

The **Warning Status** screen will display the last "USER WARNING" which occurred. It states how many cycles ago and the wash state. ***This is a fault that the Customer may have caused.*** Other "USER WARNINGS" which may appear in the LCD are:-

Out of balance
No hot water
No cold water
No water
Overloaded
Too many suds

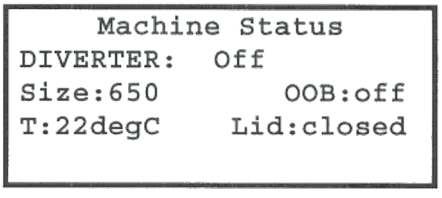


Service information for user warnings is in Section 10.

MACHINE STATUS

The **Machine Status** screen displays the status of the lid switch and the out of balance switch. It also displays the Size setting of Smartdrive and the water temperature measured by the thermistor. The state of the Diverter may be changed in IWECO.

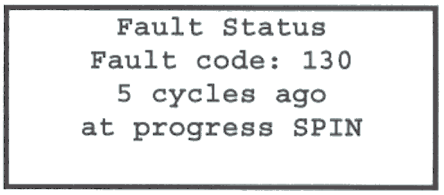
When the lid is opened, the screen display will change from reading "closed" to "open". Similarly, for the out of balance switch test. If hot water is passed through the water chamber, the temperature read out in the screen will change accordingly as measured by the thermistor.



On the IWM10 IW710 IWL10 IW810 the 'DIVERTER' option will also appear. When changing the diverter from OFF to ON the display will say 'HEATING' for approximately 1 minute. This is the length of time the diverter takes to change from the OFF state to the ON state. When changing the diverter from ON to OFF the display will say 'COOLING' for approximately 3 minutes. A number adjacent to the diverter state gives an indication of the time to go, maximum 180.

FAULT STATUS

The **Fault Status** screen will display the fault code for the current or last fault that has occurred in Smartdrive. It will also display how many cycles ago the fault occurred and at what part of the cycle. The **fault code** can be checked in Section 11 to identify the repairs that may be necessary.



DRAIN PUMP TEST

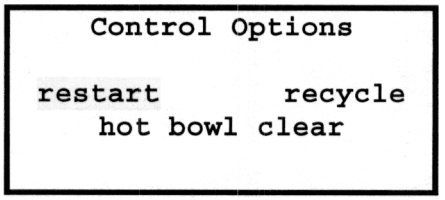
When in diagnostic mode, the **FABRIC CARE** button turns the drain pump on or off. This can be helpful if the bowl is still full of water. The pump is run at 50Hz for this test. When in the 50Hz mode, the pump will not turn on and off every 10 seconds. When running this test the state of the diverter valve should be known. This is the best method for checking the recirculation system. Always check that there is no water pumped to drain when the product is recirculating and vice versa.

WATER VALVE TEST

When in diagnostic mode, 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 must be held on to keep the valves on.

RESTART

When in diagnostic mode, pressing the **OPTION** button will bring up the **Control Option** screen.



Smartdrive defaults to RESTART ON. This is indicated on the screen by the word RESTART highlighted. To turn RESTART OFF, push the button alongside the word. This will remove the highlight from the word RESTART. When Smartdrive is being serviced it is more convenient to turn RESTART OFF. This will allow any fault in the system to show up immediately.

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

The status of RESTART is indicated during normal use of Smartdrive as follows: -
If none of the 5 green "HOW DIRTY" LED's are on, RESTART is on.
If the 5 green "**HOW DIRTY" LED's are flashing**, RESTART is off.

NB: RESTART 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 RESTART to the default setting, switch Smartdrive off at the wall. If this does not reset the state then RESTART and RECYCLE must be reset in EEPROM. To set these states hold down the button adjacent to the LCD for 2 seconds, Smartdrive will beep once.

RECYCLE

In the Control Option mode, similar to setting the RESTART. Push the button beside the word RECYCLE to toggle on and off Recycle. At the end of 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.

The status of RECYCLE is indicated during normal use when Smartdrive is first turned on:
If none of the FABRIC CARE LED's are on, recycle is off.
If all of the **FABRIC CARE LED's are flashing**, recycle is on.

NB: Recycle is designed as a service aid only and should be OFF in the customer's home. To return to normal operation, and to return recycle to the default setting, switch Smartdrive off at the wall. If this does not reset the state then RESTART and RECYCLE must be reset in EEPROM. To set these states hold down the button adjacent to the LCD for 2 seconds, Smartdrive will beep once.

HOT BOWL FLAG

If Smartdrive has been filled with hot water and has not had a cold rinse, Smartdrive will not spin up to its full speed of 1000 RPM, its maximum speed will be reduced to 700 RPM. To remove this flag, enter the Control Option mode and push the button beside the words HOT BOWL CLEAR, or put Smartdrive through a complete final rinse.

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

E.6 SIZE SETTING MODE for IW

It is important to set the size of Smartdrive into the Motor Controller's EEPROM whenever a replacement Motor Controller or Display Module is fitted to Smartdrive. Failure to do so will result in fault code 9.

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 give either of the following options in the LCD screen.

IW509, IW609, IW709
'size' is determined in the conventional way, with sizes 5, 6 & 7.

MACHINE	SIZE	SETUP
5		7
6		no size

IWC09, IWM10, IW710, IWL10, IW810
'size' is determined by product width in mm.

MACHINE	SIZE	SETUP
560		650
600		no size

The LCD screen has a number of options. Pushing the button alongside the appropriate machine size, or product width will select and highlight the size. Pushing the **POWER** button will set the "size" into the module's memory.