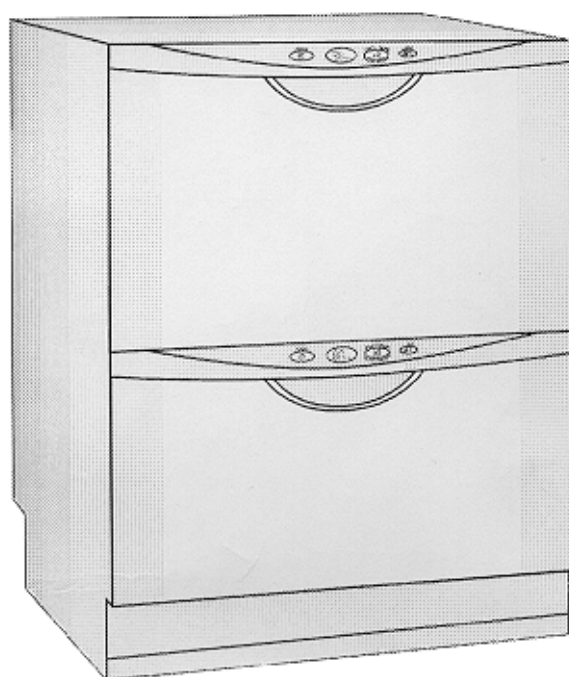


DISHDRAWER®

MODELS
DD603 DS603



599089

DIMENSIONS & SPECIFICATIONS

Product Size (mm)

Height (double)	819 - 870mm
Height (single)	409mm
Width	595mm
Depth	570mm
Drawer Open (incl cabinet)	1080mm

Specifications

Electrical

NZ/AUS/UK/UE	230-240Volt AC 50Hz 10 amp max.
USA	110-120Volt AC 60Hz 12.5 amp max.
JAP	90-110Volt AC 50/60Hz 11.6 amp max.

Water Inlet Valves	24Volt DC 70 \pm 5 Ohms 5 Lt/min (1.3 US gal/min)
--------------------	---

Chassis P.C.B.	
NZ/AUS/UK/UE	240 Volt AC
USA/JAP	120 Volt AC

Temperature Sensor	962 Ohms @ 20°C (68°F)
(On Heater Plate)	1000 Ohms @ 30°C (86°F)
	1202 Ohms @ 60°C (140°F)

Drying Fan	3.4 K Ohms
------------	------------

Motor	80 Volt DC 3 Phase
Drain	4200 RPM
Wash	2300 – 2850 RPM

Stator	8 \pm .5 Ohms per winding
--------	-----------------------------

Inlet Hose	1.7m (66 inches) 1000Kpa (145 PSI)
Drain Hose	2.0m (78 inches) from rear of cabinet 2.5m (98 inches) bottom tub 2.9m (114 inches) top tub
Detergent Dispenser	24 Volt DC 70 ± 5 Ohms
Rinse Aid Dispenser	24 Volt DC 70 ± 5 Ohms
Heater Plate (NZ/AUS/UK/UE)	240 Volt AC
Heater Track	60 ± 3 Ohms
Power Supply Resistor	125 ± 5 Ohms
Heater Plate (USA)	120 Volt AC
Heater Track	26 ± 2.5 Ohms
Power Supply Resistor	30 ± 5 Ohms
Heater Plate (JAP)	110 Volt AC
Heater Track	20 ± 1.5 Ohms
Power Supply Resistor	20 ± 2 Ohms
Diverter Valve Softener Assy	24 Volt DC 70 ± 5 Ohms
Brine Pump	24 Volt DC 70 ± 5 Ohms

OPTION ADJUSTMENT

Changing Setup Options

To enter the option adjustment mode, press **POWER** to turn the LCD on, then hold the **ECO** button and **KEYLOCK** button simultaneously for 5 seconds, ensuring that **ECO** is pushed first. Once the option adjustment mode is entered, a beep is emitted and the LCD displays the letters rA. Pushing the **START/PAUSE** button scrolls through the options and allows changes as follows:-

Rinse Aid Setup (rA).

Water Supply Hardness Setup (hd).

Auto Power Option (AP).

End of Cycle Beeps (EC).

Closed Drawer Option (Ld).

Clean/Dirty Dish Symbol (dS).

Dry Enhancement Option (LH).

Integrated:- On an integrated DishDrawer where there is no display, the option chosen is indicated by the lights showing on the integrated badge as follows:-

Rinse Aid Setup (red light above **START/PAUSE** button).

Water Supply Hardness (green light above **START/PAUSE** button).

Auto Power Option (orange light above **START/PAUSE** button).

End of Cycle Beeps (green light above **START/PAUSE** and red light above Keylock) button).

Closed Drawer Option (red light above **START/PAUSE** and **KEYLOCK** buttons).

Clean/Dirty Dish Symbol (not available on Integrated models).

Dry Enhancement Option (orange light above **START/PAUSE** button, **ECO** light is red).

Push **POWER** at any time to exit this setup mode.

Integrated:- On an integrated DishDrawer when one of the options is changed, it is indicated by the red wash cycle LEDs on the secondary control panel. If an option is turned on, then all the LEDs turn on, and if an option is turned off, all the LEDs turn off.

Rinse Aid Setup (rA)

The current rinse aid setting is shown using the red LED's on the touch switch panel.

The amount of rinse aid dispensed into a rinse cycle can be varied to suit the level of hardness of the local water supply. It is adjusted for 1 - 5 dispenser levels

(1 = approx 0.5mls (1/10) teaspoon of rinse aid, 5 = approx. 2.5mls (1½) teaspoon of rinse aid).

Push **KEYLOCK** to advance the rinse aid setting. Once the desired setting is achieved, push **POWER** to exit. The rinse aid index is stored in EE memory, so even with the power removed, the rinse aid level is retained.

Water Supply Hardness Setup (hd) (Where Fitted)

The current supply hardness setting is shown using the red LED's on the touch switch panel. One of 5 settings should be selected according to the known hardness of the supply water. Each setting is appropriate for the following water supply hardness:

No LED	Water Softener turned off, continuous bypass of softener
1 LED	150-250 ppm water supply hardness
2 LEDs	250-350 ppm water supply hardness
3 LEDs	350-450 ppm water supply hardness
4 LEDs	450-550 ppm water supply hardness
5 LEDs	550-625 ppm water supply hardness

Push **KEYLOCK** to advance the Water Softener setting. Once the desired setting has been achieved push **POWER** to exit.

Selection of a setting affects how the Electronic Controller diverts supply water, how much water is treated, and how much salt is used in regeneration, in a manner that optimises the performance of the Water Softener.

Auto Power Option (AP)

The automatic power up sequence that occurs when the tub is opened can be turned on or off using the **KEYLOCK** button. If the scrubbing brush is showing on the LCD, then the auto power up sequence will occur when the tub is opened. If the scrubbing brush is not showing, then the DishDrawer will not automatically power up when the tub is opened (the customer will need to push the power button each time they wish to use the DishDrawer). Push **POWER** to exit when the desired setting has been selected.

End of Cycle Beeps (EC)

The six beeps that occur at the end of the cycle can be turned on or off using the **KEYLOCK** button. If the scrubbing brush is showing on the LCD, then the end of cycle beeps are activated. If the scrubbing brush is not showing, then the end of cycle beeps are deactivated. Push **POWER** to exit when the desired setting has been selected.

Closed Drawer Option (Ld)

The closed drawer option can be turned on or off using the **KEYLOCK** button. If the scrubbing brush is showing on the LCD, then the closed drawer option is selected and it will keep the DishDrawer locked at all times by bringing the lid down. When this mode is selected the customer needs to push the **POWER** button to lift the lid whenever they want to open the drawer. When they close the drawer again, the lid comes down automatically after 30 seconds and locks the tub. If the scrubbing brush is not showing, then the closed drawer option is deactivated. Push **POWER** to exit when the desired setting has been selected.

Clean/Dirty Dish Symbol (dS)

(Not available on integrated models)

The clean/dirty dish symbol can be turned on or off using the **KEYLOCK** button. If the scrubbing brush is showing on the LCD, then the clean/dirty dish option is selected. This means that the end of cycle clean dishes symbol will remain in the LCD display until the power button is pressed to clear it. If the scrubbing brush is not showing, then the clean/dirty dish symbol will disappear when the drawer is first opened at the end of a cycle (factory setting). Push **POWER** to exit when the desired setting has been selected.

Dry Enhancement Option (LH)

(Available in prefinished products from Serial Number MEM741743, manufactured after 21/5/03, software version 3.2.06. Estimated to be available in integrated models from October 2003, software version 3.2.07.)

Dry enhancement option can be turned on or off using the **KEYLOCK** button. If the scrubbing brush is showing on the LCD, then the dry enhancement option is selected. This means the lid will stay down and the drying fan will continue running for 4 hours after the wash program completes.

If the customer wishes to open or stop the DishDrawer during this 4 hour period, they can do so by pushing the **POWER** or **START/PAUSE** button. This will reset the feature until the end of the next wash program. Push **POWER** to exit when the desired setting has been selected.

DIAGNOSTICS

DishDrawer Diagnostics

Dishwasher Diagnostics can **only** be entered in Power Off mode, ie. when there is no display on the LCD or the badge LED's are off. Diagnostics is entered by holding the **KEYLOCK** and **START/PAUSE** buttons simultaneously for 5 seconds. Ensure that **KEYLOCK** is pushed first.

There are currently four levels of diagnostics. To move to the next level push **POWER**. To enter a level push **START/PAUSE**. Once a level has been entered, pushing **POWER** will exit diagnostics completely. If no level is entered, then the display will cycle through the four levels and exit after the last. On entering diagnostic mode, the first level is the Display/Download Mode.

Display/Download Mode

In this mode, all LED's and LCD segments (except keylock) are illuminated.

Optical LED Download/Fault Display

An optical data download is available here to download all EE data to a PC or Palm PC via the lower tub-home sensor light pipe. Hold the reader pen over the lower tub-home sensor light pipe and press **START/PAUSE** to initiate the download. A short beep indicates the start and finish of download.

The last two faults are displayed on the LCD (secondary control panel LEDs for integrated models) during the optical download. The Current Fault code is displayed first followed by the Previous Fault Code. To read the Fault Code on the secondary display, refer to page 7 on Fault Codes.

Clearing Fault Logs

To clear the Current Fault, press the **KEYLOCK** button until a beep is sounded. This action moves the Current Fault into the Previous Fault while clearing the Current Fault. To Clear the Previous Fault press **KEYLOCK** once more until the beep is sounded.

Warning: Once a fault has been cleared, it is permanently removed from memory and cannot be recovered.

Press **POWER** to advance to the next level.

Hardware Output Diagnostic Test Mode

This level tests all the hardware outputs and inputs. The LCD display shows "HO".

Press **POWER** to skip hardware diagnostics and advance to the next level.

Press **START/PAUSE** to enter hardware diagnostics.

Once hardware diagnostics has been entered, the current hardware output being tested is indicated by letters in the LCD display, and for integrated models the LEDs on the touch switch panel using binary encoding, as shown in the table on the next page.

Different combinations of outputs can be switched on or off together, but the controller will prevent higher current drawing components such as the wash pump and the lid motors being turned on together.

Press **START/PAUSE** to advance to the next hardware output.

Press **KEYLOCK** to turn the currently displayed output on or off. If the scrubbing brush symbol (green LED above start/pause button on integrated models) is displayed, then that output has been switched on, and if it is not displayed then that output is off.

Press **POWER** to Exit at any time (all outputs will be switched off on exit).

As mentioned on the previous page, the LCD display and touch switch panel LEDs are illuminated to correspond to a particular hardware device. The following table details the display order of the test.

LCD	Norm LED	Fast LED	Deli LED	Rinse LED	Hardware Output
bL	Off	Off	Off	<u>On</u>	Backlight
Er	Off	Off	<u>On</u>	Off	Element Relay
Ld	Off	Off	<u>On</u>	<u>On</u>	Lid Motors (will run for 10 seconds)
dd	Off	<u>On</u>	Off	Off	Detergent Diverter Valve
FU	Off	<u>On</u>	Off	<u>On</u>	Fill Water Valve
P1	Off	<u>On</u>	<u>On</u>	Off	Motor Wash direction (2300-2850 rpm)
P2	Off	<u>On</u>	<u>On</u>	<u>On</u>	Motor Drain direction (4200 rpm)
rd	<u>On</u>	Off	Off	Off	Rinse Aid Dispenser (dispenses current setting)
dF	<u>On</u>	Off	Off	<u>On</u>	Drying fan
LE	<u>On</u>	Off	<u>On</u>	Off	Rinse Aid LED
C1	<u>On</u>	Off	<u>On</u>	<u>On</u>	Water Softener Diverter Valve
C2	<u>On</u>	<u>On</u>	Off	Off	Water Softener Brine Pump
°C	<u>On</u>	<u>On</u>	Off	<u>On</u>	Displays current water temperature.
°E	<u>On</u>	<u>On</u>	<u>On</u>	Off	Displays controller rail voltage
(C3 is used in the Factory to empty the Water Softener before the Product is packed.)					

WARNING: In diagnostic mode there is no component protection. Therefore take care when running individual components not to overload them. It is advisable to avoid turning the element on without filling the tub with water first.

NB : No fault codes will come up while in diagnostics mode.

Tub Home Sensor Test: At any time during HO test mode, the Keylock symbol on the LCD display (Keylock LED on integrated badge) indicates the tub position. On = Closed, Off = Open.

Fast Test Cycle

This level runs a 5 minute fast test cycle.

Press **POWER** to skip Fast Test Cycle and advance to the next level.

Press **START/PAUSE** to enter Fast Test cycle.

Once Fast Test Cycle is selected the DishDrawer goes into standby mode and 5 minutes will be showing on the display. The test cycle is started by pushing **START/PAUSE** and the following components are run during the 5 minute cycle that follows:- Lid motors, fill valve, wash motor, element, drain motor.

Press **POWER** to Exit at any time.

Continuous Cycle Test Mode

In this level the DishDrawer can be run continuously in any wash cycle. Once the cycle has finished, the DishDrawer automatically restarts the same wash cycle.

Press **POWER** to skip Continuous Cycle. As this is the last level, doing this will exit diagnostics.

Press **START/PAUSE** to enter Continuous Cycle.

Once selected, the LCD backlight flashes on and off to indicate the DishDrawer is in continuous cycle and the cycle starts straight away (for integrated models the LED above the start/pause button will be orange instead of green to indicate the DishDrawer is running in continuous cycle). It will run the last cycle that had been selected prior to going into diagnostics mode.

If it is desired to run a different cycle, exit diagnostics, turn the DishDrawer on as normal and select the cycle required. Then turn the DishDrawer off again, re-enter diagnostics and restart the Continuous Cycle as above.

Press **POWER** to Exit at any time.

Cycle Count Retrieval

(not available on integrated models)

To display the cycle count on the LCD screen, pause the DishDrawer while running a Continuous Cycle. The two bytes of the cycle count will be displayed alternately, in synchronisation with the changing backlight.

The Low byte is displayed when the backlight is off.

The High byte is displayed when the backlight is on.

To calculate the Total DishDrawer cycle count use the formula below.

$$\text{Cycle_Count} = (200 \times \text{High_byte}) + \text{Low_byte}.$$

Eg. Low_byte = 156

High_byte = 2

Cycle_count = $(200 \times 2) + 156 = 556$.

Temperature & Voltage Display Mode

(Not available on integrated models)

During a wash cycle, the current water temperature or the power supply rail voltage of the controller can be displayed on the LCD instead of the time remaining. To enter temperature/voltage display mode, start a wash cycle as normal. Initiate a keylock by pushing and holding the **KEYLOCK** button for 4 seconds

Once in keylock mode, push and hold **START/PAUSE** for 8 seconds to enter temperature display mode. The display now alternates between a °C symbol and the water temperature. Pressing the **START/PAUSE** again changes the display to alternate between an °E symbol and the power supply rail voltage of the controller.

To cancel temperature/voltage display mode, press the **POWER** button.

Show Off/Showroom Wash Mode

This mode initiates a shop show off display and wash operation demonstration.

With the DishDrawer powered up and turned on, the show off mode is entered by holding the **ECO** and **POWER** buttons simultaneously for 5 seconds. Ensure that **ECO** is pushed first.

The DishDrawer is now in the Show Off mode and cycles through all of the LED & LCD segments while pulsing the LCD backlight on and off.

Pressing the **POWER** button now puts the DishDrawer into the Showroom Wash mode. Before running this mode the tub should be filled with water until it is just touching the underside of the spray arm. The Showroom Wash is started by pushing the **START/PAUSE** button whereby the following cycle is run:-

The lid is pulled down.

The wash motor starts and runs for 4 minutes.

The wash motor stops.

The lid is lifted.

The display counts down to zero throughout this cycle.

The DishDrawer turns off at the end of this cycle.

The DishDrawer is still in the Showroom wash mode however, and it can be re-run by pushing **POWER** and then **START/PAUSE**. Once Show Off/Showroom Wash mode has been initiated, the mains power must be removed to exit out.

DIAGNOSTICS QUICK REFERENCE CHARTS

Fault Display/Download Mode

Press and hold **KEYLOCK**, then **START/PAUSE** for 5 seconds.

All LEDs & LCD segments except Keylock are illuminated.

Press **START/PAUSE**.

This initiates Pen upload via lower tub-home light pipe. At the same time the current and then the previous fault code will be displayed in the LCD screen and on the secondary control panel LEDs. To read the fault code on the secondary display, refer to page 7 on Fault Codes.

Press **KEYLOCK**.

This will clear current fault code. Note: if Keylock is pressed again, the previous fault code will be cleared.

Press **POWER** to exit.

Hardware Output Test Mode

Press and hold **KEYLOCK**, then **START/PAUSE** for 5 seconds.

All LEDs & LCD segments except Keylock are illuminated.

Press **POWER** once.

“HO” will show in the display (integrated: Heavy, Normal, Fast, Delicate, Rinse LEDs showing)

Press **START/PAUSE**.

Scroll through the following outputs using Start/Pause. Turn the outputs on & off using Keylock button.

Press **POWER** to exit.

Note: Scrubbing Brush = output on, No Scrubbing Brush = output off (on integrated models a green LED above the start/pause button is used in place of the scrubbing brush).

LCD Display	Norm LED	Fast LED	Deli LED	Rinse LED	Hardware Output
bL	Off	Off	Off	<u>On</u>	Backlight
Er	Off	Off	<u>On</u>	Off	Element Relay
Ld	Off	Off	<u>On</u>	<u>On</u>	Lid Motors (will run for 10 seconds)
dd	Off	<u>On</u>	Off	Off	Detergent Diverter Valve
FU	Off	<u>On</u>	Off	<u>On</u>	Fill Water Valve
P1	Off	<u>On</u>	<u>On</u>	Off	Motor Wash direction (2300-2850 rpm)
P2	Off	<u>On</u>	<u>On</u>	<u>On</u>	Motor Drain direction (4200 rpm)
rd	<u>On</u>	Off	Off	Off	Rinse Aid Dispenser (dispenses current setting)
dF	<u>On</u>	Off	Off	<u>On</u>	Drying fan
LE	<u>On</u>	Off	<u>On</u>	Off	Rinse Aid LED
C1	<u>On</u>	Off	<u>On</u>	<u>On</u>	Water Softener Diverter Valve
C2	<u>On</u>	<u>On</u>	Off	Off	Water Softener Brine Pump
°C	<u>On</u>	<u>On</u>	Off	<u>On</u>	Displays current water temperature.
°E	<u>On</u>	<u>On</u>	<u>On</u>	Off	Displays controller rail voltage
Tub Home Sensor test:- Keylock symbol on = tub closed, off = tub open					

Fast Test Cycle

Press and hold **KEYLOCK**, then **START/PAUSE** for 5 seconds.
All LEDs & LCD segments except Keylock are illuminated.
Press **POWER** twice.
“FC” will show in the display (integrated: Heavy, Normal, Delicate, Rinse LEDs showing).
Press **START/PAUSE** twice.
The 5 minute fast test cycle will start.
Press **POWER** to exit.

Continuous Cycle

Press and hold **KEYLOCK**, then **START/PAUSE** for 5 seconds.
All LEDs & LCD segments except Keylock are illuminated.
Press **POWER** three times.
“CC” will show in the display (integrated: Heavy, Normal, Rinse LEDs showing).
Press **START/PAUSE**.
The last cycle that had been selected prior to going into diagnostics mode will be run continuously.
Press **POWER** to exit.

Temperature & Voltage Display Mode

(Not available on integrated models)
Start a wash cycle running.
Press & hold **KEYLOCK** for 4 seconds.
Keylock will be activated.
Press & hold **START/PAUSE** for 8 seconds.
LCD will now alternate between °C symbol & the water temperature.
Press **START/PAUSE**.
LCD will now alternate between °E symbol & the controllers rail voltage.
Press & hold **KEYLOCK** for 4 seconds.
Keylock is deactivated.
Press **POWER** to exit.

Fault Codes

The faults are displayed in the LCD as one of 5 F (fatal) faults or 1 U (user) fault along with the symbol of a spanner. A fatal fault will usually require the assistance of a qualified service person, while a U1 user fault indicates the machine had failed to prime within a certain length of time usually because the tap has not been turned on. For this reason at the same time a U1 comes up in the display we also show the symbol of a tap. In the Integrated models, an LCD is not available, and the presence of a fault is indicated by a Red centre LED, with the fault number indicated on the touch switch panel with Red LEDs.

Once a fault is repaired it can be cleared by pressing the **POWER** button. If the fault is still present then it will not clear.

A fatal or user fault is accompanied by a continuous pulsating beep, which can be turned off by pressing either the **POWER**, **START/PAUSE**, or **KEY LOCK** button.

The last two faults are logged into EE memory.

The other U (user) faults have been removed. The old U2 fault, which was the tub forced open during a cycle, has been removed completely. Instead, if the tub is forced open, the product simply pauses as if someone had pressed the start/pause button. The old U3 fault, which indicated a failure to drain, i.e. water left in the tub, will not show up a fault and the DishDrawer will continue through the cycle.

Fault Code Description Chart

The following chart is a quick reference guide on fault codes. To read a fault code off an integrated model, refer to the LED Display column on the chart below. The LED that has activated on the secondary display indicates which fault code has occurred.

Fault Code	LED Display	Fault	Possible Causes
F1	Rinse LED	The flood switch has been activated for more than six seconds	<ul style="list-style-type: none"> • Inlet hose to inlet valve connection loose • Inlet valve body leak • Damage to the fill or drain hoses • Heater plate damage (chipped enamel) • Seals/O Rings (pinched, contaminated or poor join) • Dispenser (seal, diverter valve or weld leak) • Lid area (lid motors not functioning correctly, lid off yoke, yoke jammed or broken, or foreign object interfering with lid seal)
F2	Delicate LED	The motor has not been sensed rotating	<ul style="list-style-type: none"> • Foreign object has jammed the rotor • The rotor has failed • The hall sensor has failed • The electronic controller has failed
F3	Delicate and Rinse LED	The water temperature has been sensed at greater than 85°C (185°F)	<ul style="list-style-type: none"> • The incoming water is greater than 85°C (185°F) • The element has failed closed circuit • The temperature sensor has failed • The electronic controller has failed

Fault Code	LED Display	Fault	Possible Causes
F4	Fast LED	No temperature increase has been sensed for 2 hours while the element is on	<ul style="list-style-type: none"> • The element is not connected • The element has failed open circuit • The temperature sensor has failed • The electronic controller has failed
F9	Normal and Rinse LED	Electronics Failure	<ul style="list-style-type: none"> • The electronic controller has failed
U1	Heavy and Rinse LED	Machine has failed to prime with water within approx. 3 minutes	<ul style="list-style-type: none"> • The water supply is not turned on • The machine is syphoning • The spray arm is not in place • Excessive foaming • The inlet valve has failed • The electronic controller has failed • Rotor not fitted correctly

Fault Code Problem Solving Charts

The following charts can be used as a guide to help locate faults in a DishDrawer. Answer each question with a yes or no and follow the instructions inside the relevant box.

F1 The flood switch has been activated for more than 6 seconds			
	Question	Yes	No
1	Is there a F1 on both displays?	Go to Question 2	If power fails to the bottom tub it will cause the top tub to go F1. Test heater plate.
2	Has a flood occurred? (N.B. The flood may have dried up)	Go to Question 3	Go to Question 13
3	Is the lid sealing on the tub correctly?	Go to Question 5	Go to Question 4
4	Are the lid actuators functioning correctly?	Go to Question 5	Check the lid actuators are assembled correctly on the slides and yokes. Check the plugs on the RFI board and the terminals on the lid motors. If the lid actuators look slow replace them.
5	Is the water level in the tub high?	Go to Question 6	Go to Question 8
6	Is the water inlet valve leaking?	Replace inlet valve	Go to Question 7
7	Is the DishDrawer priming correctly?	Go to Question 12	Go to Question 8
8	Is the spray arm split?	Replace spray arm	Go to Question 9

9	Is the spray arm running freely?	Go to Question 10	Check the rotor is running freely, clear of foreign objects and fitted correctly. Make sure the wash impeller is not slipping off the rotor shaft
10	Is water leaking from a split inlet or drain hose?	Replace split inlet or drain hose	Go to Question 11
11	Is water leaking around the heater plate 'O' rings?	Replace or refit 'O' rings	Go to Question 12
12	Is the drain hose blocked?	Clear drain hose of blockage	Go to Question 13
13	Is there condensation or foreign matter around the flood switch PCB?	Clear flood sensor of condensation or foreign matter	Go to Question 14
14	After clearing water does the F1 fault code still activate?	Replace Chassis RFI board	Go to Question 15
15	Refer to Bulletin DW028		

F2 The motor is not sensed to be rotating			
	Question	Yes	No
1	Is the rotor jammed?	Free jammed rotor, check for foreign object damage to rotor and rotor housing.	Go to Question 2
2	Does the stator wiring from the controller test okay?	Go to Question 3	Replace wiring harness or repair faulty connections.
3	Do the stator windings show the correct resistance?	Go to Question 4	Repair or replace stator as required

4	Is the rotor position sensor clipped into the stator housing correctly? Is the sensor plugged into the controller with a good connection?	Go to Question 5	Clip rotor position sensor into stator housing or repair wiring connection at electronic controller.
5	Rotor position sensor fault?	Replace rotor position sensor	Go to Question 1

F3 Water temperature sensed at greater than 85°C (185°F)			
	Question	Yes	No
1	Is the incoming water temperature greater than 85°C (185°F)	Adjust the incoming water temperature.	Go to Question 2
2	Is the element on all the time?	Replace the electronic controller	Go to Question 3
3	Are the wiring and connections from the controller to the element all okay?	Go to Question 4	Repair or replace wiring harness or wiring connections
4	Are there any signs of moisture around the temperature sensor?	Locate and repair source of leak	Go to Question 5
5	Is the resistance of the temperature sensor correct?	Go to Question 6	Replace heater plate assembly
6	Does the machine fault again if run through a test cycle?	Go to Question 1	No fault found

F4 No temperature increase has been sensed while the element is turned on			
	Question	Yes	No
1	Does the element heat in diagnostics?	Go to Question 7	Go to Question 2
2	Test the resistance of the heater element using the connection on the controller, is it correct?	Go to Question 3	Go to Question 5
3	Is the connection on the controller okay?	Go to Question 4	Replace or repair connection
4	Electronic controller failure?	Replace electronic controller	Go to Question 1
5	Are the wiring and connections from the controller to the element all okay?	Go to Question 6	Repair or replace wiring harness or wiring connections
6	Is the resistance of the heater element correct?	Go to Question 7	Replace heater plate
7	Is the resistance of the temperature sensor correct?	Replace electronic controller	Go to Question 8
8	Are the wiring and connections down to the temperature sensor okay?	Go to Question 9	Replace or repair wiring harness or wiring connections
9	Heater element failure?	Replace heater plate	Go to Question 1

F9 Electronics failure (EEPROM access error)			
	Question	Yes	No
1	If the DishDrawer is isolated from the power supply for 10 seconds, does the fault clear?	No fault found	Go to Question 2
2	Electronic controller failure?	Replace electronic controller	Go to Question 1

U1 DishDrawer failed to prime with water within approx. 3 minutes			
	Question	Yes	No
1	Is the tap turned on?	Go to Question 2	Turn the tap on
2	Is the spray arm in place? (spray arm may have been refitted since U1 fault occurred)	Go to Question 3	Refit spray arm
3	Activate the water inlet valve in diagnostics. Does any water enter the machine?	Go to Question 4	Go to Question 7
4	Is the impeller on the rotor slipping?	Replace the rotor	Go to Question 5
5	Is the supply water pressure above 30Kpa (4.3p.s.i)?	Go to Question 6	The DishDrawer requires a minimum water pressure installation of 30Kpa (4.3p.s.i)
6	Are the inlet water hoses and valves free of any blockages or obstructions?	Go to Question 10	Clear the water valves or hoses of blockage or obstruction
7	Is the resistance of the water inlet valve measured at the plug on the controller correct?	Go to Question 8	Go to Question 9
8	Is there 24V DC coming from the controller during the water inlet valve test?	Go to Question 6	Replace the electronic controller
9	Are the wiring and edge connections down to the water inlet valve okay?	Go to Question 10	Replace or repair wiring harness or wiring connections
10	Water inlet valve failure?	Replace water inlet valve	Go to Question 11
11	Is the Rotor fitted correctly?	Go to Question 1	Refit Rotor

Poor Dry Performance

Poor Dry Performance			
	Question	Yes	No
1	Is the customer complaining of plastic items not drying?	Advise customer that due to plastics having a low thermal mass these items give inherently bad drying performance	Go to Question 2
2	Is the customer using rinse aid?	Go to Question 3	Advise customer that the use of rinse aid will improve dry performance
3	Is the customer using Fast or Eco cycles	Advise customer that due to lower final rinse temperatures dry performance is comprised when using Fast and Eco cycles (there is less residual heat for drying at the end of cycle)	Go to Question 4
4	Is the rinse aid setting high enough for the water hardness in the area?	Go to Question 5	Turn the rinse aid up to a higher setting
5	Using diagnostics test the dispenser. Is it dispensing the correct amount of rinse aid?	Go to Question 1	Replace dispenser

Poor Wash Performance

Customers Complaint Food Particles left on Dishes	
Cause of problem (1)	Spray arm has stopped rotating.
How to resolve the problem	a) One of the dishes / cutlery / utensils has fallen through the basket and jammed the spray arm, remove the obstruction. b) Filter plate, drain filter, or drain filter access panel is not installed correctly and is causing the spray arm to jam.
Cause of problem (2)	The product is being over loaded or incorrectly loaded with dishes.
How to resolve the problem	Advise customer of correct loading.
Cause of problem (3)	Customer is selecting the wrong wash cycle for the soil level on the dishes.
How to resolve the problem	Advise customer about reduced water temperatures (up to 20°C / 70°F lower) and wash times when using Fast and Eco cycles.

Customers Complaint Coffee/Tea Stains left in Cups	
Cause of problem (1)	Not enough detergent being used. To remove these stains requires a stronger concentration of detergent in the water. More detergent is also required in hard water areas as minerals in the hard water reduce the effectiveness of the detergent.
How to resolve the problem	Fill the main-wash detergent cup to the top & for best results also fill the pre-wash detergent cup. Run on normal or heavy cycles not Eco.
Cause of problem (2)	The product is being over loaded which is preventing water reaching the cups on the upper cup racks.
How to resolve the problem	Advise customer of correct loading.

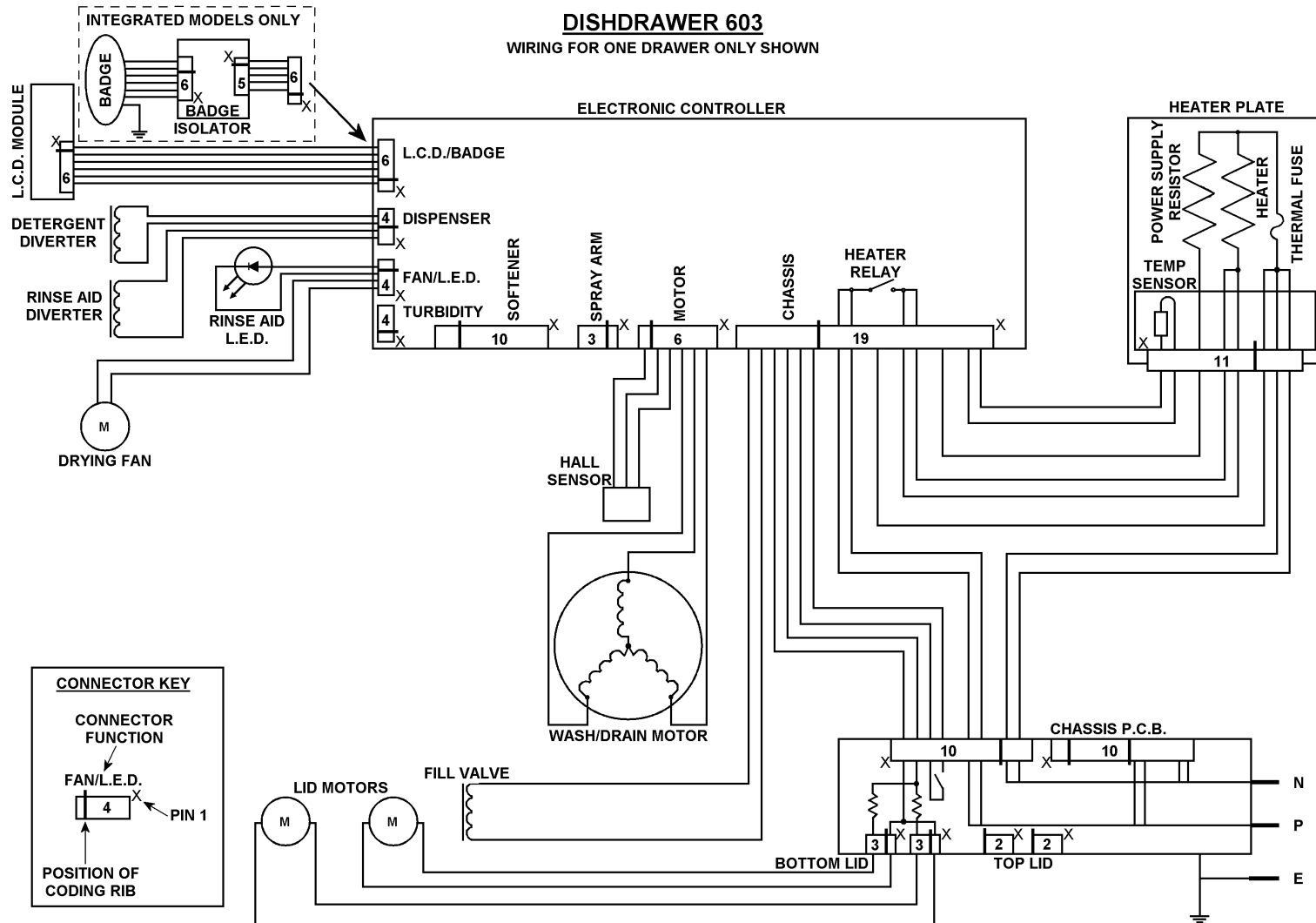
Customers Complaint Dishes have blotchy marks on them that look like water stain marks not food	
Cause of problem	Not enough rinse aid being used. The water is not soft enough during the final rinse and therefore hard water droplets containing impurities are drying on the dishes instead of running off during the dry cycle.
How to resolve the problem	<p>Confirm that the customer is using rinse aid.</p> <p>The rinse aid may need to be turned up to a higher setting (4 or 5 lights) and for optimum dry performance run the DishDrawer on normal or heavy cycles not Eco.</p> <p>Check that the rinse aid dispenser is dispensing correctly in diagnostics.</p>

Customers Complaint Glasses & Cutlery have a Cloudy White film on them and/or Plates have a White Chalky film on them	
Cause of problem	Hard water & not enough detergent being used. Minerals from the water are building up on the dishes or the Water Softener is not set to the correct Water Hardness Level or is faulty.
How to resolve the problem	<p>Once this film forms on the dishes it cannot be removed by normal running in the dishwasher. The dishes will need to be cleaned by soaking them in an acidic solution such as white vinegar and water.</p> <p><i>Where a Water Softener is not fitted;</i> To prevent the build up re-occurring the customer will need to fill both the main-wash & pre-wash detergent cups to the top with a power detergent and we would recommend running on normal cycles.</p> <p>In problem areas with very hard water the customer may need to use a detergent additive designed for use in hard water areas or fit a water softener to the incoming water supply.</p>

	<p>Where a Water Softener is fitted; Set the Water Softener for the correct local Water Supply hardness. Check that the Water Softener is functioning correctly in Diagnostics;</p> <p>C1 Water Softener Diverter Valve In hardware output Diagnostics Test Mode FU – turn the Fill Water Valve on P2 – turn the Motor Drain on C1 – Water Softener Diverter Valve On – water bypasses the resin tank Off – water flows through the resin tank</p>
	<p>C2 Water Softener Brine Pump Turn the Brine Pump on in Diagnostics mode. Observe a small quantity of water (approx. 30 ml per min.) flowing out the bottom of the dispenser. (Drop the Dispenser Door down to observe this.) Observe a change in the water level (approximately 120ml per 4 min.) in the Salt Reservoir. The Reservoir should pump dry of water in this time. Note:- Fill the Salt Reservoir with Salt (and then water if not already) before performing this test.</p> <p>Pipe Interrupter (Air Break) Function A critical component in the performance of the Water Softener is the pipe Interrupter (PI). There is a certain amount of spray leakage from the PI which is used to provide water to the Salt Reservoir.</p> <p>If the spray is inadequate, there will be insufficient water in the Salt Reservoir to make Brine.</p> <p>If there is too much spray then the excess bypasses the Water Softener and defeats the softening process by pouring untreated water into the Tub.</p> <p>To check that the amount spray leakage is appropriate:-</p>

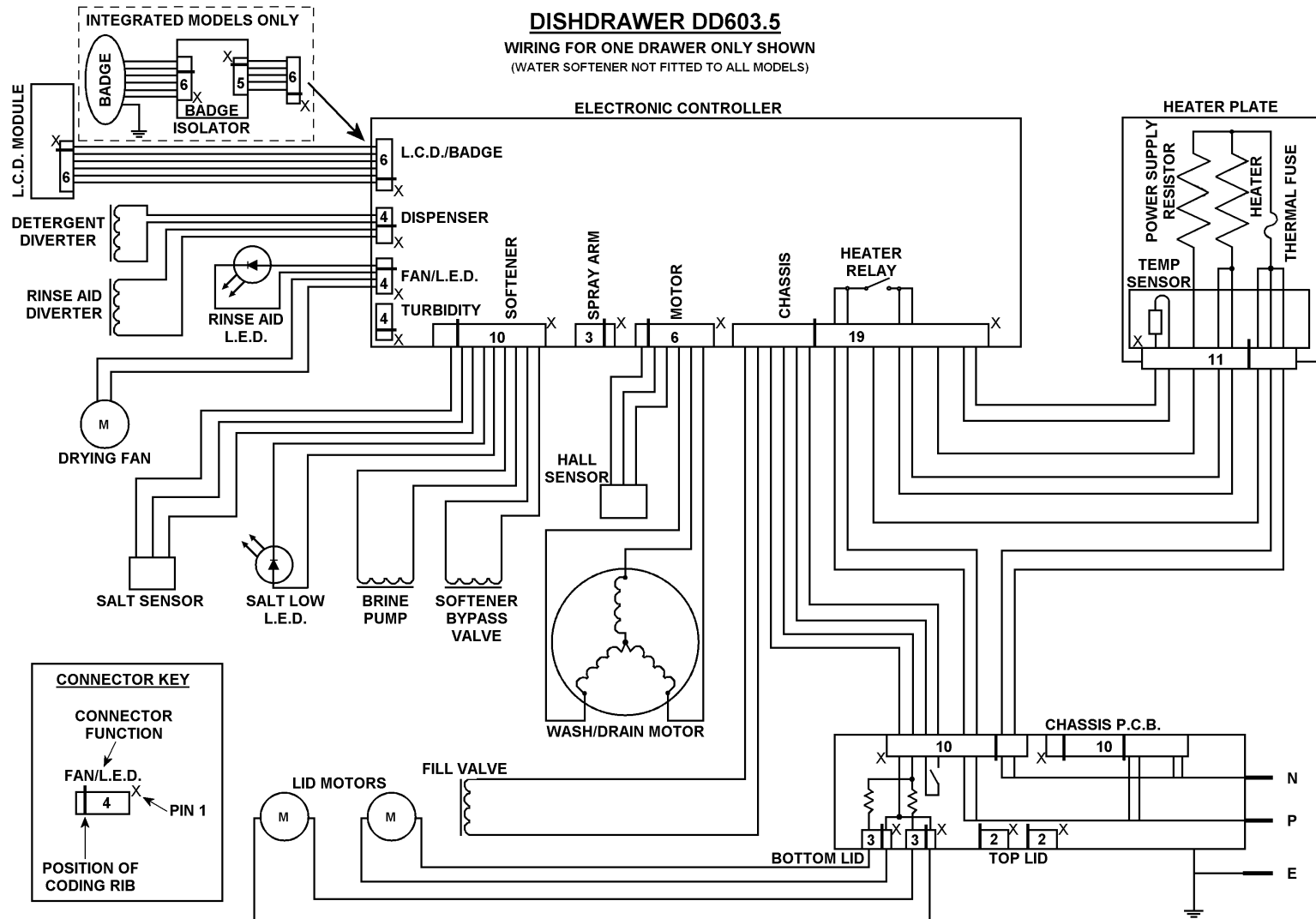
	<p>Fill the Salt Reservoir with water.</p> <p>In diagnostics mode, Turn on the Fill Water Valve, and the Motor Drain. Water will flow out of the Dispenser into the Tub, as well as out of the Water Softener Overflow into the Tub.</p> <p>Observe the flow from the Water Softener Overflow (beside the Dispenser). There should be a trickle (25-100 ml per minute). With experience you can guess what is appropriate. If the trickle is outside these rates, replace the softener as the PI is faulty.</p> <p>To check that there is water in the Salt Reservoir, remove the Drawer front and observe the level of water in the tank. (A quick way to check that there is water in the Salt Reservoir is to remove the Salt Bung and test the water level by placing your finger down through the opening.)</p> <p>Detergent or Rinse Aid in the Water Softener</p> <p>If detergent or rinse aid is poured in to the Salt Reservoir it will destroy the Water Softener. This could also happen if the Salt Bung is left off or falls out. Evidence of this could be white streaks through the Resin.</p>
--	--

WIRING DIAGRAM



DON MOFFATT - 2003

WIRING DIAGRAM



DON MOFFATT - 2003