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Interim Manual for Hotpoint Indesit

FDUD43133
FDUD44110
FDUD51110

LTB4M116
LTF11M1137
LTF11S1120

Service Information

Indesit Company UK Ltd

SAFETY NOTES & GENERAL SERVICING ADVICE

1. This manual is NOT intended as a comprehensive repair/maintenance guide to the appliance.
2. It should ONLY be used by suitably qualified persons having technical competence applicable product knowledge and suitable tools and test equipment.
3. Servicing of electrical appliances must be undertaken with the appliance disconnected (unplugged) from the electrical supply.
4. Servicing must be preceded by Earth Continuity, Earth Resistance and Insulation Resistance checks.
5. Personal safety precautions must be taken to protect against accidents caused by sharp edges on metal and plastic parts.
6. After Servicing the appliance must be rechecked for Electrical Safety. In the case of appliances which are connected to a water supply (i.e.: Washing Machines, Dishwashers & Food Centres etc.) checks must be made for leaks from seals gaskets and pipe work and rectification carried out where necessary.
7. It can be dangerous to attempt 'DIY' repairs / maintenance on complex equipment and the Company recommends that any problem with the appliance is referred to its own Service Organisation.
8. Whilst the Company has endeavoured to ensure the accuracy of the data within this publication they cannot hold themselves responsible for any inconvenience or loss occasioned by any error within.

GENERAL INFORMATION

Programme Start Delay

AFTER STARTING A PROGRAMME THERE WILL BE A DELAY BEFORE THE CYCLE STARTS, ALTHOUGH THE DISPLAY WILL BEGIN TO COUNT DOWN.

THIS DELAY CAN BE UPTO 5 MINUTES, THIS IS NOT A FAULT WITH THE MACHINE and CANNOT BE CHANGED BY REPLACING PARTS or REPROGRAMMING.

THERE MAY ALSO BE SHORT DELAYS DURING THE WASH PROGRAMMES.

Introduction

PLP2 Dishwashers are a New Innovation Version of the Current Dishwasher Range (EOS, 2007 to current 2013).

These models have a DEA700 Module, with a BLAC Wash Pump and Drain Pump, Virtual Sensors are used to monitor the quantity of water in the machine. The Pressure Switch has been eliminated.

Some Models also feature a Ozone Generator incorporated into the Dispenser.

Activation:

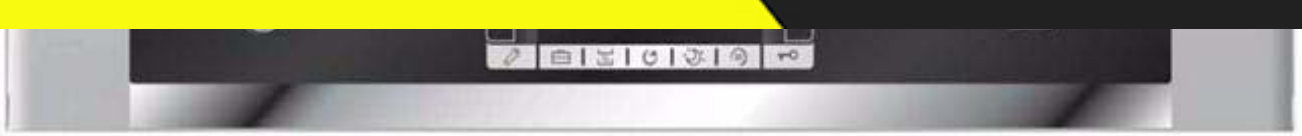
1. Make certain the machine is Off at the Console with Mains power On.
2. Switch the machine On, then Off.
3. Press and hold the **Start/Pause** button, and at the same time (within 5 seconds), press and hold **On/Off** for 10 seconds. A confirmatory "Beep" will be heard.
4. The message "**DEMO ON**" is displayed.
5. Demo Mode can be aborted by disconnecting the appliance from the power supply or follow the Deactivation sequence below.

Deactivation:

1. With the machine Off at the Console, press and hold the **Start/Pause** button, and at the same time - within 5 seconds - press and hold **On/Off** for 2 seconds.
2. A confirmatory "Beep" will be heard and the message "**DEMO OFF**" is displayed.
3. Demo Mode can also be aborted by disconnecting the appliance from the power supply.

CONSOLE PANELS (Dashboards) - PLP2 Platform

LED Type



PLP2 Platform Hydraulics

Depending on the model, there are 2 type of PLP2 hydraulics.

Fig.1

"L" column type

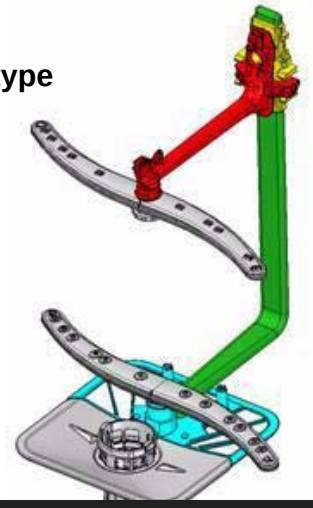
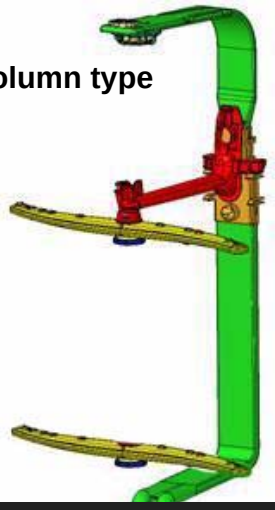
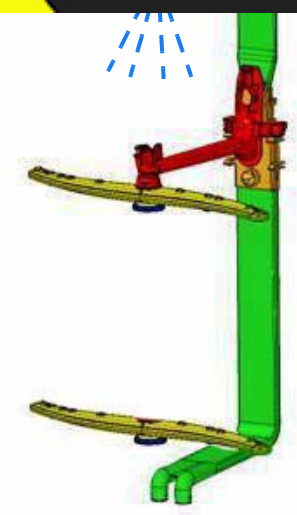


Fig. 2

"C" column type



Tray with a shower Head in the Roof. Fig. 3. shows the Water Circuit.



VIRTUAL SENSORS Description and Operation

Basic Description:.

The traditional pressure switch has been replaced by a system of "Virtual Sensors" that will detect the presence or absence of water in the tub.

In practice, these sensors are the BLAC Wash Pump and the BLAC Drain Pump.

The Virtual Sensors are able to detect full or empty conditions by monitoring the operation of the BLAC wash pump and the BLAC drain pump: By measuring the effort (energy consumption) expended power by these motors, the Main Module can identify the exact operating situation.

See Tables below.

WASH PUMP	
0	Empty Sensor
1	Full Sensor to Wash
2	Full Sensor to activate Heating Element

DRAIN PUMP	
0	Empty Sensor
1	-
2	Full Sensor

will drain and the program skips to the next step of the cycle.

Drain Pump

The new Drain Pump has a BLAC motor.

The speed of this pump is controlled by the Power Module in response to the different conditions prevailing at any given moment.

The BLAC Drain Pump's main function is to drain water from the machine.

In addition, the BLAC drain pump (in combination with the BLAC Wash Pump) operate as a virtual sensors.

Anti Flood Device

Consisting of a polystyrene float and microswitch. An excess of water in the base operates the float switch sending a signal to the control module operating the drain pump and displaying a fault code on the console.

FILLING SEQUENCE (with Virtual Sensors)

Once a program has been started, the first action of the dishwasher will be to drain down until the **"D-Sensor"** registers **empty + 15 seconds**.
Thereafter, the W-Sensor runs for 40 seconds at 1400 rpm with the bottom delivery outlet open, to confirm that the tub is actually empty (if not, after three unsuccessful attempts error **"F15"** will be displayed).

The machine then starts to fill — an operation that will be completed in two steps:

1. **Static fill:** the fill solenoid valve is piloted to open by the Main Module, and will admit approximately 2.0 litres of water, measured by the Water Turbine. When this threshold is reached, the Wash Pump (**"W-Sensor")** runs at 1400 rpm with the bottom delivery outlet open, to confirm whether or not the machine is in Full status. If the **Full** condition is satisfied, the dynamic fill will start.

   Note: The BLAC Wash Pump Motor running at 1400 rpm on the bottom outlet, full status will register with approximately 1.5 litres of water.

2. **Dynamic Fill:** with the BLAC Wash Pump running (at 1400 rpm, bottom delivery outlet), the fill solenoid valve is activated and held open by the Main Module until the water level increases to around 3.5/3.8 litres (depending on the cycle selected).

time and H will be displayed, is displayed (Warning to the user that no water is entering the machine) after a further period the machine times out and 06 fault will display.

Turbine out of Range

Static fill: The fill solenoid is piloted to open. The Main Module does not receive any information from the Litre-count turbine. After one minute during which the solenoid valve remains open and approximately 2.4 litres of water have entered the machine, the Wash Pump (W-Sensor) runs at 1400 rpm with the bottom delivery outlet open to confirm

W-Sensor Full status. The cycle moves on to dynamic fill.

Dynamic fill: The speed of the Wash Pump is increased to 2400/2500 rpm (depending on the cycle selected) and the tub continues to fill until the motor torque registers at a value corresponding to Full status, at which point the machine continues washing as normal.

continued on next page...

Blocked Filter

1. **Static fill:** the fill solenoid valve is piloted to open by the Main Module, and will admit approximately 2.0 litres of water, measured by the Litre-count Turbine. When this threshold is reached, the Wash Pump ("W-Sensor") runs at 1400 rpm with the bottom delivery outlet open, to confirm whether or not the machine is in Full status.

   If the Full condition is satisfied, the dynamic fill will start.

2. **Dynamic fill:** with the Wash Pump running (at 1400 rpm, bottom delivery outlet), the fill solenoid valve is activated and held open by the main module until the water level increases to around 3.5/3.8 litres.

   At this point if a fault situation is confirmed, the machine continues to fill until:

> Full status is satisfied, in which case the wash proceeds as normal;

> It the Tub contains 5.5 litre's of water, or the dynamic fill timeout is exceeded; in both instances, the program skips to the next step. (The programme will complete in a short period and the load will be dirty at the end of the cycle.) No Fault code will display.

Detergent, Rinse Aid Dispenser and Oxygen Generator

the setting adopted by the user. Each time the dispenser is opened, 1.5 ml (1.5 cc) of rinse aid will be released.

Possible settings:

0: Off (no rinse aid is released)
1. One pulse is generated, releasing 1.5 ml of rinse aid
2: Two pulses are generated, releasing 3 ml of rinse aid
3: Three pulses are generated, releasing 4.5 ml of rinse aid
4: Four pulses are generated, releasing 6 ml of rinse aid

continued on next page...

ADDITIONAL COMPONENTS INFORMATION

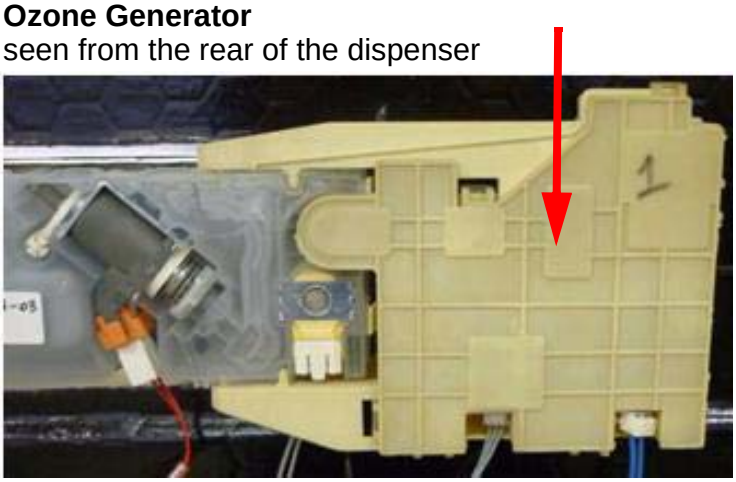
Ozone Generator

The function of the ozone generator, is to prevent the formation of bacteria, consequently minimizing unpleasant smells inside the tub and generally improving hygiene conditions internally of the appliance.

The component receives a power input of 220 V from the mainboard. An internal electronic circuit is programmed to govern the components and the duration for which ozone is produced.

When activated to deliver ozone, the solenoid valve of the device is open, and the fan and ozone generator come into

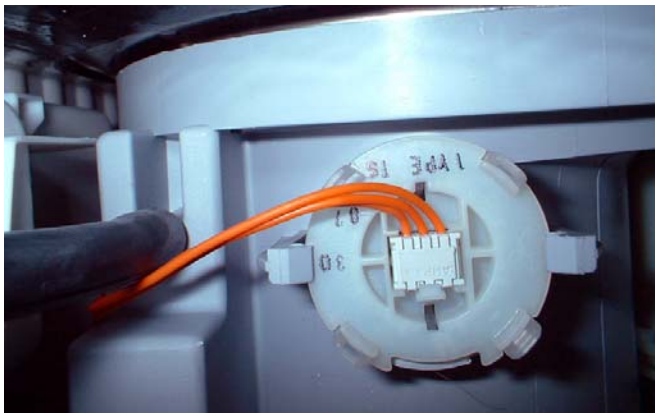
Ozone Generator
seen from the rear of the dispenser



cycle content and duration when an Auto Cycle is selected.

The Turbidity Sensor is active on Programmes:

- **Auto Normal**
- **Auto Duo Wash**
- **Auto Super Wash**



Depending upon the soil in the water the control module, in conjunction with the turbidity sensor adjusts the following:

- **Temperature**
- **Cycle duration**
- **Number of rinses**
- **Wash Pump Flexipower Motor speed**
- **Spray arm pressure**

AUTO TEST CYCLE

Activation of the Auto Test Cycle:

Dishwashers with LED displays and Programme Knob

1 With the machine switched off, position the knob anywhere other than on program 5 and close the door.
2 Switch the machine on (On/Off button).
3 Switch the machine off (On/Off button).
4 Turn the knob to Position 5 (position 3 in the case of machines with three programs).
5 Turn the knob to Position 1.
6 Turn the knob to Position 5 (position 3 in the case of machines with three programs).

7 Switch the machine On (On/Off button).
8 The display lights up all LED segments and **At** appears in the display.
9 Press the "Start/Pause" to start the autotest sequence. See next page for details.

Dishwashers with LCD User Interface:

1 Start with the appliance Off and the door closed.
2 Switch the machine On (On/Off button).
3 Switch the machine Off (On/Off button).
4 Press the P up button ▲ and release, press P up button ▲ again - an audible beep will be heard.
5 Press the P down button ▼ (Program 1).
6 Switch the machine On (On/Off button) - "**SELF TEST**" appears in the display.
7 Press the “Start/Pause” to start the auto test sequence. See next page for details.

The Autotest sequence in DEA 700 – PLP2 machines is as follows:

Note - there will be a delay before the test starts - possibly up to 2 minutes.

a **Make sure the dispenser flaps are closed.**
The machine is drained to empty status + 15 seconds (D-Sensor); at the same time, the alternating wash motor is repositioned to operate with the bottom delivery outlet open.

b Empty status is verified by the wash pump (W-Sensor), running with the bottom delivery outlet open at 1400 rpm for 40 seconds.

c The tub takes in 2 litres of water, with activation of the W-Sensor to confirm Full status.

d Another 2 litres are added in dynamic mode - (washing whilst filling).

e The wash pump is activated for 30 seconds with the top delivery outlet open.

f The pump is switched to the bottom outlet for 30 seconds.

g The Wash heating element is activated, with the Wash Pump running at 2500 rpm, and the temperature raised to 30°C.

h The machine is drained to empty status (D-Sensor) + 15 seconds.

i The dispenser is opened by activating the solenoid valve for 2 seconds.

j 10-second pause.

n The Turbo Dry Fan is activated (if installed).

o The machine is drained to empty status (D-Sensor) + 15 seconds.

p Sequence ends. Display / LEDs turn Off.

q Refit the catch plate - if removed in "k" above and check for correct door switch operation.

If there is a fault (active):

The service technician will find the machine immobilized, with the Fault indicator LEDs permanently alight and other LEDs on the Control Panel blinking. Digit and LCD display models will show the Fault Code in the display. Refer to the Fault Code charts for guidance.

If Warning or Last Fault is indicated:

Starting the autotest, the last Fault or the current Warning will be displayed for 20 seconds.

Once this time has elapsed, the autotest sequence starts automatically.

If the autotest reaches the end, the Last Fault will be reset.

Should the Autotest procedure be interrupted for whatever reason, data in the Last Fault memory will be saved.

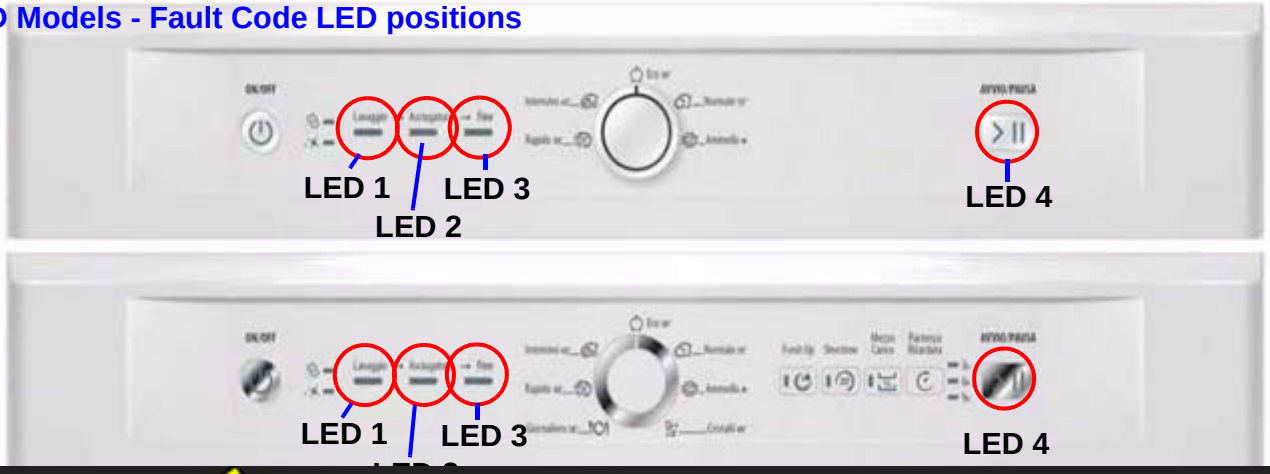
N.B.: The "last Fault detected electronically" will always be displayed.

FAULT CODES - Basic

If there is a fault (active):

The service technician will find the machine immobilized, with the Fault indicator LEDs **permanently alight** and other LEDs on the Control Panel blinking (usually On/Off, Salt and Rinse Aid).

LED Models - Fault Code LED positions



2	WATER FILL SOLENOID VALVE FAILURE				
3	DRAIN TIMEOUT	**On**	**On**	Off	Off
4	THERMISTOR (NTC) not compliant	Off	Off	**On**	Off
5	PRESSURE SWITCH non compliant	**On**	Off	**On**	Off
6	WATER FILL TIMEOUT	Off	**On**	**On**	Off
7	WATER TURBINE damaged	**On**	**On**	**On**	Off
8	TEMPERATURE TIMEOUT (1 hour)	Off	Off	Off	**On**
9	Software recognition error.	**On**	Off	Off	**On**
10	HEATING ELEMENT CIRCUIT not compliant	Off	**On**	Off	**On**
11	WASH PUMP Failure	**On**	**On**	Off	**On**
12	COMMUNICATION error between main board and display	Off	Off	**On**	**On**
13	MAIN BOARD not Working	**On**	Off	**On**	**On**
15	VIRTUAL SENSOR - Inconsistent readings	**On**	**On**	**On**	**On**

For more detailed information refer to next page.

FAULT CODES - Detailed

FAULT CODE	LED'S	NAME	POSSIBLE CAUSE	CHECKS
1	1 ■□□□	ANTI-FLOODING OVERFLOW	Bowl float microswitch electrical circuit OPEN! (must be closed)	- Water leak; - Float switch or wiring defective; - New main board: Eeprom was programmed off-site; to reset the alarm, switch off and switch on again using the ON/OFF button.
2	2 □■□□	WATER FILL SOLENOID VALVE FAILURE	Fill valve admits water even when deactivated.	- Fill solenoid valve failure; - Main board fill solenoid valve triac short-circuiting; - Make certain drain hose is not on the floor.
3	1-2 ■■□□	DRAIN TIMEOUT	Maximum drain time elapsed.	- Drain pump blocked by foreign matter; - Drain pump faulty/disconnected; - Drain hose blocked; - Drain trap blocked; - Air bubble in hose; - Check drain pump wiring and connectors at component end and main board end; - Check integrity of drain pump impeller; - Replace drain pump.
4	3 □□■□	THERMISTOR (NTC) not compliant	THERMISTOR (NTC) circuit not compliant (break in continuity or short-circuit)	- NTC sensor cables disconnected or damaged; - Cables or connectors disconnected or short-circuiting; - NTC sensor wet, short-circuit; - NTC sensor damaged, open circuit.
9	1-4 ■□□■	Software recognition error. Main board not programmed	Software recognition error Processor not programmed.	- Main board not programmed; - Incorrect setting file.
10	2-4 □■□■	HEATING ELEMENT CIRCUIT not compliant	HEATING ELEMENT CIRCUIT not compliant (circuit open).	- Heating element cables disconnected; - Main board relay defective - Heating element defective; - Main board relay defective.
11	1-2-4 ■■□■	Wash Pump Failure	No communication/power between BLDC/BLAC motor and main board, or motor seized.	- Motor connectors disconnected; - Wiring not compliant; - Foreign matter between motor blades; - Motor defective/seized.
12	3-4 □□■■	COMMUNICATION error between main board and display	No communication/connection between main board and user interface.	- Fault in Main board/user interface wiring; - Disconnect from electrical power supply. Wait 2 minutes. Reconnect appliance to power supply and test again; - User interface defective.
13	1-3-4 ■□■■	Main board NOT WORKING	Main board NOT WORKING	- Replace main board.
15	1-2-3-4 ■■■■	VIRTUAL SENSOR	Reading between Wash pump and Drain pump not consistent.	- Replace wash pump.

Thermistor - Resistance Chart

Temperature in degrees C	Resistance in K Ohms	Temperature in degrees C	Resistance in K Ohms
- 40	24751.661	**50**	146.215
- 35	17127.169	**55**	117.828
- 30	12014.762	**60**	95.420
- 25	8524.305	**65**	77.718
- 20	6113.811	**70**	63.584
- 15	4435.437	**75**	52.260
- 10	3249.216	**80**	43.166
- 5	2403.515	**85**	35.808
0	1794.358	**90**	29.828

"C" Column Type Hydraulics Assembly.

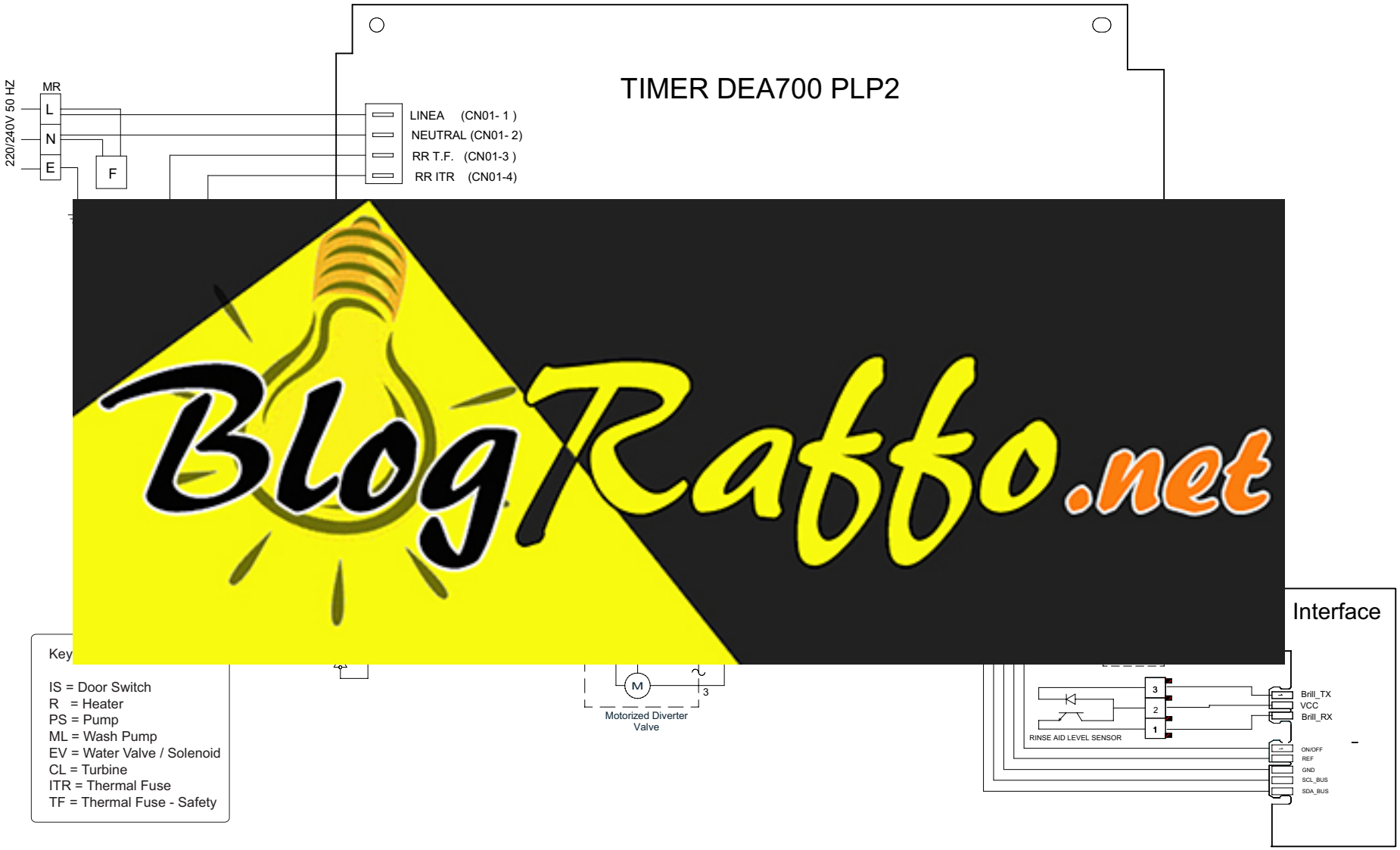
The top section of this assembly is supported from above the tub roof with a plastic twist cap and seal.

It is necessary to remove the dishwasher worktop to gain access. Twist the cap anticlockwise by 90 degrees to release it.

On reassembly MAKE SURE that the circular thread protrusion on the top of the assembly moulding locates centrally in the hole in the tub before refitting the retaining cap.

Stress or damage to the cap or thread protrusion can occur if it is forced before being correctly located.

WIRING DIAGRAM



GENERAL DISHWASHING INFORMATION

NOTE: - Many faults occur over along period of washing incorrectly. Correcting faults may not immediately cure a problem, e.g. several washes may be necessary to give better results.

POOR WASH RESULTS

A variety of factors influence wash results and some of the more common are listed below.

A. FOOD OR STARCHY REMAINS LEFT ON CROCKERY

May be detected by running the tip of a finger over the surface of a dish or by wiping with iodine. This gives a blue/black colour to even the smallest trace of starch. Dried on starch or food soil should be washed off manually before placing items back into the dishwasher.

1. **Food remains not removed prior to washing**

   Ensure that surplus food is removed and that heavily encrusted or burnt on remains are pre-soaked.
   Ensure that Pre-Wash Programme is used if soiled dishes are being stored in the machine prior to washing.

2. **Spray arm nozzle blockage**

   Ensure that loading allows sufficient force of water to reach all dishes.

   In certain cases it may be necessary to leave some spaces empty to ensure good results.

5. **Blocked filter or kinked drain hose**

   Ensure that these items are satisfactory otherwise excess food soil will be present in the machine.

6. **Low wash temperature**

   Check that correct programme is being used and that the thermostat is operating at the correct temperature.

7. **Insufficient detergent**

   Food soil may not be completely loosened and will not be kept in suspension in the water.
   If in doubt, too much detergent does no harm, but too little in the long run does.

   If dishes are heavily soiled add extra detergent. Remember - too little detergent causes foaming.

B. WHITE COATING ON DISHES AND INSIDE THE MACHINE

1. White coating or scale

Detergent not only loosens the remains of food but, together with the calcium salts in the water, forms water-soluble compounds which prevent the appearance of the white calcium coating or scale. Insufficient detergent may result in a white coating on dishes and the machine interior.

Unsoftened water can also cause this.

Coatings can often be removed by the following:

Take approximately 100 g of Citric Acid, a white very acidic powder which can be purchased at chemists. Put the dishes which are to be treated into the dishwasher and fill the dispensing container with Citric Acid instead of detergent. Then, switch on a normal programme (not the Economy programme). The container does not take the whole amount of acid powder so interrupt the programme before the start of the main washing cycle and pour the rest into the main body of the tub or the inside of the door.

2. White coating on dishes that tastes of salt

Possibly caused by a poor seating regeneration valve or, most likely by a defective salt cap gasket.

8. Check that the machine is filling correctly.
9. Check that the machine is rinsing correctly.
10. Check that the softener by-pass is working correctly.
11. If the dishwasher has programmes of less than 65°C, use these in preference to 65°C programmes when washing glassware.

D. WHITE DISHES TURNING PINK

1. Caused by a chemical reaction between dishwasher detergent and porcelain. This porcelain is not dishwasher proof.
2. Formation of silicate scum on the dishes caused by using insufficient detergent.

   Silicate scum absorbs iron and/or Manganese which is present in all water supplies. This colours the scum light brown or pink.

E. POOR DRYING

1. Correct amount of Rinse Aid

The purpose of rinse aid when added to the water of a final rinse is to allow the water to run off the dishes as a complete film so that no water-run marks or calcium are left. To enable this to happen it is essential that the correct amount of rinse aid is dispensed. Too little does not reduce water tension sufficiently.
Result: The water film breaks up into streaks which make shiny and clear drying impossible. After all the rest of the water has evaporated, marks are left which are especially noticeable on glass and cutlery as well as on items made from stainless steel.

Too much rinse aid leaves smear marks. As a result, the dishes look and feel greasy.

Setting Guide

Set dial to approximately mid position. From experience it is advisable to start with too little and to increase the amount until perfect results are obtained. This can be verified by holding the plate surface horizontal to incidental light at eye level. An even shine should be observed.
The automatic rinse aid dispenser should then be adjusted accordingly.

2. Opening and closing door during drying

occur during hand washing but by using lower wash temperatures and milder detergents the effect takes longer to show.

2. Etched glassware can also be attributed to 100% softened water that is produced from a water softening plant that may be installed in the home. In this instance the customer can negotiate with the manufacturer of the softening plant to install a by-pass system to feed back approximately 5° of hardness into the water supply, or put the appliance back on to the mains water supply and use salt as required.

H. CUTLERY TARNISHING / DISCOLOURING

1. Silver cutlery tarnishes when exposed to air. Stainless steel cutlery may show a coating on its surface after several washes if water has been allowed to evaporate on it, e.g. if incorrect dose of rinse aid is used. Electrochemical reactions also have an effect and mixing various grades of stainless, bronze plated and silver cutlery will cause problems.

2. Nickel Silver (German Silver) is an alloy of copper, nickel and zinc, and when subjected to heat in dishwashing solutions the metal acquires a yellow colour. Maintaining this alloy in attractive condition requires frequent polishing and it should not be washed in a dishwasher.
3. Pits and rust marks on stainless steel cutlery can usually be attributed to inferior quality stainless steel or the finished article not being highly polished during manufacture.

   Certain food soils have a damaging effect on the protective coating of stainless steel, particularly foods containing vinegar, fruit and ordinary table salt.
   It should be noted that stainless steel should not be left in the humid atmosphere of the dishwasher for too long after the end of the programme, since this denies the protective coating the healing effect of oxygen.
4. Bronze or bronze plated cutlery is subject to rapid tarnishing and should not be washed in the dishwasher.

J. ALUMINIUM COOKING UTENSILS

Bright aluminium utensils may discolour or tarnish due to alkaline attack caused by certain minerals in the water. Removing these utensils before the final heated rinse should prevent further problems.

M. RAINBOW COLOURING ON STAINLESS STEEL INTERIOR AND COOKING UTENSILS

Usually caused by consistent underdosing of detergent, particularly if liquid detergent is being used.

N. BLACK MARKS ON CHINA

Usually caused by metal marks from spoons and knives. It can normally be removed by soaking the china in a mild bleach solution and washing or by gently rubbing with metal polish, wiping dry then washing.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