

Fisher & Paykel
appliances



Service Manual

PHASE 7

AQUASMART™ – HI-EFFICIENCY WASHER



Service Supplement



Supplementary Manual to 517792A

517794B

517794B

The specifications and servicing procedures outlined in this manual are subject to change without notice.

The latest version is indicated by the reprint date and replaces any earlier editions.

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FISHER & PAYKEL



PHASE 7 ELECTRONIC WASHING MACHINE

Covering the following models

Market	Model Number
North America	WL37T26CW WL37T26DW

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1 SPECIFICATIONS

1.1 Model Information

AquaSmart™ introduces the new Fisher & Paykel model numbering system, which provides a clearer description of the product and its features. The new model numbering system will come in to affect with each new model released.

The model identification is explained below.

W	Washer	W	Washer
L	Low (Low Profile Agitator)	L	Low (Low Profile Agitator)
37	Capacity cu/ft (3.7) IEC	37	Capacity cu/ft (3.7) IEC
T	Top Loading	T	Top Loading
26	26 inches wide (25.6 inches)	26	26 inches wide (25.6 inches)
C	LCD Screen	D	LED Display
W	White	W	White
1	Series	1	Series

1.2 Dimensions

Height to lid	
Open	55.5in – 56.7in / 1410mm – 1440mm
Closed	37.4in – 38.6in / 950mm – 980mm
Height to console	39.8in – 41.3in / 1010mm – 1050mm
Width	26in / 650mm
Depth	26in / 650mm
Inlet hose length	47.24in / 1200mm
Packed weight	133.4lb / 60.5 kg
Unpacked weight	114.64lb / 52.0kg

Note: The exact height of AquaSmart™ is dependent on how far the feet are inserted into the base of the machine.

1.3 Maximum Capacity (AS/NZS 2040.1:2005)

Dry Weight: 15.4 lb / 7 kg

1.4 Water Consumption

Load Size	Regular High Efficiency*
15.5 lb / 7kg	21.7 G / 82 litres
11 lb / 5kg	18.2 G / 69 litres
6.6 lb / 3kg	15.85 G / 60 litres
2.2 lb / 1kg	14.5 G / 55 litres

*Regular High Efficiency is the default wash cycle for AquaSmart™

1.5 Water Fill Temperature (Approximate Factory Settings)

Supply	Water Fill Temp*
Hot	140°F (60°C)
Hot / Warm	115°F (46°C)
Warm	102°F (39°C)
Warm / Cold	91°F (33°C)
Cold Plus	68°F (20°C)
Cold	Supply temperature

Recommended hot water inlet temperature 149°F (65°C) (Maximum)

*Dependent on hot and cold supply temperatures and water pressures

1.6 Wash Motor

Electronically commutated 36 pole direct drive 3 Phase brushless DC Motor.
Motor Resistance per Phase $16\Omega \pm 10\%$ @ 68°F (20°C).

1.7 Pump Motor

The motor is a fully electronically controlled 325V, 3 phase, 6 pole, brushless DC motor.
The speed of the motor will vary depending on whether it is draining or recirculating the water.

Motor Resistance per Phase: $8.1\Omega \pm 10\%$ ($16.2\Omega \pm 10\%$ across any two phases).
Maximum Wattage: 200W
Nominal Wattage: 60W
Drain Speed: 2500rpm
Recirculation Speed: 2000 rpm

Head Height	Drain Speed	Flow Rate
4ft (Nominal)	2500rpm	6.2 gallons (23.6 litres) per minute
8ft (Maximum)	2500rpm	3.9 gallons (15 litres) per minute

1.8 Water Valves

Supply	Mode of Operation	Voltage	Resistance	Flow Rate
Cold	Digitally Operated	24V DC	64Ω @ 68°F (20°C)	2.6 Gal (10 litres) per min. max
Hot	Digitally Operated	24VDC	64Ω @ 68°F (20°C)	2.6 Gal (10 litres) per min. max
Detergent	Digitally Operated	24VDC	64Ω @ 68°F (20°C)	2.1 Gal (8 litres) per min. max
Fabric	Digitally Operated	24VDC	64Ω @ 68°F (20°C)	.5 Gal (2 litres) per min. max

Note: Flow rate will vary slightly depending on pressure.

Water Supply

- For best operating conditions your hot water should be approximately 149°F . The hot water should not exceed 167°F or the cold water exceed 95°F . Temperatures above these may cause the machine to fault or cause damage to the machine.
- If there is an uncontrolled water-heating source (eg a wet back or solar heating) a tempering device should be fitted. This will ensure the hot water temperature remains within safe limits. For the most suitable type of tempering device we recommend a local plumber or plumbing supply merchant be contacted.
- Inlet Water Static Pressure 3psi (20kPa) to 150psi (1MPa).

Note: If using a header tank, then the top of the header tank must be at least 2 metres above the top of the clothes washer.

- Minimum flow rate from the tap supplying the clothes washer should be greater than 1.6 gallons (6 litres) per minute (assumes $\frac{1}{2}$ inch diameter pipes).
- Minimum height of taps to clear the top of the machine is 45.25 inches (1150mm).

1.9 Thermistor

NTC-type temperature sensor (Thermistor) Resistance $10,000\Omega$ @ 77°F (25°C)

1.10 Cabinet

Pre-painted steel

1.11 Lid

ABS plastic (co-injected)

1.12 Top Deck

Polypropylene

1.13 Inner Bowl

Stainless steel: Grade 430T
Bowl base and balance ring: Polypropylene

Inner Bowl Weight
24lb 3oz (10.965kg) +/- 10oz (275g)

Inner Bowl Speed	
Fast Spin	1,000 RPM
Medium Spin	700 RPM
Slow Spin	300 RPM
Stir Speed	25 RPM

1.14 Outer Bowl

Aluminium insert over-moulded with polypropylene

1.15 Console

ABS plastic

1.16 Facia

IMD (In-mould decorative) Polycarbonate/PET

1.17 Neck Ring / Straps

Neck Ring: Polypropylene
Straps: Dynaflex TPE (Thermoplastic Elastomer)

1.18 Low Profile Agitator

Low profile agitator: Polypropylene
Low profile agitator Cap: Polypropylene
Low profile agitator Bolt: Acetyl

1.19 Energy Label / Water Rating

Modified Energy Factor – 2.15
Water Factor – 5.79

1.20 Bleach Dispenser

Dosage 70mls (To the Max indicator level).

Note: *Any amount above the Max level may cause the bleach to self-siphon in to the machine.*

1.21 Electric Supply

Operating Voltage: 110/120V AC 60Hz
Maximum Current: 7 amps

1.22 User Guide

User Guide: Part Number 421054
LCD 478093
LED 478107

1.23 Lid Lock

Resistance: 63Ω +/- 10% @ 68°F (20°C)

Note: *Normally low voltage, potentially 110V if harness is grounded on the cabinet!*

1.24 Control Panel LCD Model



1.25 Control Panel LED Model



1.26 Important Screw / Bolt Torque Settings

Below are the important screw torque settings on the AquaSmart™ washer. These settings must be adhered to. For all other screws and bolts that are not listed, we recommended that they are tightened sufficiently without being over-tightened.

Screw / Bolt	Torque (in/lbs)	Torque (Nm)
Pump hood to cap to outer bowl	27 in/lbs	3Nm
Rotor bolt to shaft	70 in/lbs	8Nm
Pump housing to outer bowl	18 in/lbs	2Nm

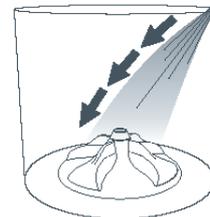
2 THE UNIQUE AQUASMART™ WASH

The AquaSmart™ is a SmartDrive™ based washing machine that has two modes of washing, **High Efficiency & Conventional**. It is essentially a front loader and a top loader washer in one.

Both washing modes start the same way, with a detergent activating wash.

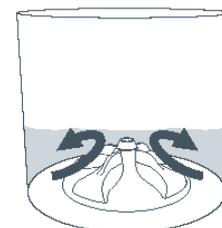
Detergent Activating Wash

AquaSmart™ fills at the selected water temperature, with just enough water so that the clothes are saturated. This concentrated detergent solution is then recirculated through the wash. This thoroughly dissolves and activates the detergent.



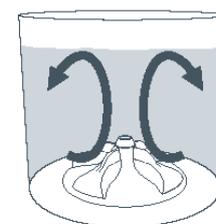
High Efficiency Mode (front loader type wash)

In the High Efficiency mode, the AquaSmart™ then fills with just enough cool water to lift the clothes off the low profile agitator, so that when it rotates, the clothes gently roll over each other. This wash uses similar quantities of water to most Front Loaders and so, not only are there the benefits of water savings, but also the higher detergent concentrations give optimum soil removal.



Conventional Mode (top loader type wash)

The Conventional mode is the immersion wash all Top Loader users are familiar with. After the Detergent Activating Wash, the AquaSmart™ fills with cold water until the clothes are underwater, whilst gently turning the clothes over. We recommend this mode when the dilution effect of water can solve or prevent common wash problems. For example when dye or colour run can be a problem, or when washing sandy towels. Sheets are better washed in this mode. Some cycles can be used in both modes, whilst others work in only one.



Cycle	Modes Available
Regular	High Efficiency
Sheets	Conventional
Whites	High Efficiency and Conventional
Colors	Conventional
Heavy Duty	High Efficiency and Conventional
Delicate	High Efficiency and Conventional
Easy Iron	Conventional
Bulky	Conventional

3 ELECTRONICS

3.1 Motor Control Module

The Motor Control Module used on the AquaSmart™ washer is similar to the other Phase 7 washers in its physical size and shape, however the electronics have different software to control the unique aspects of this machine.

Therefore the Motor Control Module is specific to this machine and is not interchangeable with any other Phase 7 machines.

The text on the yellow identifier label (P7SPL) stands for Phase 7, SmartPump™, Low profile Agitator.



3.2 Control Panel

The three core components of the control panel on the LCD model are the console, the IMD facia, and the PCB and housing. A new look that differs from existing machines has been created, so now capacitive touch buttons drive a high-resolution dot matrix display. The facia provides a sleek look and no protruding buttons makes it easier to clean.

Console – LCD Model

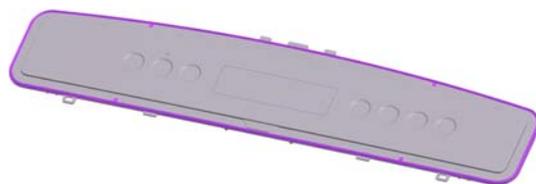
The console, which is made from ABS, is the housing to which the facia and PCB housing attaches. Lugs at the base of the console locate into the top deck. The console is secured to the rear of the top deck by two screws.



IMD Facia – LCD Model

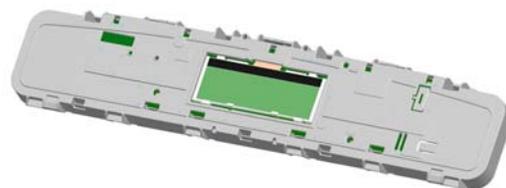
IMD stands for In Mould Decorative display. Clear plastic is moulded over the decorative polycarbonate silver film. The last process is to mould the seal on to the facia. The IMD process means a reduction of parts and any subsequent printing process.

- No lens.
- No light pipes.
- No separate buttons.
- No separate seal.



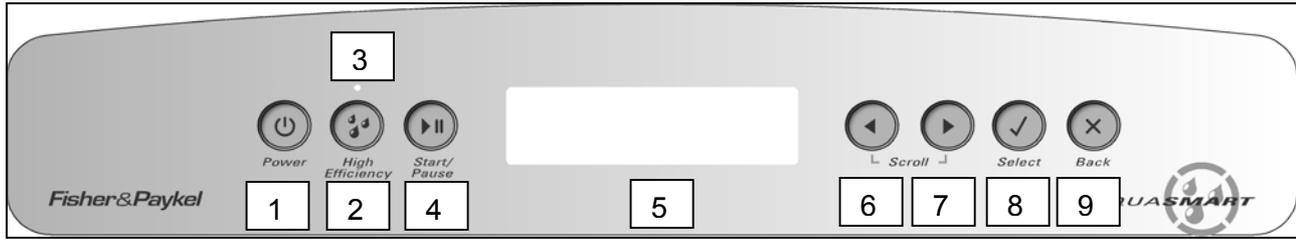
PCB and Housing – LCD Model

The PCB, which contains the capacitive touch buttons and LCD, is mounted within a plastic housing. The PCB housing is clipped into the console at the bottom, and secured with four screws along the top.

SAMPLE REF. COMPONENTS

4 CONTROL PANEL

LCD Model



1. Power On/Off button.
2. High-Efficiency mode On/Off. When off, the machine uses the conventional wash mode.
3. High-Efficiency LED used also for data download (refer to Section 15.2.5).
4. Start/Pause button
5. LCD Screen.
6. Left arrow (used when scrolling through options on the LCD screen).
7. Right arrow (used when scrolling through options on the LCD screen).
8. Select button – Use to confirm setting.
9. Back button - Use to cancel setting.

LED Model



1. Power On/Off button.
2. Service Spanner LED.
3. Lid Lock LED.
4. Regular button.
5. Heavy button.
6. Delicate button.
7. Sheets button.
8. Colours button.
9. Bulky button.
10. Easy Iron button.
11. High-Efficiency mode On/Off. When off, the machine uses the conventional wash mode.
12. Start/Pause button.
13. Advance button.
14. Soak button.
15. Delay Start button.
16. Bleach button.
17. Spin Speed button.
18. Temperature button.

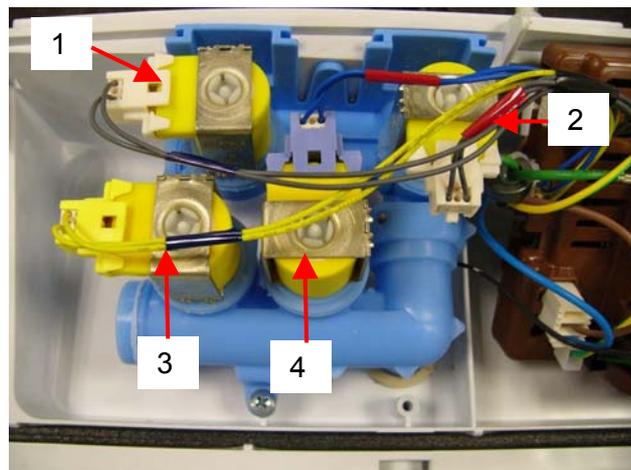
5 WATER VALVES / DISPENSING SYSTEM

5.1 Water Valves

The water valve assembly incorporates four valves that are joined by a common valve body. The two main inlet coils control the flow of water into the valve body assembly that then in turn supplies water into the machine through the inlet nozzle.

Two additional coils are used that control the valves for the fabric and detergent dispensing. They control the flow of water to the detergent and fabric dispensing system via hoses that run underneath the top deck.

1. Hot coil (White Clip)
2. Cold coil (White Clip)
3. Fabric coil (Yellow Clip)
4. Detergent coil (Purple Clip)



5.2 Dispensing System

Two hoses of different lengths run underneath the top deck and connect to either the detergent dispenser or the bleach dispenser. The detergent dispenser hose has cream elbows. The bleach dispenser hose has grey elbows.

Moulded into the top deck at the valve end are identification letters ('D' for Detergent and 'S' for bleach). At the dispenser end are moulded the words 'Detergent' and 'Bleach'.

It is important that the hoses are retained in the clips around the perimeter of the opening of the top deck correctly.



5.2.1 Detergent Dispensing

During fill, the detergent valve is also energised. This allows a proportion of the inlet water to flow into the detergent dispenser.

The flow rate through the detergent valve is dependent on the inlet water pressure, but it is less than the flow rate of water entering the machine. The valve will remain energised until the water level reaches 1 inch (25mm), at which point the bowl starts stirring until the desired water level has been achieved.

The detergent valve can be tested in diagnostics (refer to Section 15.1.2 for LCD models, or Section 16.2 for LED models).

5.2.2 Bleach Dispensing

The design of the bleach dispenser is such that it creates a self-siphoning effect. When the motor control module calls for bleach, the bleach valve will energise. This allows water to flow into and through the dispenser mechanism. The initial burst of water starts the siphoning process. The valve is pulsed on and off for a total of 95 seconds (see table below) to ensure that all of the bleach has dispensed.

On	Off
10	15
10	10
10	10
10	10
10	10

Note: The 1st off time of 15 seconds is to ‘kick start’ the siphoning process.

If the bleach valve was to run continuously, the water would cut a path through the bleach and the bulk of the bleach would remain in the dispenser. The maximum level of the bleach is 70mls to the ‘Max’ mark. If the bleach dispenser was to be filled higher than this mark, the bleach may self-siphon into the machine.

The bleach valve can be tested in diagnostics (refer to Section 15.1.2 for LCD models, or Section 16.2 for LED models).

5.2.3 Inlet Nozzle

In addition to its design, which ensures excellent rinse water distribution, the nozzle shares an important relationship with the inlet valve assembly and the dispensing system as described above.

An internal piston within the nozzle moves with the amount of water pressure against it. When the water pressure is high, more holes in the nozzle are exposed, and the backpressure on the dispensing valves is less.

When the pressure is low, more backpressure is created, which ensures that either during detergent dispensing or bleach dispensing the dispensing system takes priority.

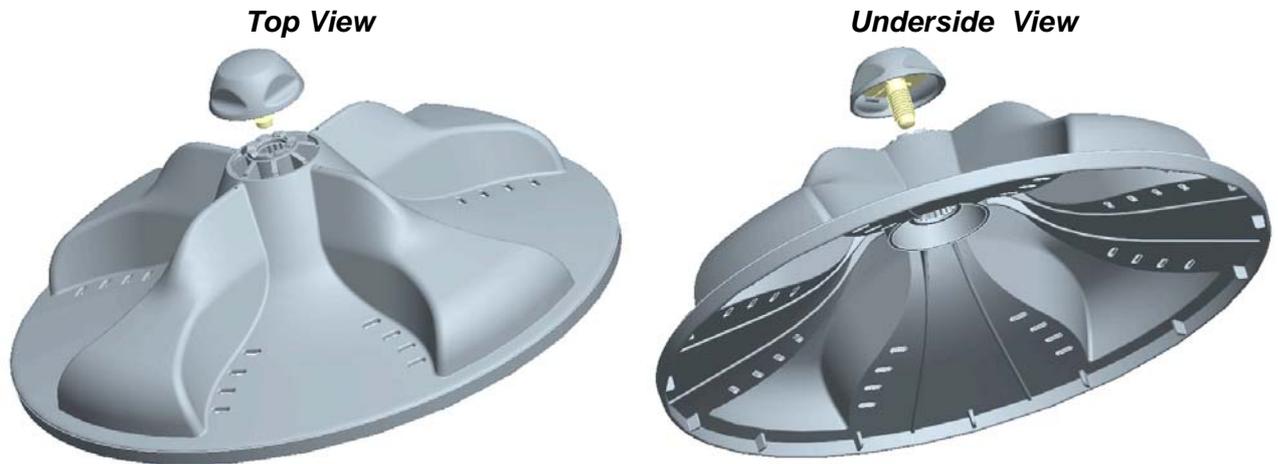
If the water pressure was very low during dispensing, it is conceivable that no water would enter the machine via the inlet nozzle until the dispensing has been completed.

Conversely, if the piston was jammed, and the water pressure was high, a high flow rate of water would go through the dispensing system and may result in water on the floor.

6 LOW PROFILE AGITATOR

The unique low profile agitator works well in both the High Efficiency and Conventional modes. In the High Efficiency mode, the clothes have greater contact with the agitator due to the low water level, and the agitator ensures a high level of clothes turnover.

In the Conventional mode, the clothes are completely submerged in the water and the curving steep side walls and raised shoulders of the wash plate vanes create enough inward and upward movement to keep the clothes turning over even when there is reduced contact with the agitator.



7 WATER LEVEL MEASUREMENT

The AquaSmart™ uses the same pressure sensing system used in the SmartDrive™ and Intuitive Eco™ machines to determine the water level. The difference with AquaSmart™ is that on both the Conventional and High Efficiency modes, AquaSmart™ will automatically choose the water level, as the precise water level for the clothes load is critical to the performance of the wash. ***The amount of water used in either mode is unable to be selected or adjusted by the user.***

So now there are an infinite number of water levels that AquaSmart™ can choose depending on the weight and type of the clothes being washed, as opposed to the more traditional 3 or 5 water levels on previous machines.

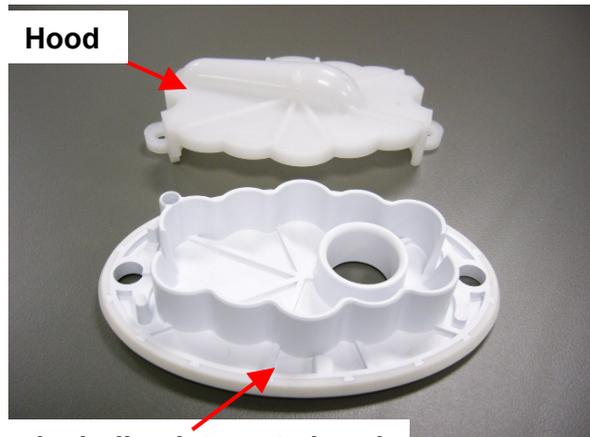
8 SMART PUMP™

SmartPump™ provides a more flexible and efficient pumping system than a conventional pump/diverter valve combination. SmartPump™ can be diverted quickly, it reacts faster and is better controlled. In addition, SmartPump™ has the capability of pumping to a much higher head whilst maintaining a constant volume flow rate regardless of pump efficiency degradations due to age.

8.1 SmartPump™ in Detail

8.1.1 Hood and Cap

The hood and cap form the top of the pump housing, which must seal to the outer bowl. The hood and cap filters out objects that cannot pass through the pump system.



Cap including integrated seal

8.1.2 Flapper Valve

A diverter valve has been integrated into the pump cavity and operates automatically with a change in pump direction. This change of direction moves a flapper valve, which diverts the water to the drain hose or to the re-circulation hose. The valve is sealed off against the port face with water pressure.



8.1.3 Impeller (non-field serviceable)

The impeller imparts rotational energy into the water and keeps sand away from the shaft seal.



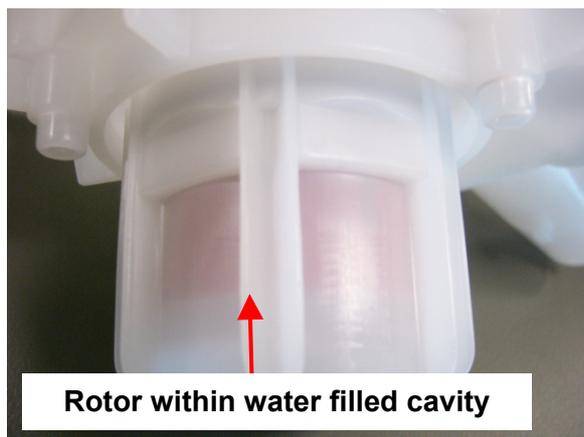
8.1.4 Rotor and Stator

The rotor and stator magnetically interact with each other in order to convert electrical energy into rotational movement of the rotor

Rotor

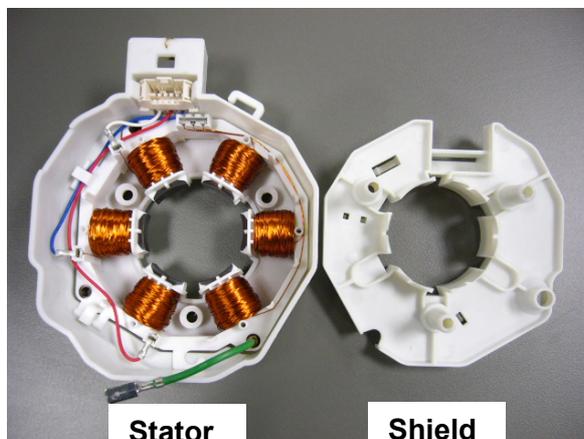
The rotor assembly is a complete unit that is permanently fixed into the pump housing. The resulting cavity is charged with water, which acts as a lubricant. In the event of a failure of the rotor, the whole assembly must be replaced.

Note: Contained within the rotor cavity are seals and bearings that are non field serviceable. The bearings provide a low friction wear surface for the rotor shaft to run on, and the seals eliminate grit from the rotor and bearing cavity



Stator & Shield

The Stator is mounted to the base of the pump housing together with the shield & cap. The harness connector inserts into the underside of the motor. Care must be taken to isolate the machine from the mains power before servicing the pump, and it is important that the harness connector cover has been refitted after reassembly.



8.1.5 Pump Housing

The pump housing is bolted directly to the outer bowl. It contains the volute shape and flapper sealing faces and also provides a structure to attach stator and rotor assemblies.



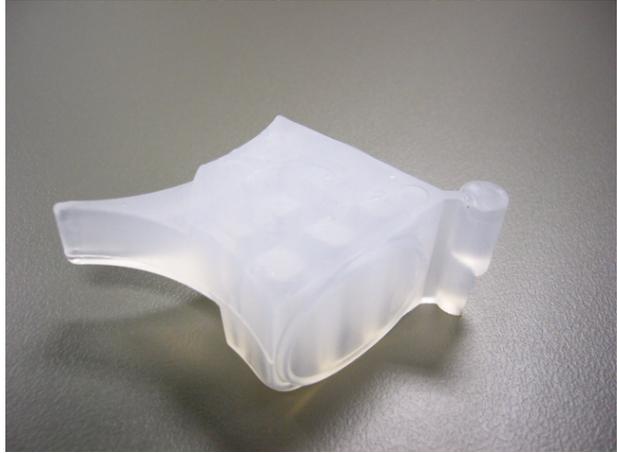
8.2 SmartPump™ Spare Parts

The following spare parts service kits are available for SmartPump™.

Hood And Cap (SmartPump™ Kit)



Flapper (SmartPump™)



Seal (SmartPump™) Housing



Pump (SmartPump™) Assembly Kit

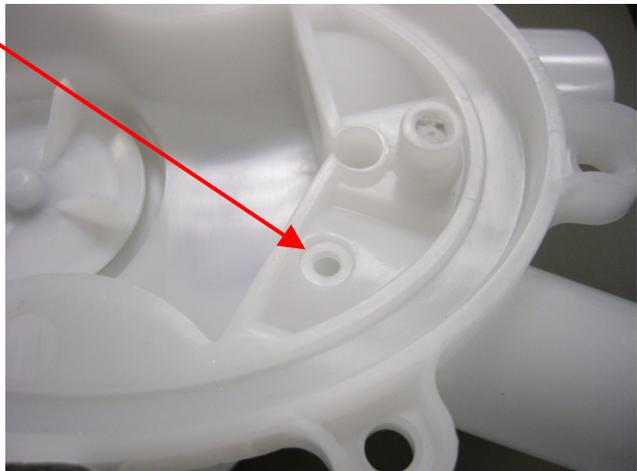


Note: The pump assembly is supplied with the connector removed from the stator shield. The cover must be fitted in place after the wiring harness has been attached.

8.3 SLR Feature

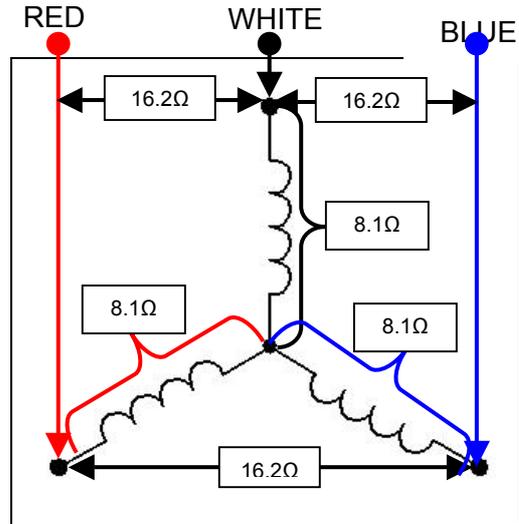
SLR Feature stands for Simplified Leak Recirculation. This feature has been added so that should the flapper not completely seal against the housing of the pump when draining, water can bypass through this hole and back into the pump, avoiding recirculating back into the bowl and on to the clothes load.

It is important that this hole remains clear, and it should be checked whenever the pump is serviced.



8.4 Testing the Stator

SmartPump™ Wiring Diagram



The stator resistance can either be tested from the harness to the motor controller or at the connections to the stator itself.

8.4.1 Testing SmartPump™ Stator From The Console

The resistance of each individual winding is approximately $8.1\Omega \pm 10\%$, however when testing the stator from the console we are testing across two windings, therefore the resistance should be approximately $16.2\Omega \pm 10\%$.

To test all windings you will need to measure across:

- Red and White
- Blue and White
- Blue and Red



If the meter shows an incorrect reading, we would recommend testing the stator from underneath the machine, as there could be a fault in the wiring harness. To test the stator it will need to be removed from the machine (refer to Section 19.12).

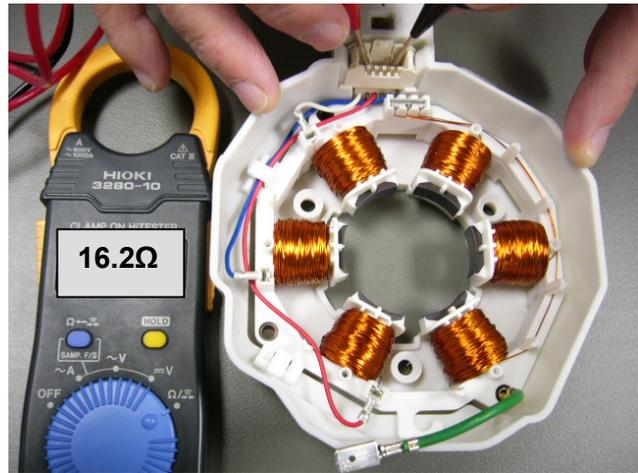
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8.4.2 Testing SmartPump™ At The Stator

After removing the stator it can be tested.

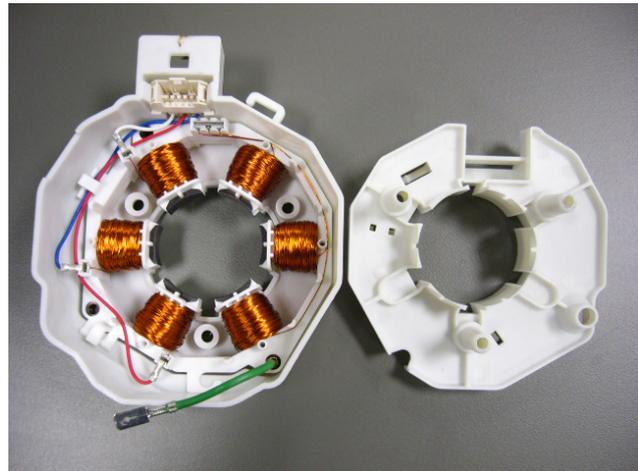
To test across all windings you will need to measure across the **centre** and the **two outer** terminals.

Note: Do not measure using the two inner terminals as these are not used.



If an incorrect reading is obtained, remove the stator shield and inspect the stator. Ensure that the three spade terminals are fitted correctly and have not been dislodged.

If the fault cannot be remedied, the entire pump assembly must be replaced.



8.5 SmartPump™ Test Routine

Use the following procedure to test the SmartPump™. It is equally important to test both the drain and recirculation modes. In diagnostic mode the lid lock is disabled, which allows the technician to visually inspect both aspects of the pump.

1. Enter diagnostic mode. (Refer to Section 15 for LCD models, or Section 16 for LED models.)
2. If the bowl is empty of water, activate either or both of the water valves until the bowl is approximately 1/4 full with water. (Refer to Section 15.1.2 for LCD models, or Section 16.2 for LED models.)
3. While in diagnostic mode, set the pump to Recirculation Mode (refer to Section 15.1.2), run for at least 1 minute and observe the following:
 - Ensure that a good flow rate is being delivered through the portal of the hose.
 - Ensure that a good pattern of flow is being delivered. If a poor flow rate is apparent, firstly check that the neck ring is fitted correctly and is not obstructing the flow of water. Secondly, remove the neck ring and check the shape and location of the recirculation nozzle is as expected. If no faults are found, the pump must be inspected. To access the pump cavity, refer to Section 19.11.
 - Ensure that no leaks are occurring from either the recirculation hose where it attaches to the outer bowl (to do this the top deck will need to be lifted, refer to Section 19.4), or where it attaches to the SmartPump™.
 - Ensure that no water is exiting from the drain hose. If it is, this indicates that water is bypassing. For the description of bypassing, refer to Section 8.5.1.
4. Again, whilst in diagnostic mode, set the machine to drain (refer to Section 15.1.2), run for at least 1 minute or until all water has been drained, and observe the following:
 - Ensure that a good pattern of flow is being delivered. If a poor flow rate is apparent the pump must be inspected. To access the pump cavity, refer to Section 19.11.
 - Ensure there are no leaks from where the drain hose exits from the cabinet or at the pump housing.
 - Ensure no water is exiting from the recirculation hose. Again, this would indicate that bypassing is occurring.

8.5.1 Bypassing

Bypassing is the term given to water that either flows from the recirculation hose when the pump is draining, or from the drain hose when the pump is recirculating. No water at all should exit from the opposing hose. The flapper valve not sealing against the face of the pump cavity, or a poor fit of the hood and cap, generally cause bypassing.

If bypassing occurs, the pump (including the SLR Feature (refer to Section 8.3)) must be inspected. To access the pump cavity, refer to Section 19.11.

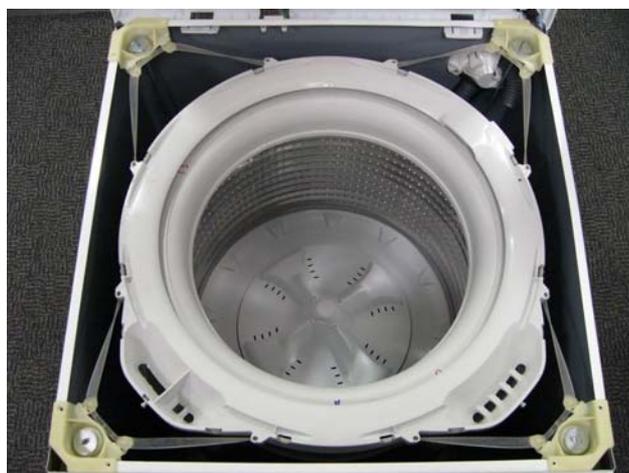
9 NECK RING

The neck ring incorporates wells used for the fabric and detergent dispensing.

The neck ring is clipped in place to the outer bowl. It also restrains the recirculating nozzle.

It is important that the neck ring is secured correctly to the outer bowl, as it affects bump detect (out of balance detection). The bowl assembly may experience more movement, which could lead to cabinet damage.

Dynaflex straps are located at four points on the neck ring and connect to lugs on each of the suspension rods.

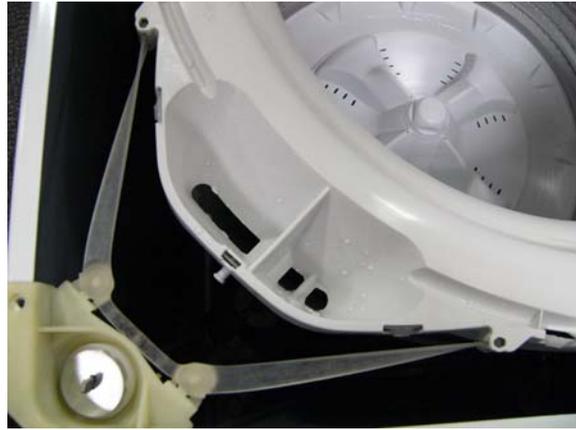


The straps serve two purposes:

1. To limit radial bowl motion during agitate.
2. As the straps stabilise the bowl, it also improves wash performance.

If one or more straps break, this can cause an increase in out of balance activity, which again may lead to cabinet damage and noise from loose straps.

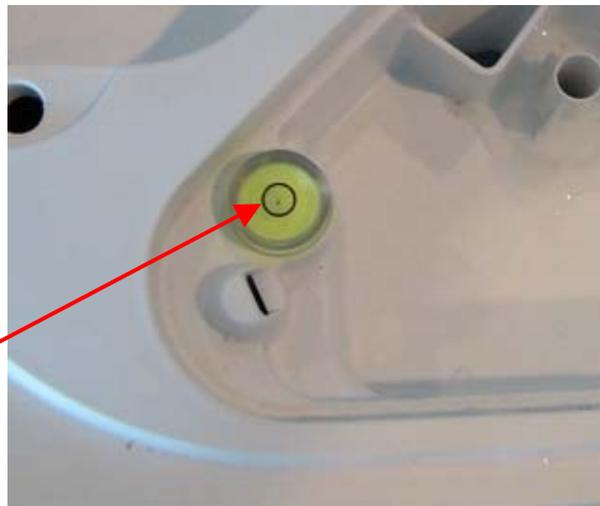
For a detailed explanation of Bump Detect, refer to Section 10.



10 INSTALLATION LEVEL INDICATOR

The levelling on this machine is especially important, as an unlevelled machine in addition to causing out of balance and splash issues, will cause a problem with the dispensing of the detergent and bleach.

Located underneath the bleach funnel is an installation level indicator. Simply remove the bleach funnel by lifting the cap upwards, then adjust the feet so that the machine is stable on the floor, and the bubble within the central ring of the indicator.



Ensure when refitting the funnel that it is clipped fully home otherwise bleach dispensing will not function.

11 OUT OF BALANCE DETECTION - BUMP DETECT

Past electronic machines have used a lever connected to a mechanical switch to detect if the load in the inner bowl is out of balance. On Phase 7 machines this system has been replaced with electronic sensing known as 'Bump Detect'. 'Bump Detect' is software written into the Motor Control Module, which looks at specific feedback from the Rotor Position Sensor.

No fault codes are associated with 'Bump Detect', and there are no hard and fast tests that can be carried out.

If a machine continually goes into an out of balance condition, then the following need to be checked in the order given.

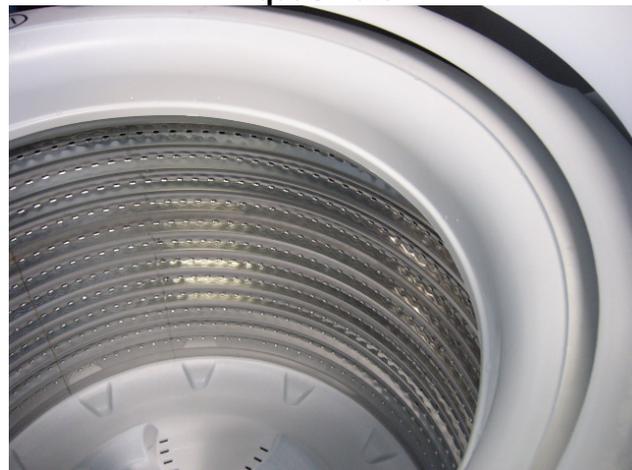
1. Even distribution of the clothes load.
2. Ensure that the machine is both level and stable on the floor.
3. Check that any of the straps on the neck ring are not broken and that they are fitted correctly.
4. Check the weight of the inner bowl. Bowl weight is as follows.
 - 24lb 3oz +/- 10oz (10.965kg +/- 275g).
5. Check the RPS using a RPS Tester.

12 INNER BOWL

SmartDrive™



AquaSmart™



12.1 Balance Ring

The inner bowl for AquaSmart™ has a new top balance ring, which has 2 internal chambers instead of just one as on SmartDrive™ bowls. Both chambers are ½ filled with water.

The physical appearance of the balance rings changes from a square profile to a curved profile.

12.2 Bowl Base

The new bowl base on large SmartDrive™ (one with the internal bumps) has only the inner and middle chambers filled with water. On AquaSmart™ all 3 chambers are partially filled with water.

IMPORTANT

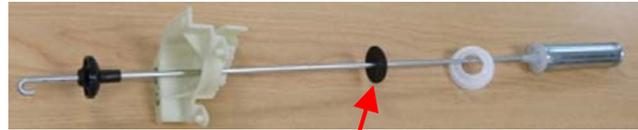
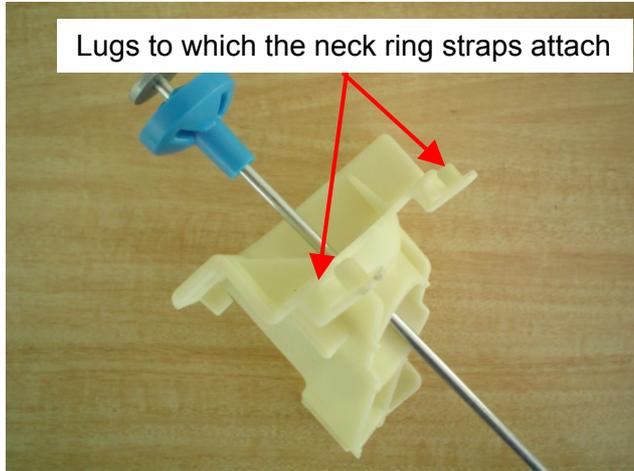
It is important that the new inner bowl for AquaSmart™ is only used on AquaSmart™ models. If the inner bowl is fitted to a SmartDrive™, it will cause the bump detect software not to function correctly, leading to increased cases whereby the inner bowl could hit against the top deck and cabinet.

Conversely, a SmartDrive™ inner bowl should not be fitted to AquaSmart™.

13 SUSPENSION RODS

The suspension rods on AquaSmart™ need to be more robust than the suspension rods used on previous SmartDrive™ machines. The top bracket has lugs to which the straps from the neck ring attach.

A rubber washer sits midway down the rod, this helps detergent residue from running down the rod and into the grease filled damper.



IMPORTANT

It is important that these suspension rods are used only for AquaSmart™ machines. These rods haven't been tested on SmartDrive™ machines, however if they were to be fitted it is likely that there will be an increased level of noise and vibration on spin.

Conversely, rods from a SmartDrive™ should not be fitted to AquaSmart™.

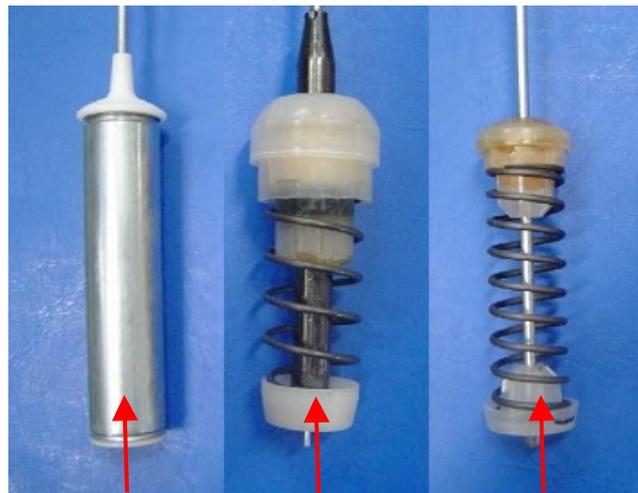
There is also an increased chance that the inner bowl may strike against the top deck on spin up.

Early production units of AquaSmart™ used the suspension rod on the right.

Later, and now current machines, use the suspension rods on the left.

This new rod provides even greater dampening, and assists in preventing out of balance loads.

To identify the change, the service code changed from A to B. (Refer to notes at top of next page)



Service Version "B" (current) Service Version "B" (early) Service Version "A"

Important:

If replacing the Service Version “A” suspension rods with the later suspension rods, the Motor Control Module MUST be replaced as the new rods require modified software.

Also, if replacing a Motor Control Module on a Service Version “A” product, the new suspension rods (supplied with the Motor Control Module kit) must be fitted.

14 LID LOCK

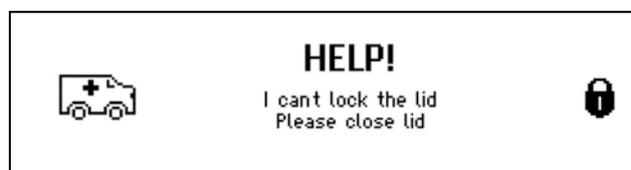
AquaSmart™ uses the same lid lock that is used on the Phase 6 series 11 & 12 and previous Phase 7 machines, and is locked during the complete cycle.



The Lid Lock symbol (padlock) appears in the top right hand corner of the screen on LCD models, and in the centre left next to the power button on the control panel on LED models, letting you know at a glance if you can open the lid or not.

To unlock the lid at any time, press **START/PAUSE**.

If the lid is left open on the LCD AquaSmart™, the machine will be unable to lock the lid, and the cycle will be halted. The machine will beep and display a message to alert the user. If this occurs, ensure that the lid is closed, and press the **START/PAUSE** button.



If the lid is left open on the LED AquaSmart™, the machine will beep and the lid lock light will constantly flash to alert the user. If this occurs, ensure that the lid is closed, and press the **START/PAUSE** button.

- If the lid-lock fails in the closed position, the locked lid can be forced upwards and out of the lock. **Note: This is the only time in which we would recommend doing this.**
- If the harness is damaged, the complete lid lock assembly will need to be replaced.

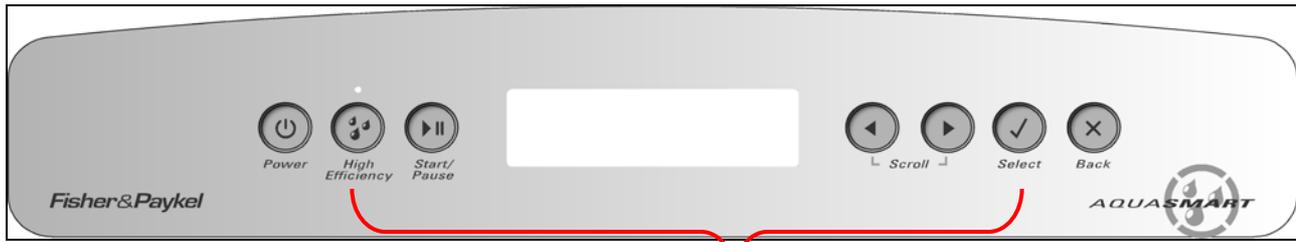
If the power supply is cut during the spin cycle, the machine will keep the lid locked until the rotor has ceased to turn (3 to 10 seconds). Only then will it release the lock. The motor is acting like a generator and allows the lock to stay energised under the bowls inertia.

In a brown out situation, the machine will restart at the start of whichever section of the cycle it was on and continue the wash.

The lid is locked throughout the complete cycle.

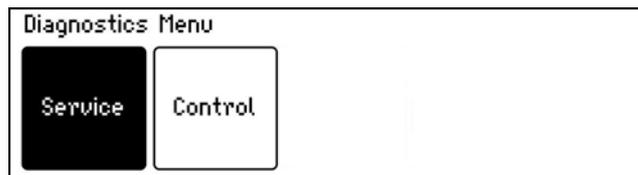
Eco-Active	Locked
Agitate	Locked
Spray Rinse	Locked
Deep Rinse	Locked
Spin	Locked

15 DIAGNOSTIC MODE – LCD MODEL



Press and hold **HI-EFFICIENCY**, then press the **SELECT** button for 2 seconds

To enter the **DIAGNOSTIC MODE**, turn the power on at the power point and off at the console.



Press and hold the **HI-EFFICIENCY** button and then press the **SELECT** button. Keep the buttons pressed for at least 2 seconds, after which time two beeps will sound and the screen above will appear.

Use the left and right arrows to highlight the screen you wish to view, then press the select button to enter that screen.

The screens are explained below.

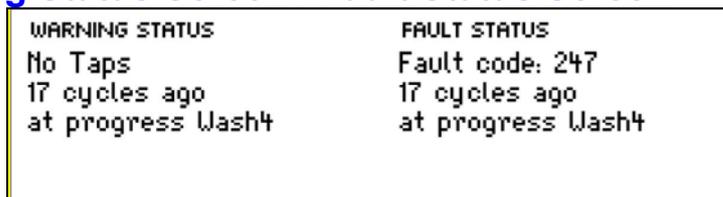
15.1 Service Screen

Upon entering the service screen, one of the following screens will appear

- Warning Status / Fault Status
- Machine Status

To scroll between the screens use the left and right arrows.

15.1.1 Warning Status Screen / Fault Status Screen



Warning Status

In this screen will be displayed the last USER WARNING FAULT that occurred and will show how many cycles ago and in what part of the cycle it occurred.

The User Warning Faults are as follows:

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

Fault Status

In this screen will be displayed a fault code for the last fault that has occurred and will show how many cycles ago and in what part of the cycle it occurred.

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

Fault code details can be found in the master service manual, part number 517792A.

15.1.2 Machine Status Screen

In the top half of the screen it displays the following information.

MACHINE STATUS				
Size: 650mm	HVDC: 323			
WL: 5	T: 22degC	Target: degC		
Hot	Cold	Det	Fab	Pump
Off	Off	Off	Off	Off

Size is the size of machine, (650mm = Large)

HVDC is for on line testing in the factory.

WL displays the water level in mm.

T is the actual temp of the inlet chamber water.

Target temp is the temperature selected.

In the lower half of the screen it displays the status of the following components.

- Hot Valve (HOT)
- Cold Valve (COLD)
- Detergent Valve (DET)
- Bleach Valve (FAB)
- SmartPump™ (PUMP)

Component Testing

In this screen the components that are displayed can be tested. To test a component, firstly highlight the component by using the left and right arrows. To activate a component, press the select button. To deactivate the component, depress the select button again.

Note: *SmartPump™ can be tested in both the drain and recirculation modes. After highlighting Pump, the first press of the Select button activates the pump in the drain direction, the second press activates the pump in the recirculation direction, a final press turns the pump off.*

15.2 Control Screen



15.2.1 Hot Bowl Flag

If the machine 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 machine 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 Screen mode and push the **HI-EFFICIENCY** button. This flag can also be removed by putting the machine through a complete final rinse.

15.2.2 Restart Feature

The machine leaves the factory with the RESTART set to the ON position, which is indicated in the screen by the word RESTART highlighted. To turn the RESTART feature OFF, push the Left arrow. This will remove the highlight from the word RESTART. When the machine 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 it occurs.

To identify that the RESTART feature has been activated, refer to the Restart / Recycle table. (Refer to Section 15.2.4)

517794B

With the RESTART feature on:

1. If a fault occurs in the machine, the diagnostic system will detect it. However, instead of displaying a fault code immediately, the machine will try to RESTART.
2. If the fault was only of temporary nature, the machine will restart and finish the cycle.
3. If there is a continuous fault the machine 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 machine still cannot restart, the fault code is displayed and the machine will beep continuously.

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 machine off at the wall or disconnect from the mains supply.

15.2.3 Recycle Feature

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

To toggle this feature on or off, press the right arrow. When the recycle feature is on, the word RECYCLE will be highlighted.

To identify that the RECYCLE feature has been activated, refer to the Restart / Recycle table. (Refer to Section 15.2.4)

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 machine off at the wall or disconnect from the mains supply.

15.2.4 Restart / Recycle Table

As the AquaSmart™ has only one LED (located above the High Efficiency button) the state of the LED will signify which feature has been selected or not selected. The table below explains the state of the LED when the machine is on at the wall and off at the machine.

LED: Off (Factory Default)	Restart on
	Recycle off
LED: Solid	Restart off
	Recycle on
LED: Slow Flashing	Restart off
	Recycle off
LED: Quick Flashing	Restart on
	Recycle on

15.2.5 Restart/Recycle Features Permanently Programmed

It is possible for the Restart Feature to be disabled, or the Recycle Feature to be enabled, or a combination of both to be permanently programmed into the memory of the electronics so that in the event of a power cut the electronics will remember the setting.

If a machine is encountered with either mode permanently programmed to disable this the machine must be de-programmed by following the steps below.

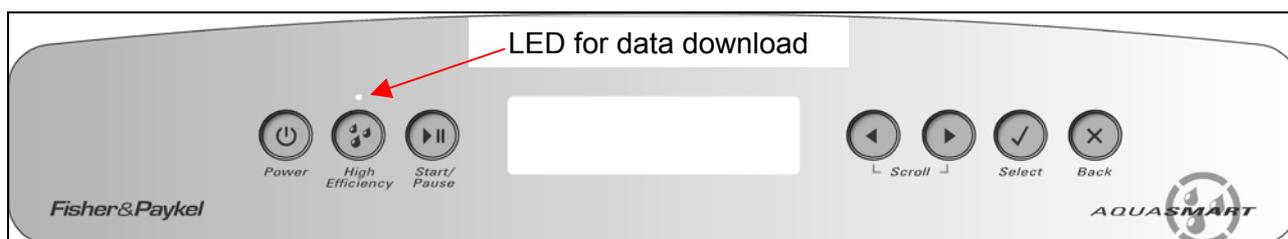
1. Enter diagnostic mode by pressing and holding the **HI-EFFICIENCY** button and then pressing the **SELECT** button. Keep the buttons pressed for at least 2 seconds, after which time two beeps will be heard and a screen showing 'Service' & 'Control' will appear.
2. Using the arrow buttons, highlight the 'Control' screen, then press **SELECT**.
3. To enable/disable the Restart feature permanently, press and hold the **LEFT ARROW** for three seconds until a beep is heard.
4. To enable/disable the Recycle feature permanently, press and hold the **RIGHT ARROW** for three seconds until a beep is heard.

The factory settings are:

- Restart is enabled (Restart highlighted).
- Recycle is disabled (Recycle not highlighted).

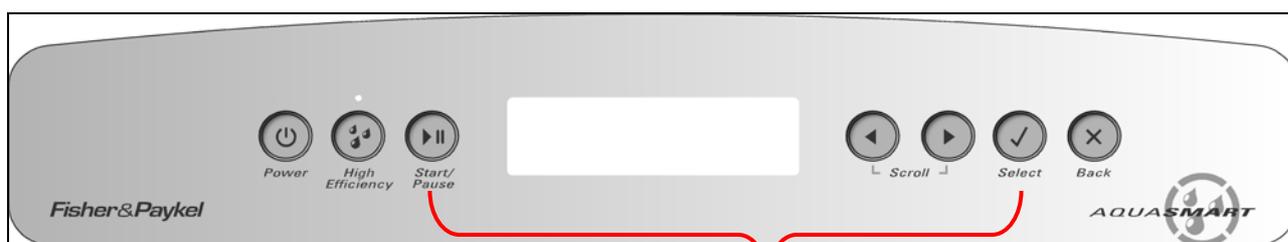
15.3 Data Download

To activate the data download, enter the diagnostic mode (refer to Section 15), then press the **START/PAUSE** button. The LED above the High Efficiency button will be on and flickering.



Place the download pen over this LED and follow the instructions supplied with the data download program.

15.4 Showroom Mode



Press and Hold **START/PAUSE**, then press the **SELECT** button

Showroom mode will play the introduction and repeat it continuously, until the machine has been isolated from the power supply.

To access the showroom mode follow the steps below.

1. Turn the power supply to the washing machine on.
2. During the introduction sequence on the LCD display (which lasts for approximately 1 minute) press and hold the **START/PAUSE** button and the **SELECT** button, and hold these buttons for at least two seconds.

To exit, turn off the power supply to the washing machine at the wall.

16 DIAGNOSTIC MODE – LED MODEL



Press and hold **HI-EFFICIENCY**, then press the **POWER** button

To enter the **DIAGNOSTIC MODE**, turn the power on at the power point and off at the console. Press and hold the **HI-EFFICIENCY** button, then press the **POWER** button until the machine beeps. Press the **SPIN** button three times, until both the **SLOW** and **HOLD** lights are on. The last fault code is now displayed.

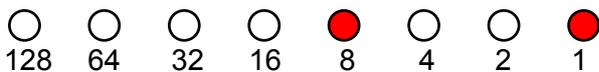
16.1 Fault Codes

The fault code is displayed in the wash cycle LEDs using a binary code. Each LED has a value as follows:

LED	VALUE
Regular	= 128
Heavy	= 64
Delicate	= 32
Sheets	= 16
Colours	= 8
Bulky	= 4
Easy Iron	= 2
Hi Efficiency	= 1

The fault code is determined by adding up the value of the illuminated LEDs.

For Example:



This Is Fault Code 9 – Size setting.

If this appears you need to set the size of the LED Aquasmart™:

1. Press and hold the **SPIN** button, then press the **POWER** button until three beeps are heard.
2. Press the **BLEACH** button once to size the machine.
3. Press the **POWER** button.

Fault code details can be found in the master service manual, part number 517792A.

16.2 Component Testing

To select the Component Test Mode:

1. Press and hold the **HI EFFICIENCY** button, then press the **POWER** button until two beeps are heard.
2. Press the **SPIN** button until all the spin LEDs are illuminated.

To operate the:

- Hot Water Valve Push the **REGULAR** button.
- Cold Water Valve Push the **HEAVY** button.
- Detergent Valve Push the **DELICATE** button then the **REGULAR** button together.
- Bleach Valve Push the **SHEETS** button then the **REGULAR** button together.
- Drain Pump Push the **BULKY** button
- Recirculating Pump Push the **EASY IRON** button

To turn each component off, push the same buttons that were pushed to turn them on.

16.3 Hot Bowl Flag

If the machine 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 machine to spin up to its full speed of 1000 RPM. It will only allow the spin speed to reach 700 RPM and the **HOT** LED will flash. To remove this flag, push and hold the **TEMPERATURE** button until the hot LED turns off.

16.4 Restart Feature

The Aquasmart™ leaves the factory with the RESTART turned on.
With the RESTART feature on:

1. If a fault occurs in the machine, the diagnostic system will detect it. However, instead of displaying a fault code immediately, the machine will try to RESTART.
2. If the fault was only of a temporary nature, the machine will restart and finish the cycle.
3. If there is a continuous fault, the machine 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 machine still cannot restart, the fault code is displayed and the machine will beep continuously.

To turn RESTART on:

- In COMPONENT TEST MODE, press the **BLEACH**. The Bleach LED will then be illuminated.

To turn RESTART off:

- In COMPONENT TEST MODE, press the **BLEACH**. The Bleach LED will then turn 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 machine off at the wall or disconnect from the mains supply.

16.5 Recycle Feature

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

To turn RECYCLE on:

- In COMPONENT TEST MODE, press the **SOAK**. The **SOAK** LED will then be illuminated.

To turn RECYCLE off:

- In COMPONENT TEST MODE, press the **SOAK**. The **SOAK** LED will then turn off.

16.6 Restart/Recycle Features Permanently Programmed

It is possible for the Restart Feature to be disabled, or the Recycle Feature to be enabled, or a combination of both to be permanently programmed into the memory of the electronics so that in the event of a power cut the electronics will remember the setting.

If a machine is encountered with either mode permanently programmed to disable this the machine must be de-programmed by following the steps below.

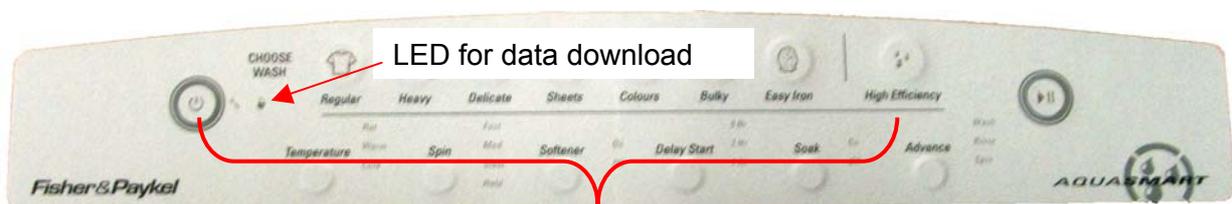
1. Enter diagnostic mode by pressing and holding the **HI-EFFICIENCY** button and then pressing the **POWER** button.
2. To enable/disable the Restart feature permanently, press and hold the **BLEACH** button for three seconds until a beep is heard.
3. To enable/disable the Recycle feature permanently, press and hold the **SOAK** button for three seconds until a beep is heard.

The factory settings are:

- Restart is enabled (Bleach LED is on).
- Recycle is disabled (Soak LED is off).

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 machine off at the wall or disconnect from the mains supply.

16.7 Data Download



Press and hold **HI-EFFICIENCY**, then press the **POWER** button

To enter the Data download mode

1. Press and hold the **HI EFFICIENCY** button, then press the **POWER** button until the machine beeps.
2. Press the **START/PAUSE** button. The lid lock LED will be on and flickering.
3. Place the download pen over this LED and follow the instructions supplied with the data download program.

16.8 SmartDrive® Diagnostic Table

To use this table, firstly enter Diagnostic Mode (Refer to Section 16). The different levels of information can be extracted by using the Spin Speed button.

Diagnostic Level	Spin Speed LEDs				Diagnostic Info Displayed
	Fast	Med	Slow	Hold	
0	OFF	OFF	OFF	OFF	Last User Warning Number
1	OFF	OFF	OFF	ON	Last User Warning Cycle Position
2	OFF	OFF	ON	OFF	<i>Factory use only – Not applicable to the field</i>
3	OFF	OFF	ON	ON	Fault Code at last fault (if within the last 8 cycles)
4	OFF	ON	OFF	OFF	<i>Factory use only – Not applicable to the field</i>
5	OFF	ON	OFF	ON	Cycle count at last fault (low byte)
6	OFF	ON	ON	OFF	Cycle count at last fault (high byte)
7	OFF	ON	ON	ON	Cycle position at last fault
8	ON	OFF	OFF	OFF	Water Temp (deg C)
9	ON	OFF	OFF	ON	Cycle count (low byte)
10	ON	OFF	ON	OFF	Cycle count (high byte)
11	ON	OFF	ON	ON	Motor speed (RPM)
12	ON	ON	OFF	OFF	Water Level
13	ON	ON	OFF	ON	EEPROM version number
14	ON	ON	ON	OFF	<i>Factory use only – Not applicable to the field</i>
15	ON	ON	ON	ON	<i>Factory use only – Not applicable to the field</i>

Diagnostic mode 0, Last User Warning Number:

When in this level, use the binary count on the Wash Cycle LEDs as used to obtain the last fault data. Use the chart below to identify which was the last user warning.

Binary Count	User Warning
0	No warning
1	No taps
2	Overload
3	OOB
4	Suds
5	No Hot
6	No Cold
7	Agitate overloaded

Diagnostic mode 1: Last User Warning Cycle Position

To find out which stage in the cycle the last user warning occurred, use this level. A LED on the wash cycle LEDs will identify the stage, ie if the user warning was suds (in diagnostic level 0) and the 1st Rinse LED was lit in this level, this was the stage in the cycle where the user warning occurred.

Diagnostic mode 3: Last fault data

This level is sometimes referred to as the detailed fault code. By adding up the LEDs on the wash cycles in binary form (Refer to Section 16.1), this will relate to a fault code (fault codes are contained in the last section of this manual). If there are no LEDs lit, a fault code hasn't occurred in the last 8 cycles.

Diagnostic mode 5&6: Cycle count at last fault (Low byte, High byte).

These levels will indicate how many cycles ago the last fault occurred. Even though the last fault gets wiped from diagnostic level 3 after 8 cycles, the cycle where the fault occurred is permanently stored in the memory.

The low byte refers to binary numbers from 1 through to 128. The high byte Refers to numbers from 256 though to 32768. It always pays to check the low and high bytes.

Diagnostic mode 7: Cycle position at last fault

An LED that is illuminated on the Wash Cycles will indicate the cycle where the last fault occurred.

Diagnostic mode 8: Water Temperature (deg C)

By adding up the LEDs on the wash cycles in binary form (Refer to Section 16.1), this will give the temperature of the thermistor in °C.

Diagnostic mode 9 & 10: Cycle count low byte & high byte

These levels work in the same way as for Diagnostic levels 5&6, which allows the Service Technician to establish how many cycles the machine has completed.

Note: A completed cycle is counted at the end of the spin cycle.

Diagnostic mode 11: Motor Speed (RPM)

Add up the LEDs on the wash cycles, and multiply this figure by 10. The result will give the spin speed in RPM.

Diagnostic mode 12: Water Level

Add up the LEDs on the wash cycles, and multiply this amount by 2. The result will give a reading of the water level in millimetres.

16.9 Showroom Mode



Press and hold **ADVANCE**, then press the **POWER** button

Showroom mode will play the introduction and repeat it continuously, until the machine has been isolated from the power supply.

To access the showroom mode follow the steps below.

- Turn the power supply to the washing machine on.
- Press and hold the **ADVANCE** button, then press the **POWER** button. Hold these buttons for at least two seconds.

To exit, turn off the power supply to the washing machine at the wall.

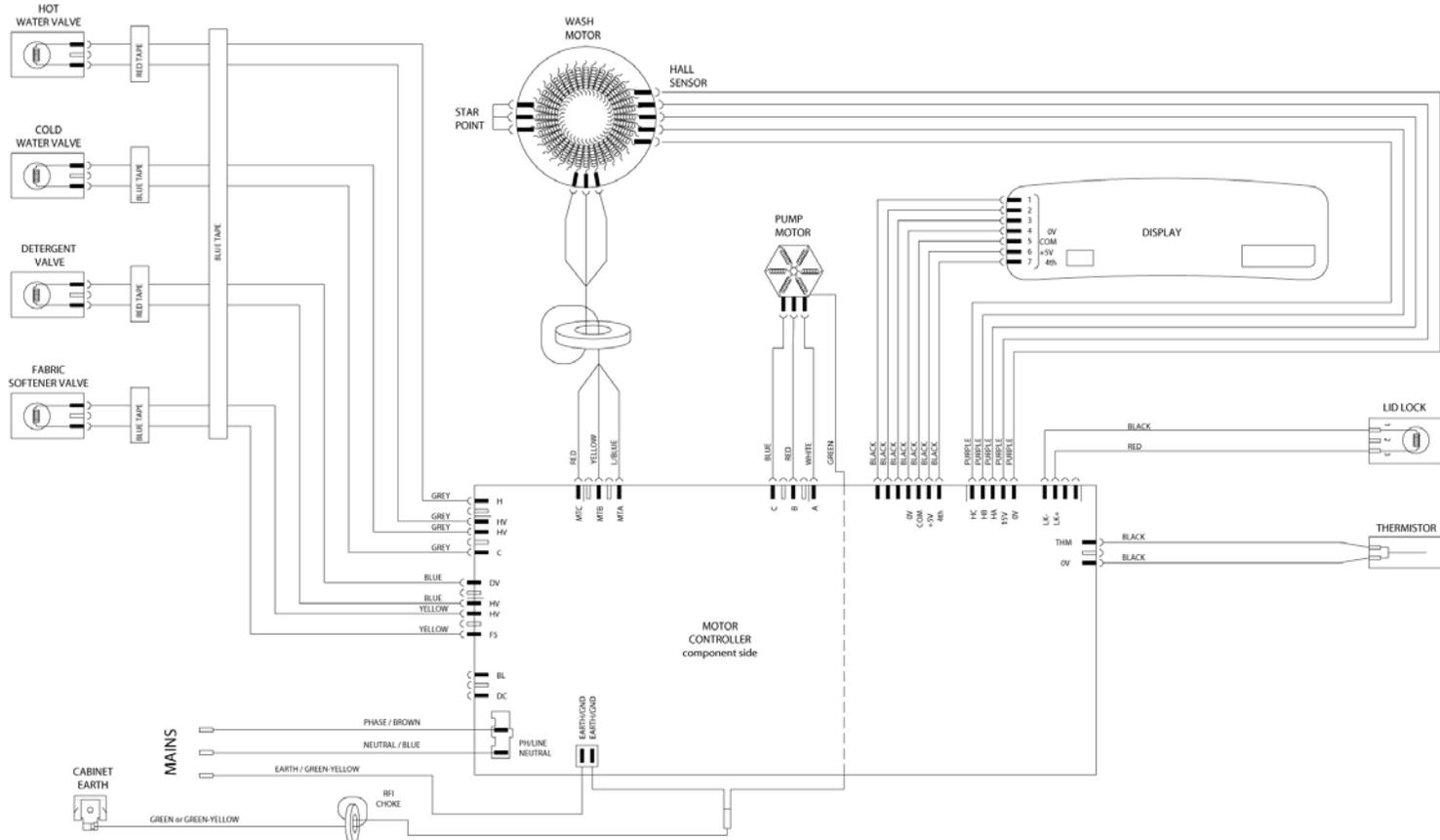
17 FAULT CODES

The fault codes and their detailed descriptions for the AquaSmart™ washing machine have been added to the master service manual, part number 517792A.

The new fault codes for AquaSmart™ are:

- 26. (00011010) Detergent Valve Fault
- 27. (00011011) Bleach Valve Fault
- 49. (00110001) Cold Valve or Cold Valve & Hot Valve Faulty
- 220. (11011100) EEPROM Model Map Not Programmed
- 245. (11110101) SmartPump™ Stall
- 247. (11110111) SmartPump™ Flapper Fault
- 248. (11111000) SmartPump™ Top Up Fault
- 249. (11111001) SmartPump™ Timeout Fault (No change in the water level)
- 250. (11111010) SmartPump™ Loss Of Sync

18 WIRING DIAGRAM



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19 SERVICE PROCEDURES

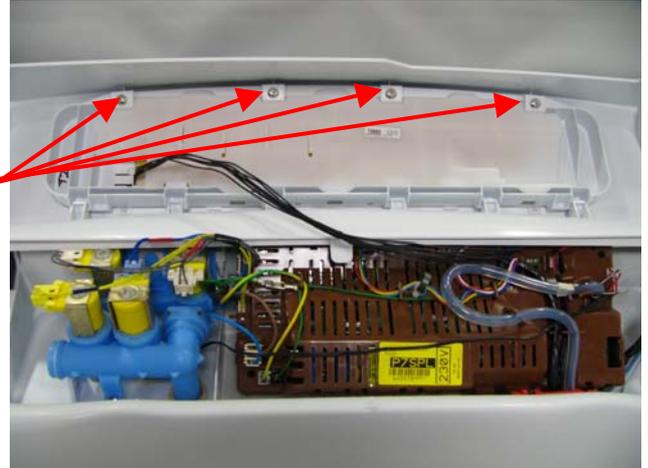
Note: Prior to carrying out any service procedures, ensure that the machine has been isolated from the power supply.

19.1 Accessing Components In Console Area

- Remove the lid.
- Remove the two screws at the rear of the console securing the console to the top deck.
- Tilt the console forward.

19.2 Removal Of Display Module

- Follow procedures for accessing components in console area (refer to Section 19.1).
- Disconnect the wiring harness from the motor control module.
- Remove the 4 screws securing the display module to the console
- Remove the display module from the housing by pivoting the display away from the console.



Reassembly:
Refit in the reverse manner.

19.3 Removal Of Inlet Valve Assembly

- Follow procedures for accessing components in console area (refer to Section 19.1).
- Remove screw securing the valve body to the top deck.
- Disconnect wiring harness from each coil.
- Depress tab from the rear of the console and slide valve assembly upwards from the top deck.



Refitting Valve Block:

- Ensure the area beneath the valve assembly is dry.
- The spigots of the of valve assembly must be lubricated with a small amount of either vaseline or silicon paste before insertion.

Note: The wires that are connected from the valve assembly to the motor control module must be placed between the coils, and must not sit on top. If the wires sit in close proximity to the display module, they may cause interference.



19.4 Raising Top Deck

- (a) Remove the lid.
- (b) Carefully remove the two lid buffers from the front side top of the deck by levering upwards, taking care not to damage the top deck.
- (c) Remove the two screws under the buffers securing the top deck to the cabinet.
- (d) Prior to raising the top deck ensure that there is no water or bleach in the dispenser.
- (e) Raise the top deck.



19.5 Removal Of Bleach Funnel

- (a) Lift the lid.
- (b) To remove the cap, lift it upwards.

Reassembly:

Refit in the reverse manner ensuring that the funnel is clipped fully home to ensure that the bleach dispenser functions correctly.



19.6 Removal Of Detergent Cover

Note: Only remove the cover if it is essential to do so. If removed, the cover and the gasket must be replaced.

- (a) Lift the lid.
- (b) To remove the cap, lift upwards (Photo1).

Reassembly:

Refit in reverse manner.

Note: On removal of the cover the retaining clips will be damaged. If the cover is refitted rather than being replaced, the cover will not

provide an adequate seal, which may cause the water to fountain from the dispenser during fill. The gasket must also be replaced for the same reason (Photo2).

Photo 1



Photo 2



19.7 Removal Of Dispensing Hoses

- (a) Follow procedures to raise the top deck (refer to Section 19.4).
- (b) Follow procedures for removal of inlet valve assembly.
- (c) Remove hose clips from the hoses located at the front of the top deck.
- (d) Remove the hose(s).

Reassembly:

Refit in the reverse manner, ensuring each hose is fitted to the correct position and that they are properly clipped in place.

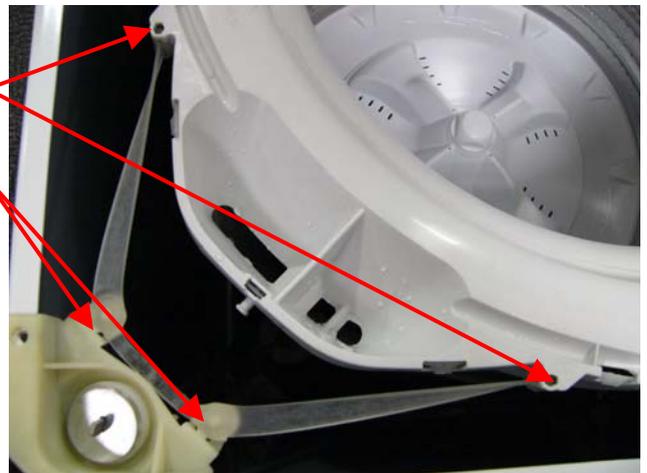


19.8 Removal of Straps

- (a) Follow procedures for raising the top deck (refer to Section 19.4).
- (b) Unclip each end of the straps from the neck ring.
- (c) Unclip the strap from the suspension rod.

Reassembly:

Refit in the reverse manner, ensuring that there are no twists in the straps.



19.9 Removal of Neck Ring

- (a) Follow procedures for removal of straps (refer to Section 19.8).
- (b) Unclip the neck ring from the outer bowl assembly.



Reassembly:

- (a) Prior to fitting the neck ring, ensure the recirculating nozzle is fitted to the outer bowl correctly.
- (b) Fit the straps to the neck ring.
- (c) Fit the neck ring to the outer bowl, ensuring that all the clips are engaged.
- (d) Fit the straps to the suspension rods ensuring and that there are no twists in the straps.

Note: *The top of the nozzle must be dry before fitting the neck ring. If any water is present, a capillary action may take place which will cause water to run down the outside of the bowl and onto the floor.*

The top of the nozzle must be dry before refitting the neck ring



19.10 Removal of Low Profile Agitator

Note: *Removal of low profile agitator is not intended to be done by the user, as regular maintenance in this area should not be required.*

- (a) Lift the lid and remove the low profile agitator cap by using an appropriate flat bladed screwdriver in one side of the slots. Lever the cap upwards until it disengages. The cap can then be removed by hand.
- (b) Remove the bolt by turning anti-clockwise using a 13mm open-ended spanner or an adjustable spanner.
- (c) Remove the low profile agitator.



Note: *If the low profile agitator does not lift off easily, hold the top balance ring of the inner bowl, then jerk the bowl upwards. This action will push the agitator upwards.*



Reassembly:

- (a) Refit the agitator, ensuring that it is pushed as far down as it can go.
- (b) Insert the bolt into the shaft. Hand tighten until the first click has been felt, then using the open-ended or adjustable spanner, tighten a further 4 more clicks. Over tightening will cause excessive damage to the castellations on the agitator, and may cause the head of the bolt to shear off. **Failure to tighten the bolt correctly will cause the agitator to lift off the spline on the shaft during wash.**



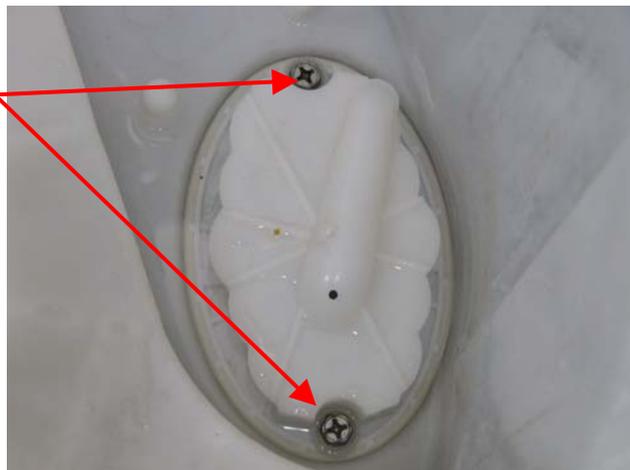
- (c) Fit the cap to the top of the bolt. Using your hand, hit firmly on top of the cap until the clips on the cap engage to the bolt.

19.11 Removal of Pump Hood & Cap (Impeller & Flapper Inspection)

- (a) Follow procedures for removal of neck ring (refer to Section 19.9).
- (b) Follow procedures for removal of low profile agitator (refer to Section 19.10).
- (c) Remove the inner bowl by lifting the inner bowl upwards and clear of machine.

Note: If the inner bowl is tight on the shaft, pressure may need to be placed on the top of the shaft, while at the same time jiggling the inner bowl upwards.

- (d) Remove the two bolts securing pump cap to the outer bowl.



Note: It is important that the screw bosses are kept free of grit. If the bosses have any grit, this can reduce the travel of the screw, which will lead to a poor fit of the cap, which in turn will cause bypassing (refer to Section 8.5.1). Bypassing can cause water on the floor, especially if the water dribbles from the recirc nozzle on to a spinning bowl.

Grit in the bosses introduces stress in the plastic when the screw is fitted, which can lead to the cracking of the boss, which may in turn cause leaking.

- (d) The impeller and flapper area of the pump can now be inspected.

Reassembly:

Refit in reverse manner.

Note: There are features on the hood and cap that make it difficult to fit in the incorrect position. Ensure the orientation of these parts is correct before fitting.



19.12 Removal of Stator (SmartPump™) – Testing / Inspection Purposes Only

Note: The stator is not available as a separate spare part, Use this procedure for inspecting and testing the stator only.

- (a) Lay machine down or against a wall. If leaning the machine against a wall, ensure that the machine is stable, and take necessary precautions not to damage the wall or the machine.
- (b) Disconnect earth by sliding connector apart.
- (c) Remove the three screws holding the Stator assembly to the Housing Pump.
- (d) Lower the stator assembly.
- (d) Unclip the wiring harness cover by releasing the two tabs from the top side of the stator shield and unplug the harness from the stator.
- (e) The stator can now be electrically tested. If a fault is shown and the stator needs to be visually inspected, the shield cap can be removed.

Reassembly:

Refit in reverse manner.

Note: Alignment arrows are moulded into the stator shield and the rotor housing to aid in the refitting process.



19.13 Removal of Pump Housing

- (a) If the bowl is full of water, drain or bail as much of the water as possible from the machine prior to continuing. To assist with bailing the water, the inner bowl can be removed.
- (b) Follow procedures for removal of stator (refer to Section 19.12).
- (c) Remove the hose clamps from the Drain & Recirculation Hoses. Carefully remove the two hoses while holding a bowl or container under the hose to catch the remaining water trapped in the hoses and pump.
- (d) Undo the two screws holding the pump to the outer bowl. The pump can now be removed from the bowl by pulling down on the two port tubes.



Reassembly:

(a) Fit the Housing Pump o'ring to the Outer Bowl. When replacing or refitting the pump housing, a new o'ring must be fitted.

(b) Refit the Pump Housing.

Note: This should be done with the Pump Cap & Hood in place, but it is not essential.

(c) Press the pump to its home position as much as possible by hand, then use the bolts to evenly torque the pump down.

(d) Tighten the pump bolts to a torque of 2Nm.

Note: If the bolts happen to strip when refitting the pump housing, refer to the Pump Housing – Stripped Pump Housing Procedure (refer to Section 20.1).

19.14 Removal of Recirculation Hose

(a) If the bowl is full of water drain or bail as much of the water as possible from the machine prior to continuing. To assist with bailing the water, the inner bowl can be removed.

(b) Follow procedures for removal of neck ring (refer to Section 19.9).

(c) Lift the recirculation hose upwards and out of its position on the outer bowl.

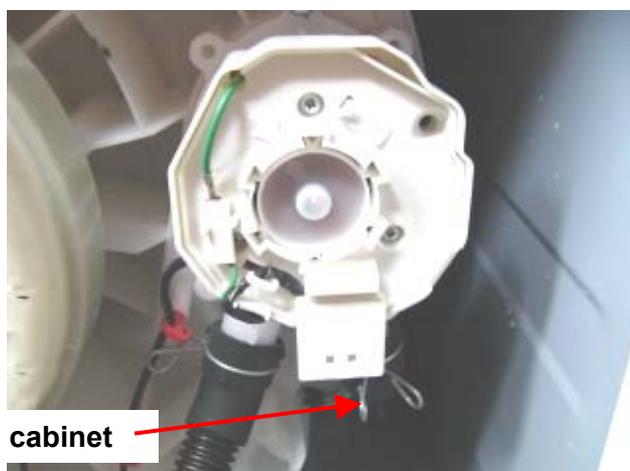
(d) Lay machine down or against a wall. If leaning the machine against a wall ensure that the machine is stable, and take necessary precautions not to damage the wall or the machine.

(e) Depress the two ends of the clip and slide the clip away from the pump housing.

(f) The hose can now be removed.

Reassembly:

Refit in the reverse manner, ensuring the recirc hose clip faces away from the cabinet.



Clip must face away from cabinet

20 SPECIALISED SERVICE PROCEDURES

20.1 Pump Housing - Stripped Bolt Procedure

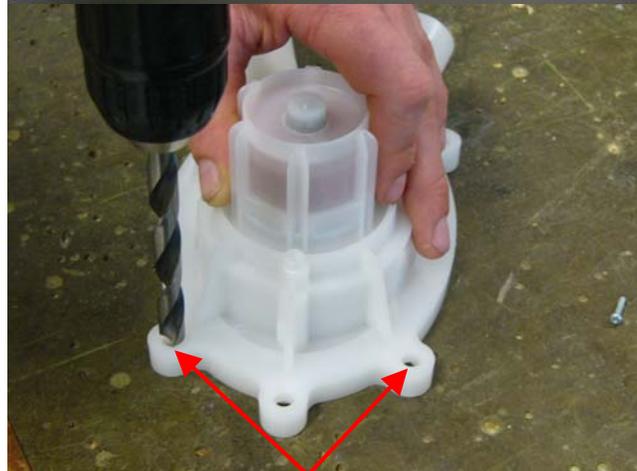
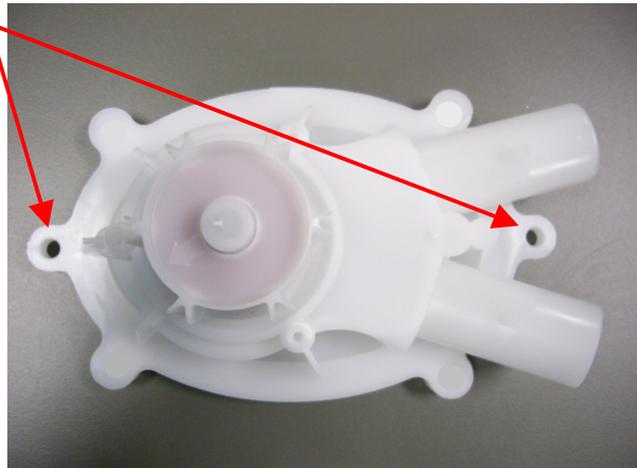
On the pump housing there are two bolt hole positions. These positions are used when the housing is assembled to the base of the outer bowl in the factory.

On servicing, should either or both bolts strip in the outer bowl, the other 'blanked off' holes can be used.

It is important to drill the two holes either side of the centre hole, otherwise the pump housing will not completely seal to the outer bowl.

- (a) Follow procedures for removal of pump housing (refer to Section 19.13).
- (b) Place the pump housing upside down on a block of timber or other such suitable surface. Using a sharp 1/4" (7mm) drill bit, drill both of the blanked off holes either side of the centre hole.
- (c) Place the pump housing on the outer bowl. Using the two new positions, screw the pump housing to the outer bowl. Ensure the bolts are tightened to 18 in/lbs (2Nm).

Note: It is essential that if using the alternate screw hole positions, the two bolts are used, otherwise the pump housing will not seat correctly and a leak will develop.



Drill hole in the two outer positions

20.2 Blocked Pump Procedure

It is possible to clear a blockage/obstruction from the pump without having to drain the water from the machine or disturbing the pump. If, however, there are concerns over the condition of the water and there may be a risk of infection, e.g. from hepatitis etc, then bail the water from the machine first. To assist in removing water from the machine, remove the inner bowl.

After removing the low profile agitator, the inner bowl, the pump hood and the cap, the impeller and flapper can easily be accessed for servicing. Use this procedure to clear any foreign objects from the machine.

Note: The impeller is not a field replaceable item, and if it is damaged, the entire pump assembly must be replaced.

- (a) Follow procedures for removal of pump hood & cap (refer to Section 19.11).
- (b) Spin the impeller by hand (it should be free to turn in both directions). If there is any resistance, try and locate the object. If the object can be located, remove and recheck for free movement of the impeller. Also ensure that the ports, flapper, chamber and SLR feature (refer to Section 8.3) are clean and free of lint or other obstructions.

Note: If there appears to be a foreign object trapped under the impeller and it cannot be freed by using the above procedure, it may be possible to clean out under the impeller area by holding it under running water while spinning the impeller. To do this the pump housing must be removed from the machine. If this fails to clear the obstruction, then the pump will have to be replaced. To remove the pump housing, refer to Section 19.13.

- (c) Refit the pump hood and cap ensuring the correct orientation.
- (d) If water is in the machine, enter diagnostic mode and run the pump (refer to Section 15) to drain the remaining water from the machine.
- (e) After the water has drained, check for any other objects in the bowl.

On completion of service we recommend carrying out the SmartPump™ test routine (refer to Section 8.5).

21 NOTES