



Technical Information

Touchtronic Clothes Washers

Includes: W1113, W1119, W1203, W1213, W1215

Touchtronic Clothes Washers – Table of Contents

A	Warning and Safety Instructions	7
1	General Information	7
B	Modification History	8
C	Technical Data	9
D	Layout of Electrical Components	11
010	Casing, Front Panel and Lid	12
1	Technical Data	13
2	Function	13
3	Fault Repair	13
4	Service	14
4.1	Lid - Removal	14
4.2	Plinth - Removal	14
4.3	Front Panel - Removal.....	14
4.4	Side Panel - Removal.....	15
020	Door and Door Lock	16
1	Technical Data	17
2	Function	17
2.1	Electro-Mechanical Door Lock.....	17
3	Fault Repair	17
4	Service	17
030	Suds Container, Drum, Bearing and Heater Element	18
1	Technical Data	19
2	Function	20
2.1	Overheating Protection.....	20
2.2	Temperature Sensor NTC	20
2.3	Foam Sensing	21
2.3.1	Excess Foam When Heating During Main Wash.....	21
2.3.2	During Rinsing Excess Foam in the Drum Vent or Order Trap	21
2.3.3	During Spinning Excess Foam in the Drum	21
2.4	Imbalance Sensing	21
3	Fault Repair	22

Touchtronic Clothes Washers – Table of Contents (continued)

4	Service	22
4.1	Temperature Sensor - Removal	22
4.2	Heater Element Replacement.....	23
4.3	Door Seal - Removal	24
4.4	Imbalance Sensor - Removal	24
040	Water Intake	25
1	Technical Data	26
2	Function	26
2.1	Water Path Control System	26
3	Fault Repair	27
3.1	Spin Before First Water Intake Not Possible	27
4	Service	27
4.1	Detergent Dispenser Removal.....	27
4.2	Water Path Control System - Removal.....	28
050	Drainage	29
1	Technical Data	30
2	Function	30
2.1	Increasing Drain Pump Head Height to 1.8M.....	30
3	Fault Repair	30
4	Service	31
4.1	Drain Pump - Removal	31
4.2	Non-return Valve - Removal	32
060	Drives.....	33
1	Technical Data	34
2	Function	34
2.1	Motor Control.....	34
3	Fault Repair	35
4	Service	35
4.1	Main Motor - Removal	35
4.2	Motor Module - Removal	35
4.3	Motor Brush - Replacement	36
070	Fascia Panel and Controls	37
1	Technical Data	38
2	Function	38
2.1	Fault Dialogue	38
3	Fault Repair	38
3.1	Fault Indication - Quick Reference	38
3.2	Check Inlet and Drain LED's Flash Together	40
3.3	Digital Display Shows: – – –	40
3.4	Fault Code F1 NTC Sensor Short-Circuited	41

Technical Information

Touchtronic Clothes Washers – Table of Contents (continued)

3.5	Fault Code F2 NTC Sensor Open-Circuited	41
3.6	Fault Code F10 Water Intake	42
3.7	Fault Code F11 Water Drainage.....	43
3.8	Fault Code F15 Hot Water Intake.....	44
3.9	Fault Code F16 Excess Foam	45
3.10	Fault Code F20 Heating	45
3.11	Fault Code F41 Faulty EEPROM / Data Fault	46
3.12	Fault Code F43 Control/Power Electronic Incompatible	46
3.13	Fault Code F47 Control/Power Module Interface Fault.....	46
3.14	Fault Code F51 Pressure Sensor	47
3.15	Fault Code F53 Tachogenerator.....	47
3.16	Fault Code F63 Water Path Control Unit	48
3.17	Fault Code F65 Drum Light Assembly Fault.....	48
3.18	Locked LED Lights Up.....	49
3.19	Locked LED Flashing	49
4	Service	50
4.1	Programming Mode	50
4.2	Demonstration Mode Activation/Deactivation	57
4.3	Service Mode	58
090	Electrical System, Power Module and Heater Relay	64
1	Technical Data	65
2	Function	65
2.1	Heater Relay - Switching	65
3	Fault Repair	65
4	Service	66
4.1	Power Electronic - Removal	66
4.2	Heater Relay - Removal	67
4.3	Interference Suppression Filter - Removal	67

Touchtronic Clothes Washers – List of Figures

D-1: Layout of Components	11
010-1: Layout of Components	13
030-1: Imbalance sensor.....	21
030-2: Heater Element Replacement	24
040-1: Water Path Control System(Close-Up)	26
040-2: Water Path Control System.....	28
050-1: Drain Pump - Removal.....	31
060-1: Pulse Width Modulation Motor Speed Control	34
060-2: Main motor Assembly.....	35
060-3: Motor Brush - Replacement	36
070-1: Drum Lamp Assembly.....	48
090-1: Power Electronic - Removal.....	66

Touchtronic Clothes Washers – List of Tables

C-1: Technical Data (1 of 2)	9
C-2: Technical Data (2 of 2)	10
C-3: Overview of Model Numbers	10
C-4: Electrical information	10
030-1: Technical Data	19
030-2: Temperature Sensor Values	20
040-1: Water Path Control System	26
050-1: Drain Pump Specifications.....	30
070-1: Fault Indication Quick Reference	39
070-2: Fault Indication Quick Reference - Continued.....	39
070-3: Programming Functions	51
070-4: Programming Functions Continued.....	52
070-5: Programming Functions Continued.....	53

Technical Information

Touchtronic Clothes Washers – List of Tables (continued)

070-6: Programming Functions Continued.....	54
070-7: Programming Functions Continued.....	55
070-8: Programming Functions Continued.....	56
070-9: Service Mode	61
070-10: Service Mode	62
070-11: Service Mode	63

A Warning and Safety Instructions

1 General Information

Service of this appliance should only be performed by qualified personnel; in accordance with local and national codes.

Power should be disconnected from the appliance during service procedures. Unplug the appliance or shut off the appropriate circuit breaker.

Technical Information

B **Modification History**

04/2004

Miele USA

Preliminary Information

C Technical Data

Casing	Version	Frontloader
		Spaceframe construction
	Fascia panel version	Light-touch buttons
	Door lock	Electromagnetic release
	Drum	Honeycomb drum
	Drum diameter	480 mm (18.9 in.)
Suds container	Maximum load, dry laundry	5 Kg (11.02 lbs) – W1113 and W1119 6 Kg (13.23 lbs)– W1203, W1213 and W1215
	Drum opening dimensions	300 mm (11.81 in)
Water path	Water intake	Cold water connection: Water Path Control Unit and single solenoid valve
		Hot water connection: Single solenoid valve
	Drainage	240VAC Drain Pump
Drive	Belt drive	Ribbed drive belt, motor spindle diameter: 27.5 mm (1.08 in.), axis-center difference: 366 mm (14.41 in.), gearing (no. of motor rotations for one drum rotation): 10.6
	Electric motor	DC series-wound motor
	Control	Pulse-width modulated (PWM) DC
	Speed monitoring	Tachogenerator

Table C-1: Technical Data (continued on Table C-2)

Technical Information

Control technology	Control panel/display module	Control panel/display module with light-touch buttons
	Control/Power module	Novotronic IV Midi. Software update feature via serial optical PC interface
Wash technology	Process technology / Drum rhythm	Hydromatic IV D, program update feature available
	Load monitoring	Displacement sensor (inductive) (optional)
	Level monitoring	Analog Pressure Sensor (ADS) integrated on the control/power module (SLT)
	Suds temperature sensor	NTC (R30)
	Rinse sensor	The suds temperature sensor also functions as the rinse sensor
	Imbalance monitoring	Speed-imbalance recognition
Imbalance sensor. Present only on models with spin > 1400 rpm.		

Table C-2: Technical Data (continued from Table C-1)

Overview of Models

Model Number	Capacity	Lbs.	Additional Information
W1113	5 Kg	11.02	Angled Controls
W1119	5 Kg	11.02	Flat Controls Full Décor Panel
W1203	6 Kg	13.23	Flat (No delay)
W1213	6 Kg	13.23	Angled Controls
W1215	6 Kg	13.23	Angled Controls, Stainless Steel

Table C-3: Overview of model numbers

Electrical Information

Electrical Requirements	Electrical Connection
120/240 (208) VAC (4 wire connection) 60 Hz, 15amp Circuit	NEMA 14-30 Molded Plug (Do not remove)

Table C-4: Electrical information

D Layout of Electrical Components

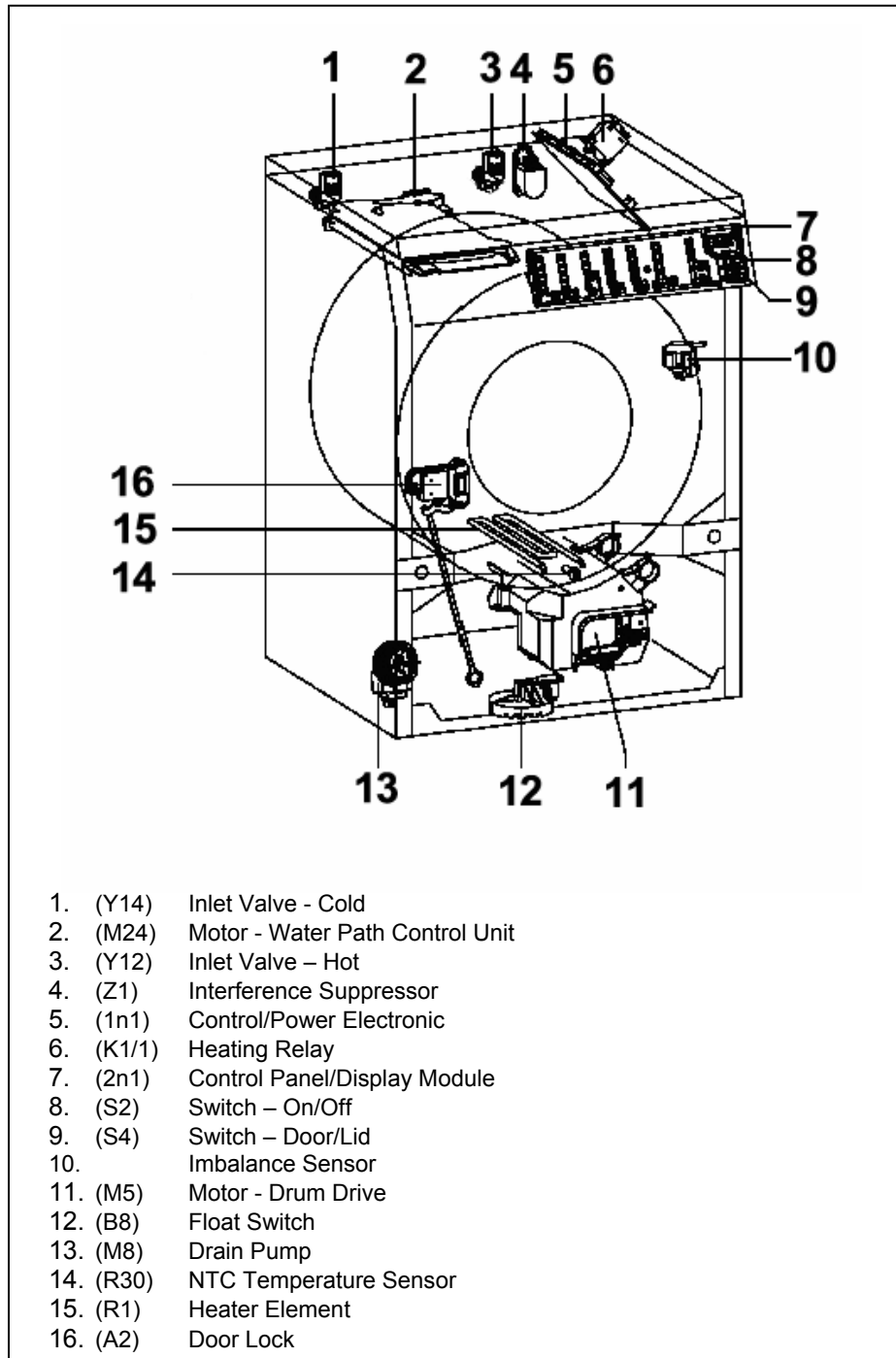
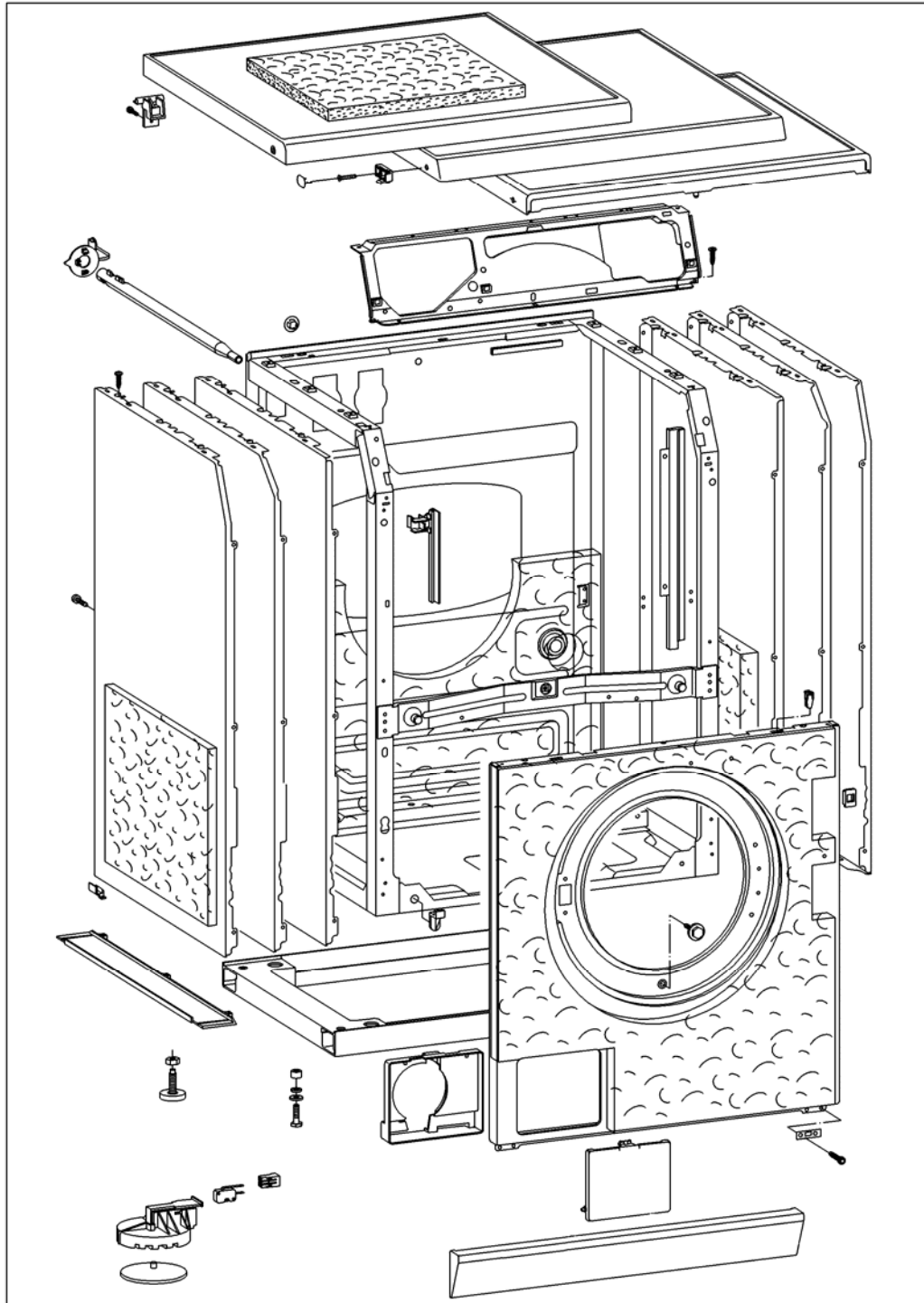


Figure D-1: Layout of Components

010 Casing, Front Panel and Lid



5279000-010

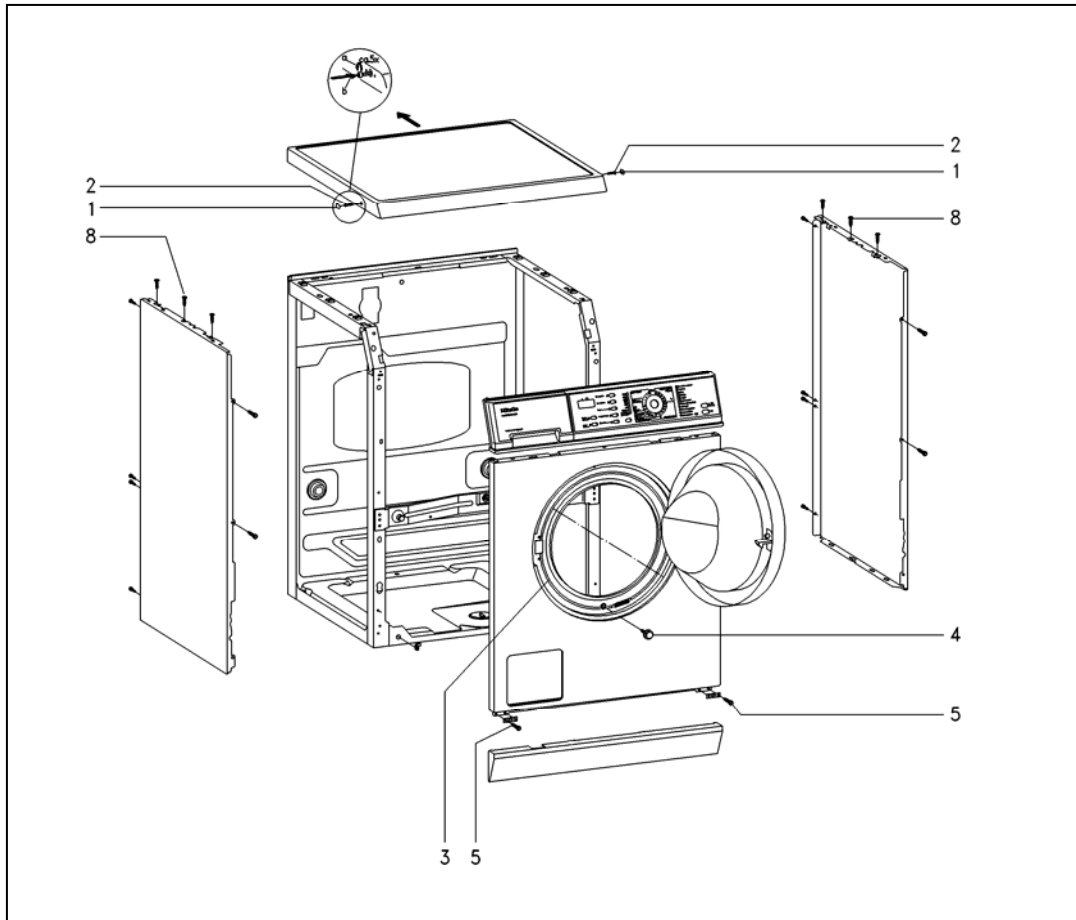


Figure 010-1: Layout of Components

- 1** **Technical Data**
n/a

- 2** **Function**
n/a

- 3** **Fault Repair**
n/a

Technical Information

4 Service**4.1 Lid - Removal**

1. Remove the screw caps from the lid side edges.
2. Loosen the lid screws about 4 to 5 turns – max. Do not completely remove the screws.
3. Press the screws in to release the retaining tabs. Lift the lid at the front, slide it to the rear and lift from appliance to remove.

4.2 Plinth (Toekick) - Removal

1. From the bottom of the toekick, apply pressure upward
2. Pull the toekick away from the appliance.

4.3 Front Panel - Removal

1. Remove the Plinth (010 4.2)
2. Open the door.
3. Remove the clamping ring, that secures the sealing to the front cover.
4. Unfasten the sealing ring and fold it back towards the drum.
5. Remove the Door Lock screws.
6. Remove the 10mm Bolt.
7. Close the door.
8. Remove the two screws from the bottom corners of the front panel.
9. Hold the sides of the front panel, tilt the bottom edge forwards and pull gently to release it from the plastic lugs on the Control Panel Frame.
10. Lift the panel away from the front of the appliance.

4.4 Side Panel - Removal

1. Remove the Lid (010 4.1).
2. Remove the Front Panel (010 4.3).
3. Remove the three screws from the rear edges of each panel, Figure 010-1.

Warning!

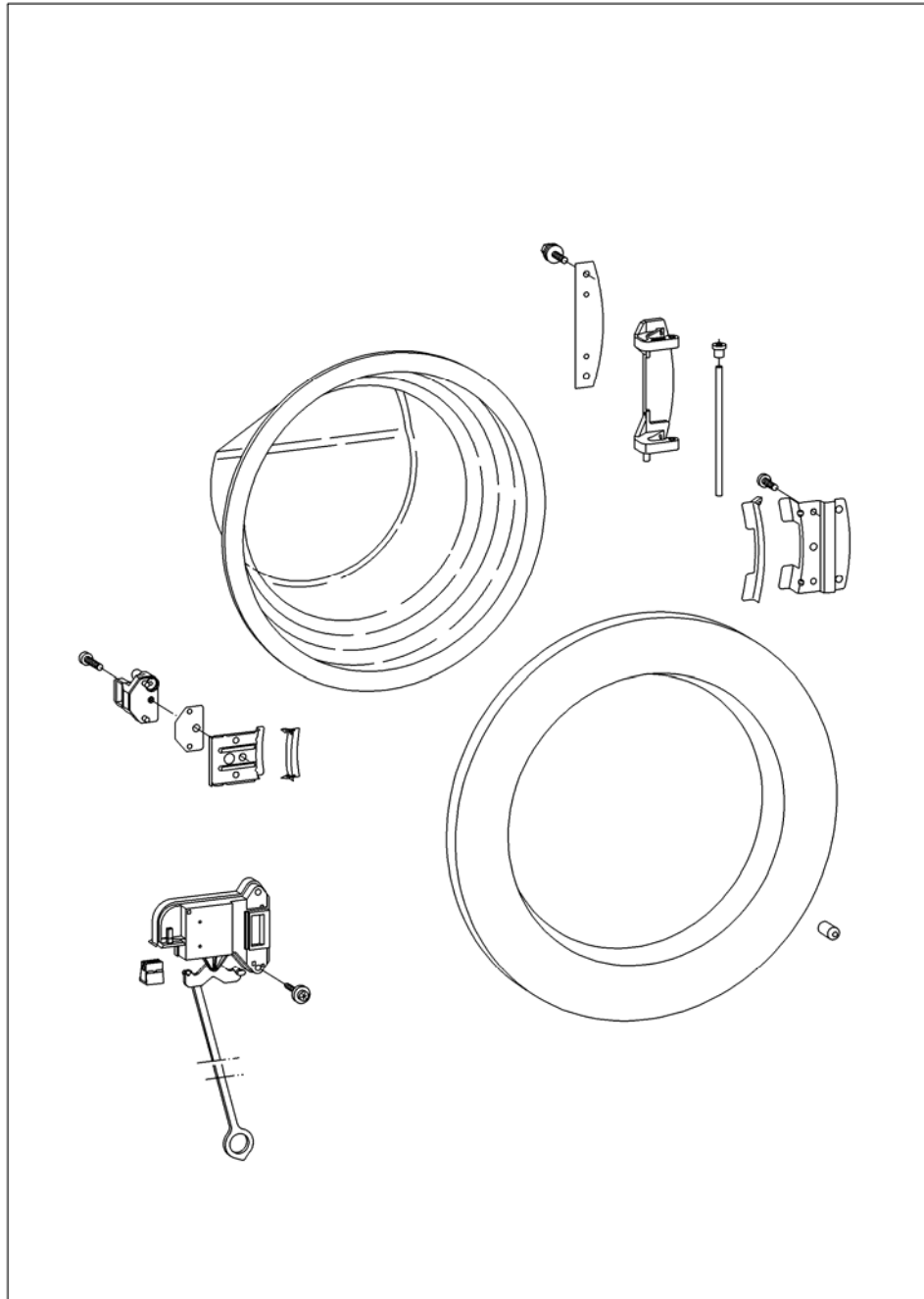
The 2 middle screws / washers provide the grounding for the side panels – ensure the screws are secured during re-assembly.

4. Remove the three screws from the top edge of each panel.
5. Remove the three screws from the front edge of each panel.
6. Pull out the top of the side panel slightly.
7. Push down the panel to unclip it from the bottom of the frame.

Note

To refit the side panel, support the panel while holding against the underside of the bottom frame at an angle. Lift the panel into position and align the top edge of the panel to the frame.

020 Door and Door Lock



5279000-020

1 Technical Data

n/a

2 Function

2.1 Electro-Mechanical Door Lock

- The door lock cannot be opened if any of the following exist:
- Drum speed is above 7 rpm (measured by the Tachogenerator)
- Water is present (measured by the Level Switch / Electronic)
- The drum temperature is above 131°F (55°C) (as measured by the Temperature Sensor and Electronic).

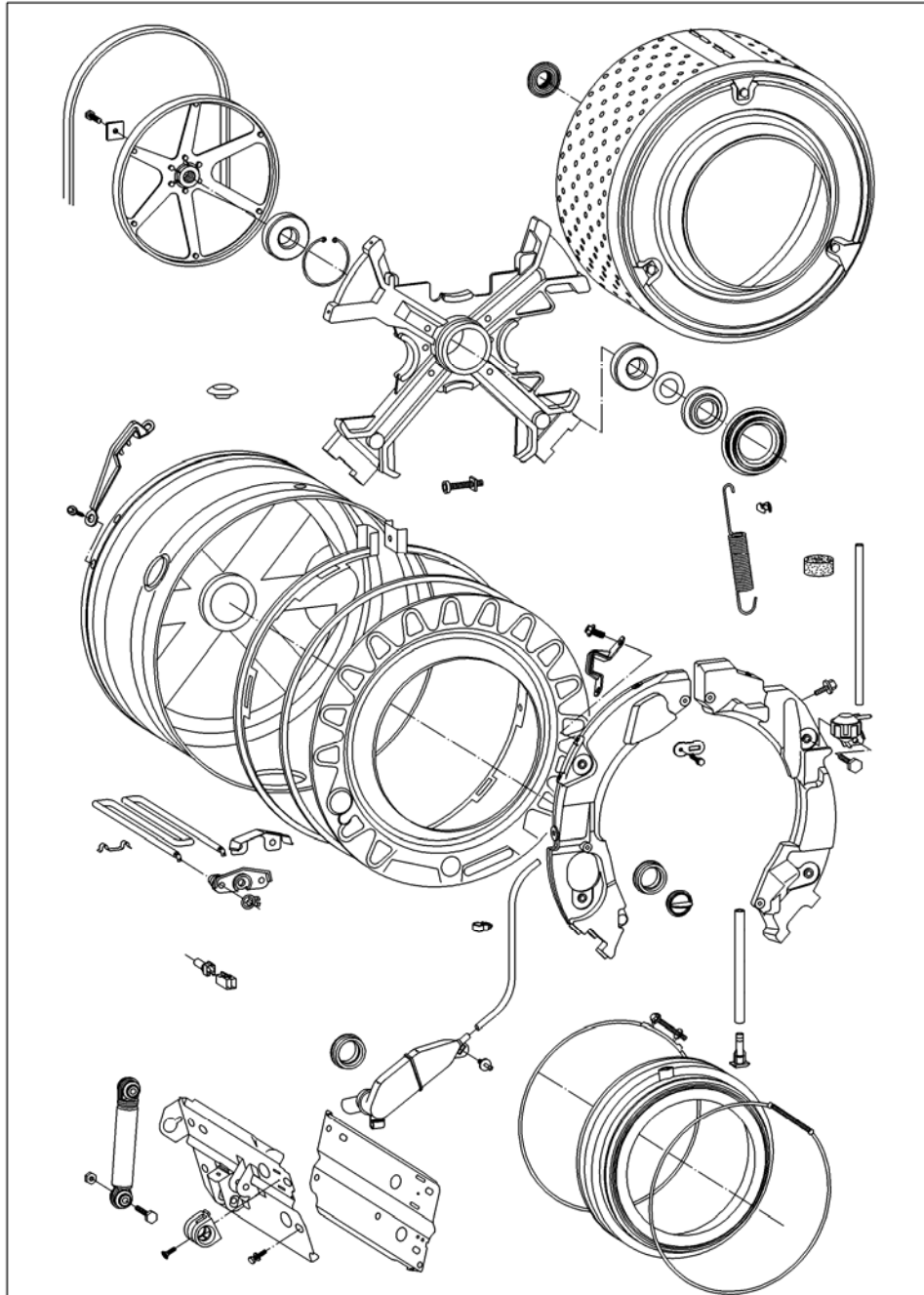
3 Fault Repair

n/a

4 Service

n/a

030 Suds Container, Drum, Bearing and Heater Element



1 Technical Data

Sub-assembly	Version	Material	Electrical Data
Drum	Micro-perforated drum with aluminium flange	Stainless steel 1.4520	-
Suds Container	Suspended stainless steel suds container	Stainless steel 1.4520	-
Bearing Cross		Cast iron	-
Drum Counterweight		Cast iron	-
Drum Shaft Bearing	Deep-groove ball bearing TMB 306 ZZ 30x72x19, TMB 305 ZZ 25x62x17		-
Heater Element	Tubular Heater element with integrated safety temperature limiter	Surface nickel-plated	240 (208) VAC 2100 watts

Table 030-1: Technical Data

Technical Information

2 Function

2.1 Overheating Protection

In the event the Heater Element remained powered (i.e. Heating Relay contacts stuck closed), the Heater element is equipped with an overheating protection device. Should the overheat device trip, the Heater Element (as an assembly) must be replaced.

2.2 Temperature Sensor (NTC)

The NTC Temperature Sensor is fitted within Heater Element Seal and is responsible for measuring the water temperature inside the appliance. The Sensor is a Negative Thermal Coefficient design (NTC), as the temperature increases the resistance decreases.

Temperature (°C)	Resistance (kΩ)
0	38.0
5	29.7
10	23.4
15	18.6
20	14.9
25	12.0
30	9.73
35	7.96
40	6.55
45	5.42
50	4.52
55	3.78
60	3.19
65	2.70
70	2.29
75	1.96
80	1.68
85	1.45
90	1.25
93	1.15
95	1.09
100	1.06

Table 030-2: Temperature Sensor Values

2.3 Foam Sensing Operation

2.3.1 Excess foam detected when heating during the main wash
During heating, the Level Switch monitors for an increase in pressure. Should this occur, the heating is switched off – regardless of the temperature reached. The Thermostop step is skipped and no indication of the fault occurs.

2.3.2 Excess foam detected during rinsing
During water intake steps, the Level Switch monitors for higher than expected increases in pressure. Should the pressure become excessive; the Water Intake Solenoid Valve(s) are switched off for a periods of time.

2.3.3 Excess foam detected during spin
During a spin, the Level Switch monitors for a higher than expected pressure (based on the spin speed setting). Should a higher than expected pressure be detected, the spin speed is reduced or interrupted. An additional rinse cycle is then automatically added to the program.

2.4 Imbalance Sensing

The Electronic monitors for in imbalance condition by:
Monitoring the pulses being sent from the Tachogenerator.
Monitoring changes in pressure from the Imbalance Sensor.

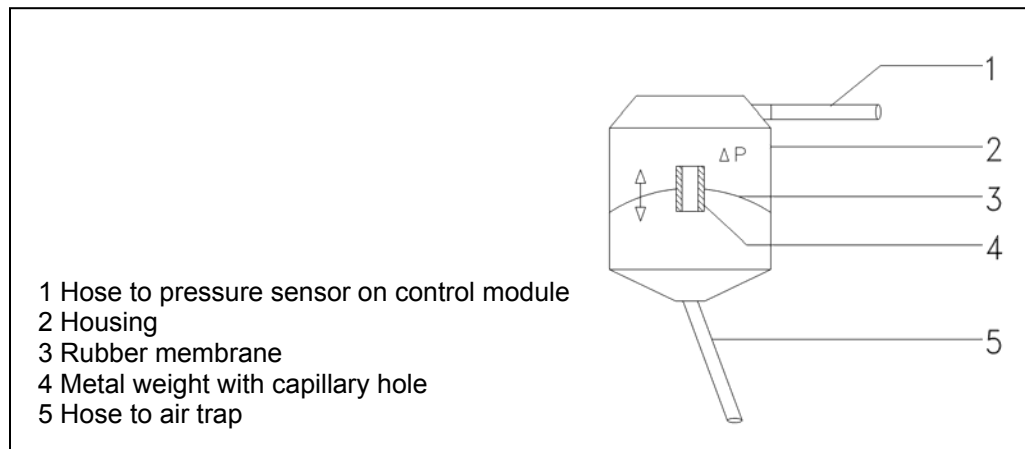


Figure 030-1: Imbalance sensor

Technical Information

The Imbalance Sensor uses a rubber membrane that contains a metal weight. Erratic movements of the suds container cause the imbalance weight to move and change the pressure signals being produced by the sensor. The pressure signals are measured three times during the spin to establish an average value.

The Electronic then compares this averaged value to the pulses being received from the Tachogenerator. Should the Electronic detect an imbalance condition, the spin speed is reduced accordingly.

Note

If the Imbalance Sensor fails, a fault will not be not stored, or displayed. The Electronic will then rely on the Tachogenerator pulses to monitor for any imbalance conditions.

3 Fault Repair

n/a

4 Service**4.1 Temperature Sensor - Removal**

1. Remove the Front panel (010 4.3)
2. Drain the appliance of excessive water.
3. Disconnect the NTC Temperature Sensor connection.
4. Pull out the NTC Temperature Sensor.

4.2 Heater Element - Replacement

Danger

The appliance must be unplugged from the wall outlet or the circuit breaker must be shut off before during replacement of any Heater circuit component(s). 240VAC is still present within this circuit, even with the appliance switched to the Off position.

1. Refer to Figure 030-2.
2. Remove the Temperature Sensor (030 4.1)
3. Disconnect the Heater Element electrical connections.
4. Using suitable pliers, grasp the Heater Element Seal (where the Temperature Sensor was). Pull the Heater element straight out with the seal (1).
5. Remove the remaining hardware (two washers and drip protection device).

Note

Should the Heater Element require replacement; a new seal with retaining washers must be installed.

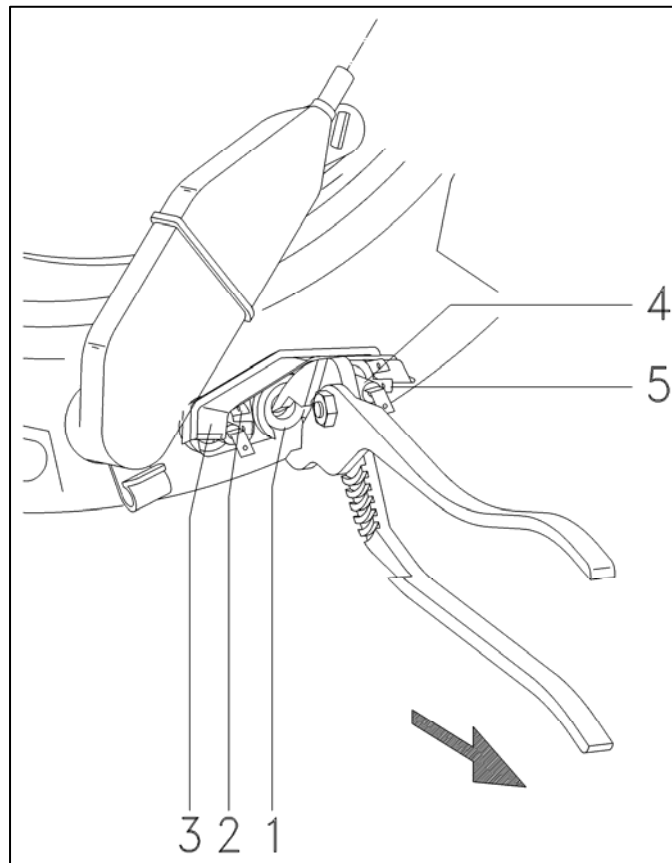
6. Slide the seal onto the Heater Element.
7. Slide the Heater Element into position; ensure it engages the retainer clip in the suds container.

Note

A small amount of liquid soap can be used to help seat the seal into its opening.

8. Ensure the seal is fully seated.
9. The Heater Element body should protrude about 3/4 " from the seal.
10. Refit the drip protection device (3), and new washers.
11. Refit the Temperature Sensor and make the electrical connections.

Technical Information

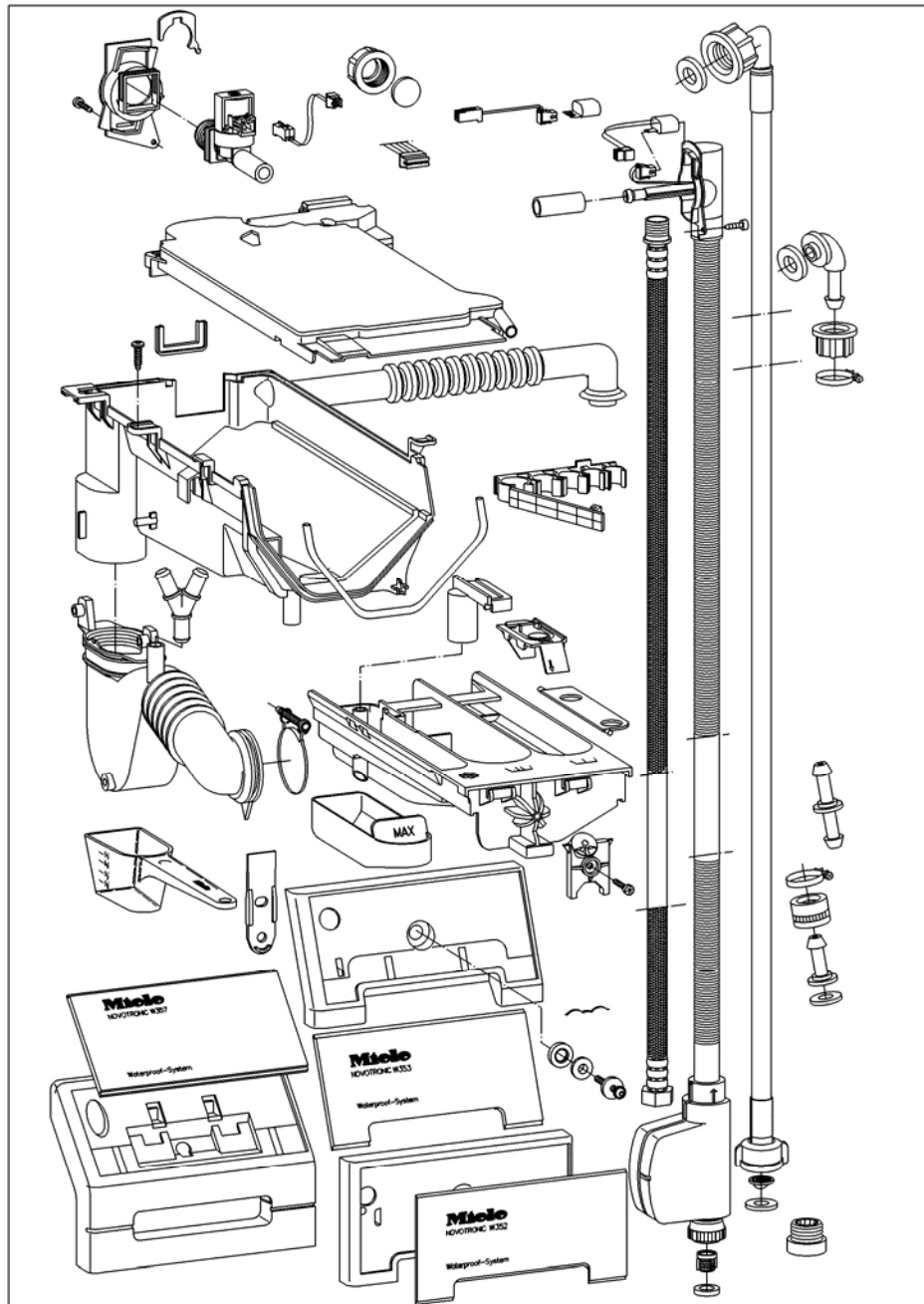
**Figure 030-2:** Heater Element Replacement**4.3 Door Seal - Removal**

1. Remove the Front Panel (010 4.3)
2. Unscrew the Seal Clamp Ring from the suds container.
3. Remove the water inlet hose.
4. Remove the Light Assembly.
5. Remove the Seal from the suds container.

4.4 Imbalance Sensor - Removal

1. Remove the Front Panel (010 4.3).
2. Remove the Imbalance Sensor retaining screws.
3. Disconnect the hose connections.
4. Remove the Imbalance Sensor.

040 Water Intake



5279000-040

Technical Information

1 Technical Data

n/a

2 Function

2.1 Water Path Control System

The Water Path Control System uses a single Cold Water Valve that opens during all needs for cold-water. The incoming cold water supply is routed to the Dispenser Assembly where a distributor tube (driven by a geared synchronous motor) sends the water to the appropriate dispenser. The position of the distributor tube is monitored by the Electronic via several contacts within the Water Path Control System Unit.

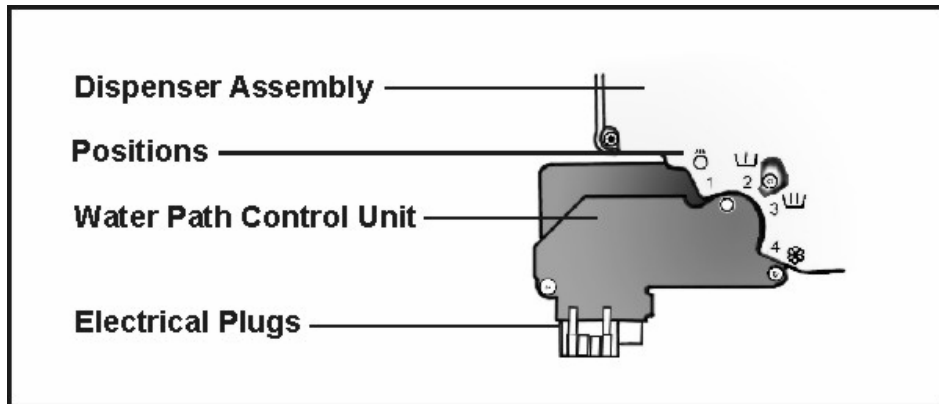


Figure 040-1: Overview of Water Path Control System

Water Path Control System	
POSITION	WATER PATH FLOW
1	Door glass
2	Pre-wash compartment
3	Main wash compartment
4	Starch / Fabric Softener

Table 040-1: Water path control system -

3 Fault Repair

3.1 Spin before first water intake not possible

Reason

Water intake to at least level 1 has not occurred.

Warning!

Spinning is only possible after the first water intake to at least level 1 has taken place. Blocking the spin function prevents a spin from being carried out with the transport struts in place. Usually the first water intake occurs only after the entire appliance has been installed including the removal of the transport struts.

Refer to the Miele Installation Manual for further details on installation procedures.

4 Service

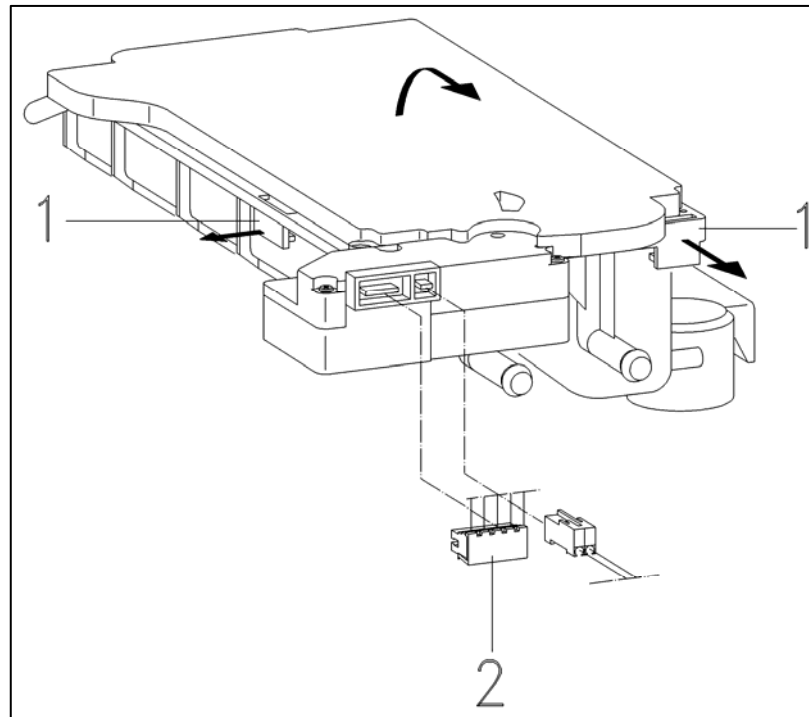
4.1 Detergent Dispenser - Removal

1. Remove the Dispenser Drawer.
2. Disconnect the electrical connections from the Water Path Control System.
3. Disconnect the Non-Return Valve and Suds Container Vent Hoses from the Dispenser Assembly.
4. Disconnect the Concertina Hose from the Dispenser Assembly.
5. Remove the two retaining screws.
6. Pull the Dispenser Assembly toward the rear of the appliance, lift it upward to remove it from the appliance.

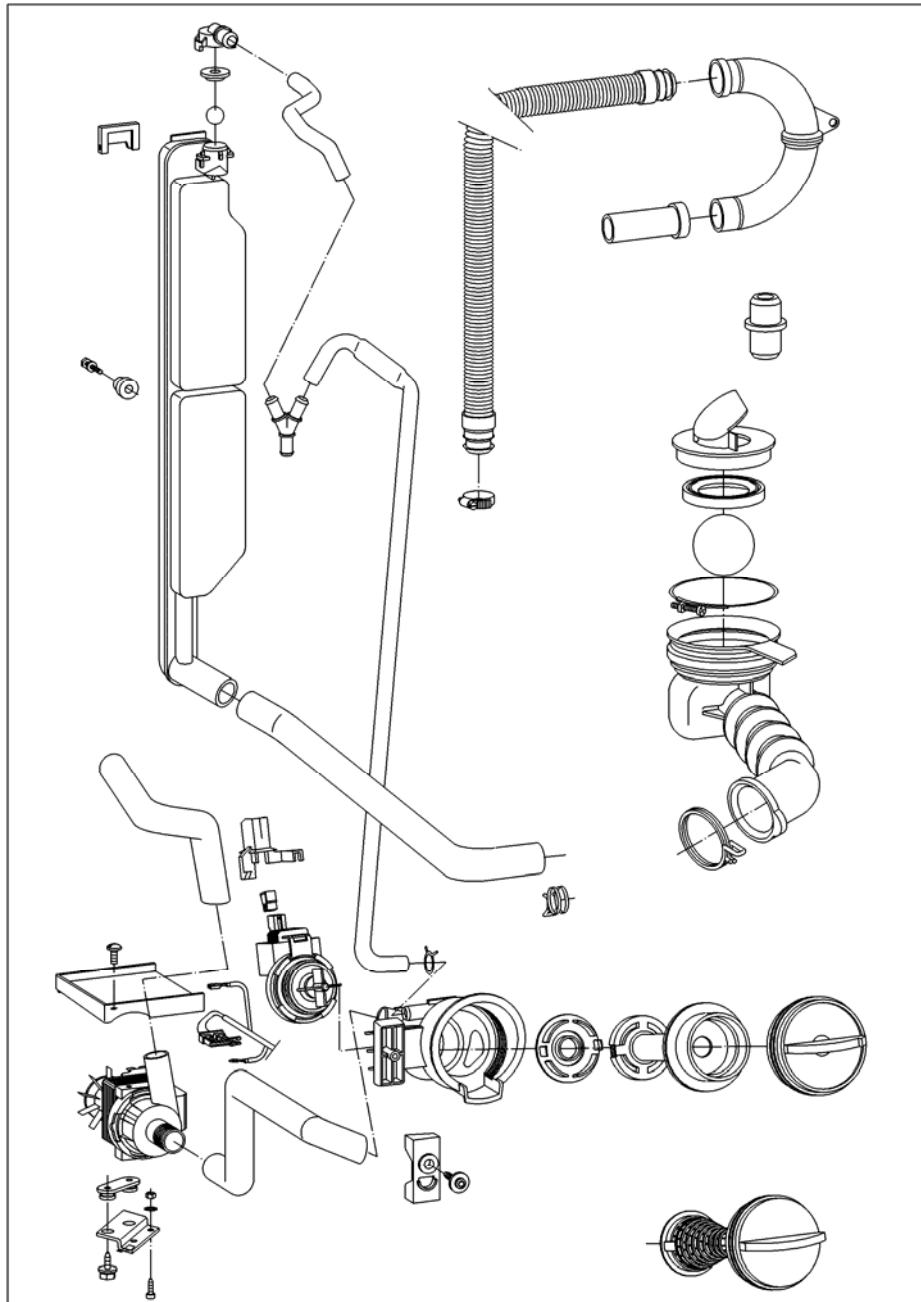
Technical Information

4.2 Water Path Control System - Removal

1. Refer to Figure 040-2.
2. Disconnect the Electrical Connections.
3. Remove the screws from the Dispenser Assembly top cover.
4. Remove the retaining clips (1), from the top of the Dispenser Assembly. Lift the top cover and remove it to the rear.
5. Remove the Water Path Control System.

**Figure 040-2:** Water Path Control System

050 Drainage



Technical Information**1 Technical Data**

Synchronous Drain Pump	
Voltage	240 (208) VAC (60 Hz)
Power rating	35 W
Max. drain hose length	5 m (about 16 ft.)
Max. head height	1 m (about 3 ft.)

Table 050-1: Drain Pump specifications**2 Function****2.1 Increasing drain pump head height to 6 ft**

To increase the Drain Pump head height to 6 ft., a second Drain Pump can be fitted. See the spare parts list for details of the conversion kit.

3 Fault Repair

n/a

4 Service

4.1 Drain Pump - Removal

1. Place a suitable pan under the area of the filter to catch water.
2. Slowly turn the filter counterclockwise, allow water to drain from the appliance. Do NOT completely remove the filter.

Note

To stop the water from flowing during manual draining, tighten the filter clockwise.

3. When no more water drains from the appliance via the filter; remove the filter by unscrewing it counterclockwise from the appliance.
4. Remove the front panel (010 4.3).
5. Disconnect the electrical connection on the Drain Pump.
6. Refer to Figure 050-1.
7. Release the retaining clip (small arrow).
8. Turn the Drain Pump about 30° in the direction of the large arrow and remove it from the filter housing.

Note

After refitting the drip protector, route the wiring into the holder.

Warning!

When activating the Drain Pump the first time after replacement, it may not start automatically without water in system. Should this occur, the Drain Pump impeller can be turned slightly with a screwdriver. Do not attempt to spin the impeller with your finger.

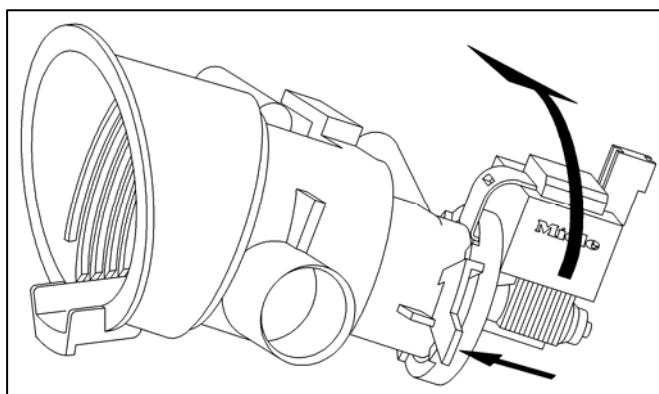


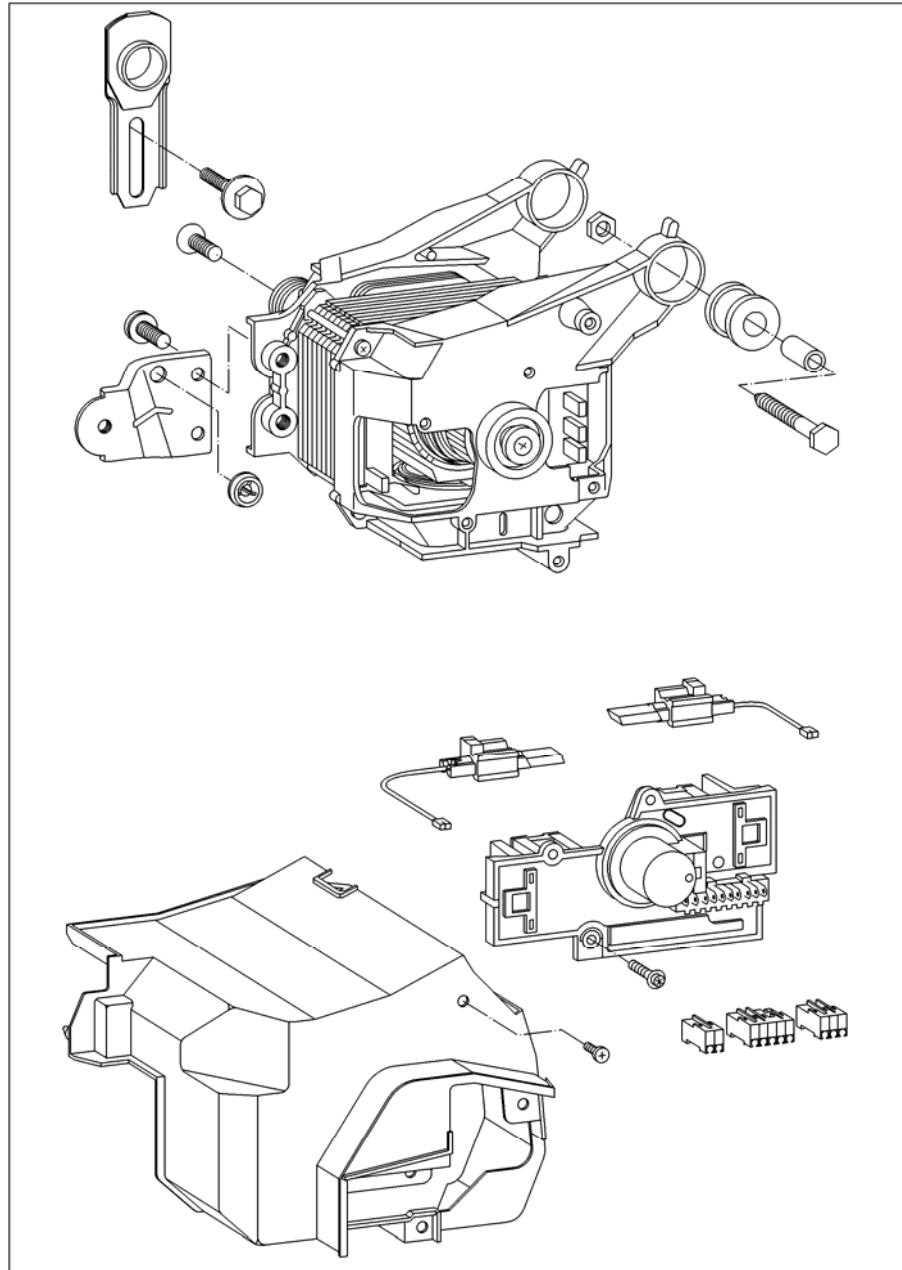
Figure 050-1: Drain Pump removal

Technical Information

4.2 Non-return Valve - Removal

1. Remove the Left Side Panel (010 4.4)
2. Remove the Drain Hose from the Non-Return Valve.
3. Remove the retaining screw from the Rear Panel.
4. Remove the Vent Hose to the filter (from the Non-Return Valve).
5. Pull out the Non-Return Valve retainer from the rear panel.
6. Push the entire Non-Return Valve Assembly downwards and remove it to the side.

060 Drives



5279000-060

Technical Information

1 Technical Data

Main Motor: DC variable speed (see 2.1 for details on control)

2 Function

2.1 Motor Control

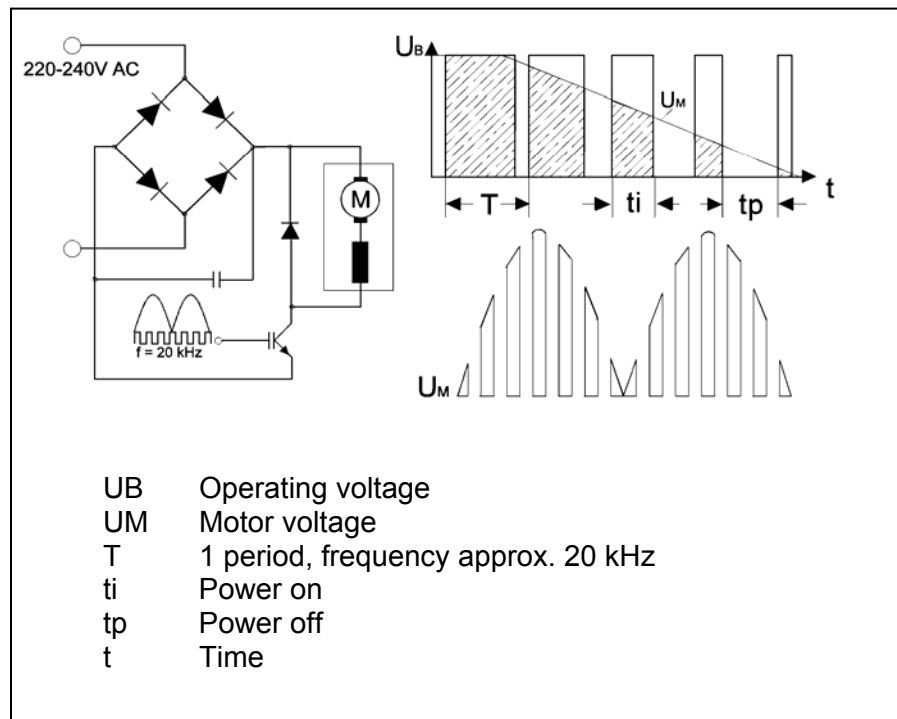


Figure 060-1: Pulse width modulation motor speed control

A bridge rectifier circuit on the power electronic provides the DC voltage supply for the motor. Pulse Width Modulation (PWM) circuitry controls the DC voltage by varying the duration of power (on / off in pulses) provided to the motor.

The proportion of **ti** (DC pulse on) and **tp** (DC pulse off) controls the motor speed. A tachogenerator (on the motor) monitors the speed of the motor.

3 Fault Repair

n/a

4 Service

4.1 Main Motor - Removal

1. Remove the Front Panel (010 4.3).
2. Refer to Figure 060-2.
3. Disconnect the electrical connections (4).
4. Release the wiring harness retainer from the motor cover.
5. Remove the retaining bolts (1, 2 and 6).
6. Remove the drive belt from the motor pulley.
7. Remove the motor toward the front.

4.2 Motor Module - Removal

1. Remove the Front Panel (010 4.3)
2. Refer to Figure 060-2.
3. Disconnect the electrical connections (4).
4. Release the wiring harness retainer from the motor cover.
5. Unscrew the motor cover and remove it.
6. Unscrew the module fixing screws (5), and remove the module.

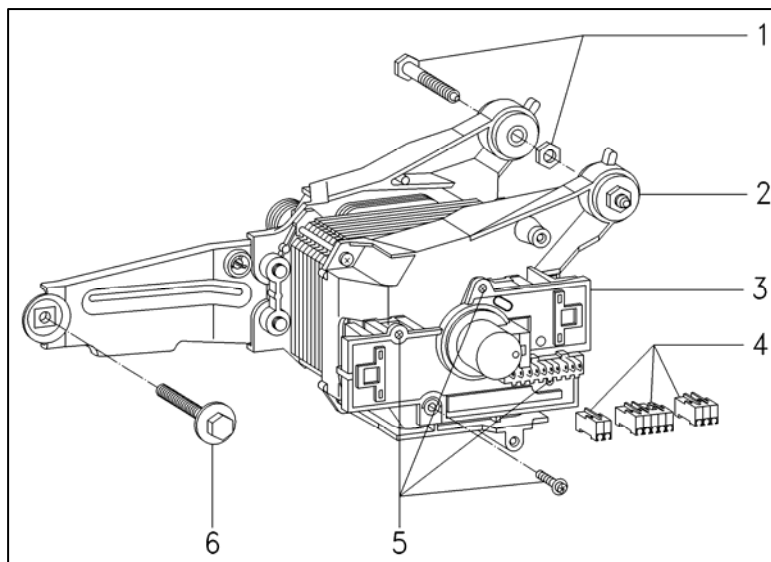


Figure 060-2: Main motor assembly

Technical Information

4.3 Motor Brush - Replacement

1. Remove the Motor Module (060 4.2)
2. Refer to Figure 060-3.
3. Press the retainers (1), together and remove the brush holder cover.
4. Disconnect the wires (2), and exchange the brushes.

Note

Always exchange the brushes in pairs.

Warning!

Refer to Figure 060-3. The brushes (4), must be pressed back into their guides (3). A retaining clip will hold them until the module is completely installed. The brushes can then be released by lightly pressing the back of the brushes using a small screwdriver or similar tool.

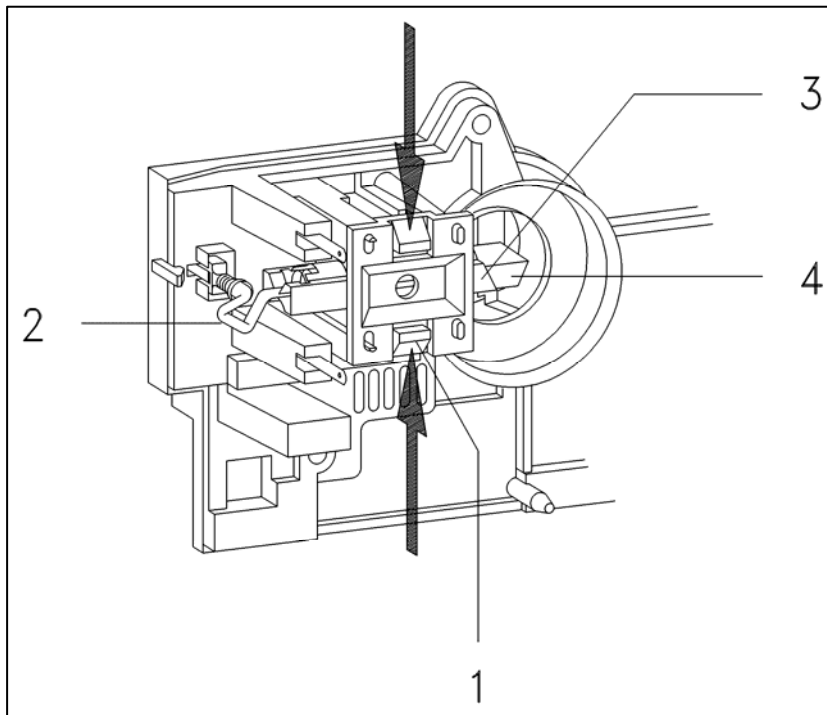
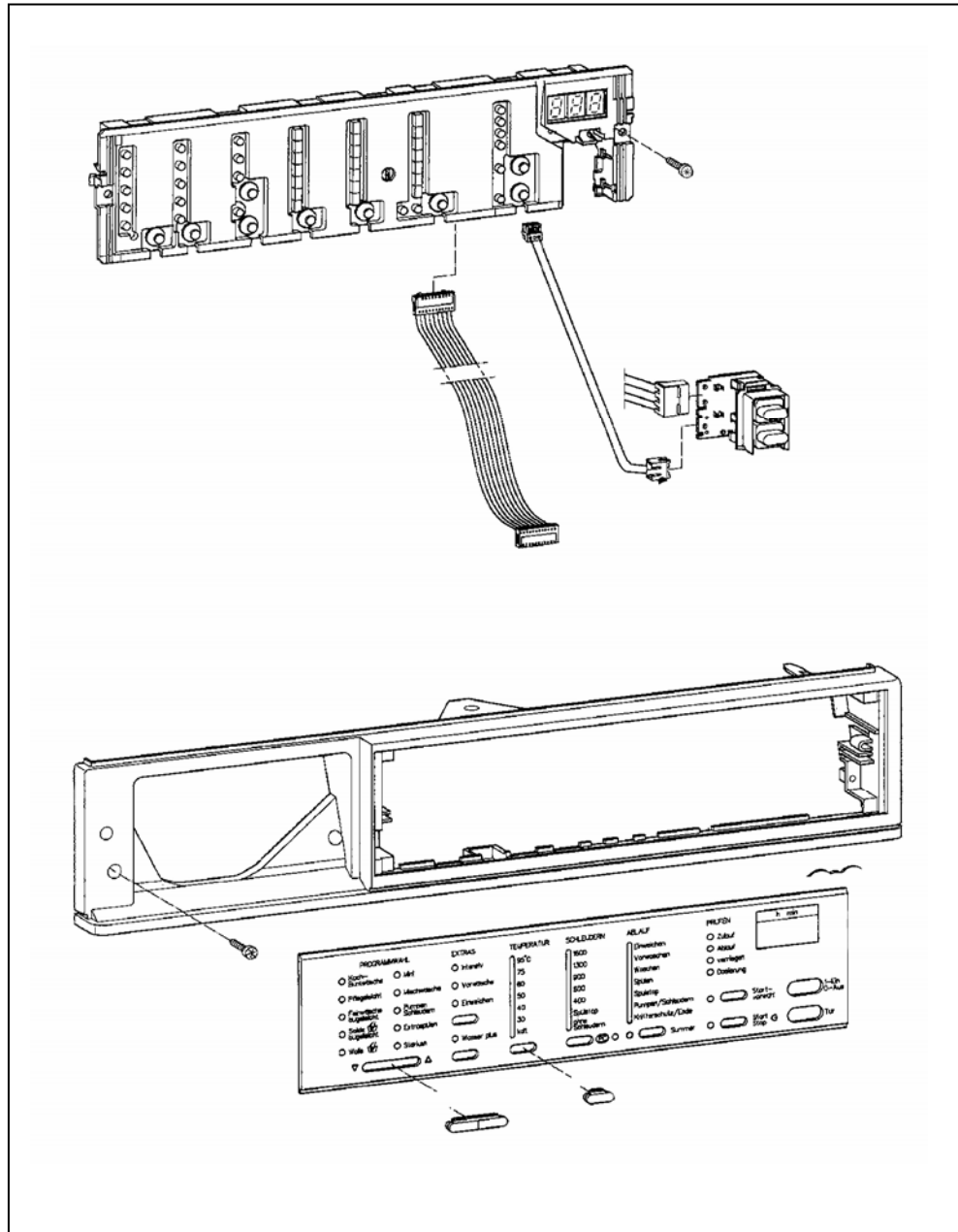


Figure 060-3: Motor Brush - Replacement

070 Fascia Panel and Controls



Technical Information
1 Technical Data

n/a

2 Function**2.1 Fault Display**

The Electronics continuously monitor the status of a program. In the event of a fault; the electronic stores the information in the form of a code. Refer to 4.3 Service Mode for details on retrieving and clearing the fault codes.

In addition to the fault code being stored, certain conditions immediately alert the user via LEDs on the Fascia Panel. Refer to Tables 070-1 and 070-2 for detailed information on these fault indicators.

3 Fault Repair**3.1 Fault Indication - Quick Reference**

Condition Noted By User		Fault Code	Cause
LED	Digital Display		
-	-	F 0	No fault registered
No indicator(s) to the user – stored fault only	-	F 1	Temperature sensor (NTC) short-circuited
No indicator(s) to the user – stored fault only	-	F 2	Temperature sensor (NTC) open-circuited
Water inlet check LED flashes	-	F 10	Insufficient water intake
Drain check LED flashes	-	F 11	Insufficient drainage

Technical Information
Table 070-1: Fault Indication Quick Reference (continued on Table 070-2)

Condition Noted By User		Fault Code	Cause
LED	Digital Display		
-	-	F 15	Insufficient hot water intake
Excess detergent LED lights up	-	F 16	Excess foam
-	-	F 20	Heating
-	----	F 41	Electronic fault
-	----	F 43	Control & Power Electronic are incompatible
-	----	F 47	Control Electronic / Power Electronic interface fault.
-	-	F 51	Pressure sensor fault
-	-	F 53	Tachogenerator fault
Water inlet check LED flashes	----	F 63	Water intake fault
-	----	F 65	Drum Light Assembly Fault
Locked LED lights up	-	-	Electronic program lock
Locked LED flashes	-	-	Electronic lock function
Water inlet check and drain check LEDs flash	---	-	Float Switch in bottom of appliance has been activated.

Table 070-2: Fault Indication Quick Reference (continued from Table 070-1)

Technical Information

3.2 Check Inlet And Check Drain LEDs Flash Together**Symptom**

In normal operation mode on models with a digital display 3 dashes are displayed. The water intake valves are closed and the program is interrupted. The Drain Pump is activated for 120 seconds.

Cause

The Float Switch in the bottom of the appliance has switched; a leak has been registered by the Electronic unit.

Remedy

- Shut off the water supply.
- Remove water from drip tray
- Perform necessary service.

3.3 Digital Display Shows: - - -**Symptom**

During operation the digital display shows 3 dashes. The Water Intake Valves are closed and the program shuts down. The Drain Pump is activated for 120 seconds.

Cause

The Electronics contain a registered a fault.

Remedy

- Access the Service Mode and check for stored fault(s).
- If either Electronic was recently replaced, ensure the correct part number is installed and the appliance is programmed correctly.
- Check the electrical connection between the control/power module panel/Display Electronic.

3.4 **Fault Code F1, NTC Sensor Short-Circuited**

Symptom

Should the NTC Sensor Circuit contain a short circuit, the heating is switched off after about 10 seconds, however the program continues. If the fault occurs with hot water operation, the machine changes over to cold water operation.

Cause

NTC Temperature Sensor or its connections short-circuited.

Remedy

- Check the NTC Temperature Sensor in the service mode.
- Check the NTC Temperature Sensor for an open or short circuit.
- Check the NTC Temperature Sensor resistance.

3.5 **Fault Code F2, NTC Sensor Open-Circuited**

Symptom

The heating switches off after approximately 10 seconds; however the program continues.

Cause

NTC Temperature Sensor or its connections contain an open-circuited.

Remedy

- Check the NTC Temperature Sensor and circuit for an open circuit.
- Check the NTC Temperature Sensor resistance, for proper operation at various temperatures. (Refer to Table 030-2)

Technical Information

3.6 Fault Code F10, Water Intake**Symptom**

The **Check inlet** LED flashes.

The Inlet Valve is closed and the program automatically ends. The Drain Pump is activated for 120 seconds.

Cause

The water supply is shut off.

Remedy

Turn the water supply on.

Cause

Water intake filters are clogged.

Remedy

Check / Clean the water intake filters.

Cause

Low on-site water pressure.

Remedy

- Check water pressure and reprogram machine if necessary
- Check on-site water pressure: The flow pressure must be at least 1 bar. With the water supply fully open, at least 5 liters (approximately 1.25 gallons) of water should flow from the tap within 15 seconds.
- If the on-site flow pressure is less than 1 bar, then it should be increased.
- If the on-site flow pressure cannot be increased, then low water pressure can be programmed as an option. Refer to the Programming Mode information (070 4.1)

Cause

Defective Water Intake Valve.

Remedy

Check / replace the Water Intake Valve.

3.7 **Fault Code F11, Water Drainage**

Symptom

During operation the Drain LED flashes.

The program automatically ends and the Drain Pump is activated for 120 seconds.

Cause

Insufficient drainage. When the Drain Pump is activated, a check is made as to whether the water level drops to 30 mm wc after 150 seconds.

Remedy

- Check the Filter for blockages caused by foreign bodies.
- Check Drain Pump for proper operation.
- Check the Drain Hose.
- Check Non-return Valve.
- Check the on-site drain system.

Technical Information

3.8 Fault Code F15, Hot Water Intake**Symptom**

During operation, this fault is not indicated via any LEDs on the Control Panel. The program continues, however it will only use the cold water supply.

Cause

The water supply is shut off.

Remedy

Turn the water supply on.

Cause

Water Intake Filters clogged.

Remedy

Clean the water intake filters.

Cause

Low on-site water pressure.

Remedy

- Check water pressure and reprogram machine if necessary
- Check on-site water pressure: The flow pressure must be at least 1 bar. With the water supply fully open, at least 5 liters of water should flow from the tap within 15 seconds.
- If the on-site flow pressure is less than 1 bar, then it should be increased.
- If the on-site flow pressure cannot be increased, then low water pressure can be programmed as an option.

Cause

Hot Water Inlet Solenoid Valve defective.

Remedy

Check the Hot Water Inlet Solenoid Valve.

3.9 **Fault Code F16, Excess Foam**

Symptom

During operation the **Oversudsing** LED lights up. The Water Intake Solenoid Valve is switched off for certain periods of time. The heating is switched off and the thermostat is skipped. The spin speed is reduced (or stopped). An additional rinse cycle is performed.

Cause

Excess foam due to too much detergent and/or improper detergent

Remedy

Ensure the correct type and amount of detergent is being used.

Cause

Not draining.

Remedy

Check the Drain Pump system for proper operation .

3.10 **Fault Code F20, Heating**

Symptom

During operation, this fault is not indicated via any LEDs on the Control Panel. The program continues, however poor wash results, and longer than usual operating times may be noticed.

Cause

The water is not being heated.

Remedy

- Check the Heater Relay and Relay circuit.
- Check the Heater Circuit for an open or short circuit.

Technical Information

3.11 Fault Code F41 – Electronic Fault**Symptom**

During operation, units with a digital display show 3 dashes. The Water Intake Valve(s) closes and the program automatically ends. The Drain Pump is activated for 120 seconds.

Cause

Electronic and/or data fault(s).

Remedy

Check / replace the Control and/or Power Electronic – as necessary.

3.12 Fault Code F43, Control/Power Electronic and the Control Panel/Display Electronic are Incompatible**Symptom**

During operation, units with a digital display show 3 dashes

Cause

The Electronics are incompatible.

Remedy

- Verify the correct Control/Power Electronic and the Display Electronics are installed.
- Ensure the appliance is programmed correctly.

3.13 Fault Code F47, Control/Power Module – Control Panel/Display Module Interface Fault**Cause**

Control/Power Electronic to Panel Electronic - communication fault.

Remedy

Check the electrical connection between the two Electronics.

3.14 **Fault Code F51, Pressure Sensor**

Symptom

During operation, units with a digital display show 3 dashes. The Water Intake Valve(s) close and the program automatically ends. The Drain Pump is activated for 120 seconds.

Cause

Analog Pressure Sensor (ADS) fault.

Remedy

Check the pressure sensor in the service mode, see 070 4.3.

Note

The pressure sensor is integrated into the control/power module (SLT). Should replacement be necessary the entire electronic is replaced as one assembly. Do not attempt to service the sensor.

3.15 **Fault Code F53, Tachogenerator**

Symptom

During operation, units with a digital display show 3 dashes. The motor does not start or is switches off after about 1.5 seconds. In the spin cycle, the program automatically ends immediately. The Water Intake Valves close, the Drain Pump is activated for 120 seconds.

Cause

No signal from Tachgenerator and / or motor – drives not functioning.

Remedy

Check Tachogenerator and Main Motor circuits.

Check for faulty mechanical components.

Technical Information

3.16 Fault Code F63, Water Path Control Unit**Symptom**

The Water Intake LED flashes. On units with a display, 3 dashes are displayed. The water intake valves are closed and the program is interrupted. The Drain Pump is activated for 120 seconds.

Cause

Faulty Water Path Control System.

The Control/Power Module cannot register a valid position from the the Water Path Control Unit within about 80 seconds of it being switched on.

Note

Water intake monitoring is not active if a valid position of the Water Path Control Unit is not registered.

Remedy

- Check the Water Path Control Unit
- Check the Water Path Control System circuit.

3.17 Fault Code F65, Drum Light Assembly Fault**Symptom**

On units with a display 3 dashes are displayed; the program is interrupted and the Drain Pump is activated for 120 seconds.

Cause

Drum Light Assembly - not installed / not installed correctly

Remedy

- Check Drum Light Assembly is installed.
- Check the Drum Light Assembly is in the locked position (turned completely and seated).
- Check the base of the Drum Light Assembly; ensure the actuator tab is present (refer to Figure 070-1).

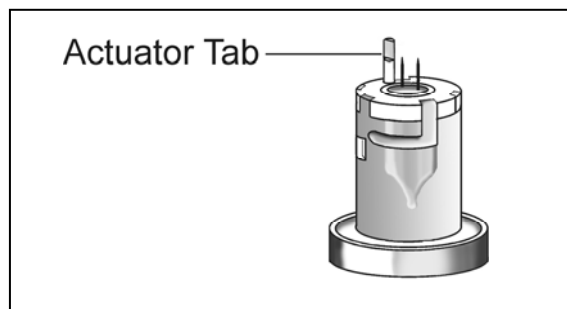


Figure 070-1: Drum Lamp Assembly

3.18 Locked LED On Steady

Cause

The electronic program lock (child-safety feature) is active.

Remedy

Deactivate the electronic program lock (child-safety feature)
By pressing the **Start** button for 6 seconds.

3.19 Locked LED Flashing

Cause

The Electronic lock function is active.

Remedy

Deactivate the Electronic lock function as follows

1. Switch off the machine.
2. Close the door.
3. Press and hold the **Sensitive** and the **Temperature** buttons while performing the following:
 - Switch on the machine.
 - Press and release the **Option** button 3 times.
4. Release the **Sensitive** and **Temperature** buttons.

Technical Information

4 Service

4.1 Programming Mode

Initial Requirements

1. Finish or cancel any program in operation.
2. Switch off the machine.
3. Close the door.

Note

Once you begin the access procedure, it must be completed within 10 seconds.

Accessing

1. Press and hold the **Start** button while switching the unit on with the **On/Off** button.
2. Release the **Start** button 2 seconds after switching the appliance on.
3. Immediately press and release the **Start** button 4 times.
4. Press and hold down the **Start** button a 5th time, until the Start LED flashes.

Acknowledgement indicator

Rapid flashing Start LED.

Options / Navigation

1. Refer to Tables 070-3 through 070-9.
2. The Program Position is displayed by the flashing rhythm of the Buzzer LED.
 - Press the Buzzer button to advance through the Program Positions.
 - The current programmed option is displayed by the flashing rhythm of the Drying LED.
 - Press **Start** button to toggle between the available options.

Save and quit

With the desired option displayed. Press the **On / Off Button** to shut off the appliance and store the desired setting.

Note
 The **Highlighted** options are the standard settings. Programmed settings vary slightly depending on the appliance model number.

Program Position			Option			
Flashing Rhythm Of Buzzer LED		Selection	Selection	Flashing Rhythm Of Soak LED		Display
Long	Short	Buzzer button	Start Button	Long	Short	
-	1	Reset all programmable functions to standard settings: Press the Start button until the reset has occurred.	All modified settings are reset to standard settings	-	-	P0
			At least one standard setting has been modified	-	1	P1
-	2	Water plus Water level / Additional rinse	Raised water level in Soak, pre- and main wash, and rinse cycles via Water plus button in Cottons, Minimum iron, Quick wash, Automatic and Silks	-	1	P1
			Additional rinse cycle via Water plus button in Cottons and Minimum iron	-	2	P2
			Raised water level in Soak, pre- and main wash, and rinse cycles via Water plus button in Cottons, Minimum iron, Quick wash, Automatic and Silks and additional rinse in Cottons and Minimum iron	-	3	P3
-	3	Always gentle action	Not active	-	-	P0
			Active	-	1	P1

Table 070-3: Programming Functions (continued on Table 070-4)

Technical Information

Program Position		Option(s)				
Flashing Rhythm Of Buzzer LED		Selection	Selection	Flashing Rhythm of Soak LED		Display
Long	Short	Buzzer Button	Start Button	Long	Short	
-	4	Suds cooling (reactivation) cold water added at end of main wash	Not active	-	-	P0
			Active	-	1	P1
-	5	Soak duration	2 h	-	1	P1
			1.5 h	-	2	P2
			1 h	-	3	P3
			0.5 h	-	4	P4
-	6	Buzzer	Off	-	1	P1
			Normal	-	2	P2
			Loud	-	3	P3
-	7	Audible button operation signal	On	-	-	P0
			Off	-	1	P1
-	8	Memory function	Not active	-	-	P0
			Active	-	1	P1
-	9	Water type (AllWater model, hot water connection)	Cold mains water	-	1	P1
			Hot water	-	2	P2
			Soft water	-	3	P3
			Rain water	-	4	P4

Table 070-4: Programming Functions (continued from Table 070-3) (Continued on Table 070-5)

Technical Information

Program Position			Option(s)			
Flashing Rhythm Of Buzzer LED		Selection	Selection	Flashing Rhythm of Soak LED		Display
Long	Short	Buzzer Button	Start Button	Long	Short	
1	0	Rinsing with level III for soft water	Not active	-	-	P0
			Active	-	1	P1
1	1	Country variations	European version (EU)	-	1	P1
			Sweden (S)	-	2	P2
			Australia (AUS)	-	3	P3
			USA/Canadian version	-	4	P4
			Japan (J)	-	5	P5
1	2	Automatic load control (Intelligent Water Intake, IWI)	Automatic load control off (for detergent test institutes/laboratories only)	-	-	P0
			Active	-	1	P1
1	3	Imbalance ranges	Table 1	-	0	P0
			Table 2	-	1	P1
1	4	Suds container unit	Old suds container unit (ASA)	-	-	P0
			New suds container unit (NSA)	-	1	P1

Table 070-5: Programming Functions (continued from Table 070-4) (Continued on Table 070-6)

Technical Information

Program Position			Option(s)			
Flashing Rhythm Of Buzzer LED		Selection	Selection	Flashing Rhythm of Soak LED		Display
Long	Short	Buzzer Button	Start Button	Long	Short	
1	5	Heater rating	2.1 kW	-	1	P1
			4.2 kW	-	2	P2
			2.6 kW	-	3	P3
			3.0 kW	-	4	P4
1	6	Matching water intake to low water pressure	Normal water pressure	-	-	P0
			Low water pressure < 1 bar (100 kPa)	-	1	P1
1	7	Program for allergy sufferers	Not active	-	-	P0
			Active	-	1	P1
1	8	Sensor-controlled rinsing	Not active	-	-	P0
			Active	-	1	P1
1	9	Flow meter	Not active	-	-	P0
			Active	-	1	P1

Table 070-6: Programming Functions (continued from Table 070-5) (Continued on Table 070-7)

Program Position		Option(s)						
Flashing Rhythm Of Buzzer LED		Selection	Selection	Flashing Rhythm of Soak LED		Display		
Long	Short	Buzzer Button	Start Button	Long	Short			
2	0	Spin speed settings (country variation)	Not used	-	1	P1		
				-	2	P2		
				-	3	P3		
				-	4	P4		
				-	5	P5		
				-	6	P6		
				-	7	P7		
				-	8	P8		
				-	9	P9		
			All US Models Numbers Do NOT Change			1	-	P10
			Not used	1	1	P11		
				1	2	P12		
				1	3	P13		
				1	4	P14		
				1	5	P15		
				1	6	P16		
				1	7	P17		
				1	8	P18		
				1	9	P19		

Table 070-7: Programming Functions (continued from Table 070-6) (Continued on Table 070-8)

Technical Information

Program Position		Option(s)				
Flashing Rhythm Of Buzzer LED		Selection	Selection	Flashing Rhythm of Soak LED		Display
Long	Short	Buzzer Button	Start Button	Long	Short	
2	1	Imbalance and load measurement	Tachogenerator	-	1	P1
			Imbalance sensor and tachogenerator	-	2	P2
			Displacement sensor (load sensor) and tachogenerator	-	3	P3
2	2	Water Intake Sys.	USA (Do Not Change)	-	-	P0
2	3	Digital display	LED Display – OFF	-	-	P0
			LED Display – ON	-	1	P1
2	4	Time left display	Not active	-	-	P0
			Active	-	1	P1
2	5	Delay start	Not active	-	-	P0
			Active	-	1	P1
2	6	Model version	Frontloader	-	-	P0
			Toploader	-	1	P1
2	7	Load / Dispensing display	None	-	1	P1
			Load	-	2	P2
			Dispensing	-	3	P3
			Load and dispensing	-	4	P4
2	8	Drum Light	OFF	-	-	P0
			ON	-	1	P1
2	9	Fascia type	7 program sequence LEDs	-	1	P1
			6 program sequence LEDs	-	2	P2

Table 070-8: Programming Functions (continued from Table 070-7)

4.2 Demonstration Mode (Dealer Displays)

Initial requirements

- Switch off the machine.
- Close the door.

Note

Once you begin the access procedure, it must be completed within 10 seconds.

Accessing

1. Press and hold the **Start Button** while switching the unit on with the **On/Off Button**.
2. As soon as the Start LED lights up, release the **Start Button**.
3. Immediately press and hold the **Start Button**, until the Start LED turns off.

Deactivation

Repeat the accessing procedure.

Note

The Demonstration Mode is NOT deactivated when the power is shut off with the **On/Off Button**, or by unplugging the appliance.

Technical Information

4.3 Service Mode

Initial Requirements

1. Finish or cancel any program in operation.
2. Switch off the appliance.
3. Close the door.

Note

Once you begin the access procedure, it must be completed within 10 seconds.

Accessing

1. Press and hold the **Start Button** while switching the appliance on with the **On/Off Button**.
2. Release the **Start Button** 2 seconds after switching the appliance on.
3. Immediately press and release the **Start Button** 2 times.
4. Press and hold down the **Start Button** a 3rd time, until the Start LED flashes.

Acknowledgement indicator

Slow flashing Start LED.

Note

Upon entering the Service Mode, The Buzzer LED displays a flashing rhythm of 2 flashes while the ROM ID is shown in the display.

Press the **Buzzer Button** to advance to the FAULT REGISTER level.

Refer to the Service Mode Tables 070-0 through 070-11.

Service Level - Navigation

- The Service Level is indicated by the flashing rhythm of the Buzzer LED. (Example: flash flash flash=Level 3)
- To advance to the next Service Level, press the **Buzzer Button**.

Important

Refer to Tables 070-0 to 070-11 for detailed information

Fault Codes (Service Level 1)Retrieval

If several faults are registered, their codes are shown one after the other in ascending order.

Note

In addition to the flashing rhythm of the Soak LED, stored faults are also shown in the LED Display. (Example *F1* = NTC Sensor short circuited.)

Deletion

With the fault displayed; press and hold the **Start Button** for about 5 seconds.

Technical Information

Component Test (Service Level 2)

The Test Step is indicated by the flashing rhythm of the Soak LED using long and short flashes. (example: long flash short flash short flash short flash short flash = 15).

Note

In addition to the flashing rhythm of the Soak LED, the active Test Step appears in the LED Display. (Example *U5* = Test Step 5 / Drain Pump activation).

Navigation / Component Activation

- Press the **Start Button** to advance to the desired Test Step. After a 1 second pause, the component is energized

Cancel the Test Step

- Press the Start Button to cancel the activated component; and advance to the next Test Step (next component test).
- The next component test automatically starts after another 1 second delay (see Navigation / Component Activation above).

Quitting the Service Mode (without saving)

- Switch off the machine.

Note

The service mode automatically shuts off after 30 minutes.

Technical Information

SERVICE LEVEL			TEST STEP				
Flashing rhythm of Buzzer LED		Selection: Press Buzzer button	Selection: Press Start button	Function tested/Machine response	Flashing rhythm of Soak LED		Display
Long	Short				Long	Short	
-	2	Software version (ID)	Control/Power module (SLT)	-	-	-	-
			<i>Cause</i>	<i>Fault code</i>			-
			No fault registered	F 0	-	-	<i>F0</i>
			NTC temperature sensor short-circuited	F 1	-	1	<i>F1</i>
			NTC temperature sensor open-circuited	F 2	-	2	<i>F2</i>
			Water intake fault	F 10	1	-	<i>F10</i>
			Drainage fault	F 11	1	1	<i>F11</i>
			Water intake fault – Hot water	F 15	1	5	<i>F15</i>
			Excess foam	F 16	1	6	<i>F16</i>
			Heating fault	F 20	2	-	<i>F20</i>
			EEPROM fault, data fault	F 41	4	1	<i>F41</i>
			Control/power module (SLT) and control panel/display module (BAE) incompatible	F 43	4	3	<i>F43</i>
			Control/power module (SLT) – Control panel/display module (BAE) interface fault	F 47	4	7	<i>F47</i>
-	2	Fault register display and deletion					

Table 070-9: Service Mode (Continued on Table 070-10)

Technical Information

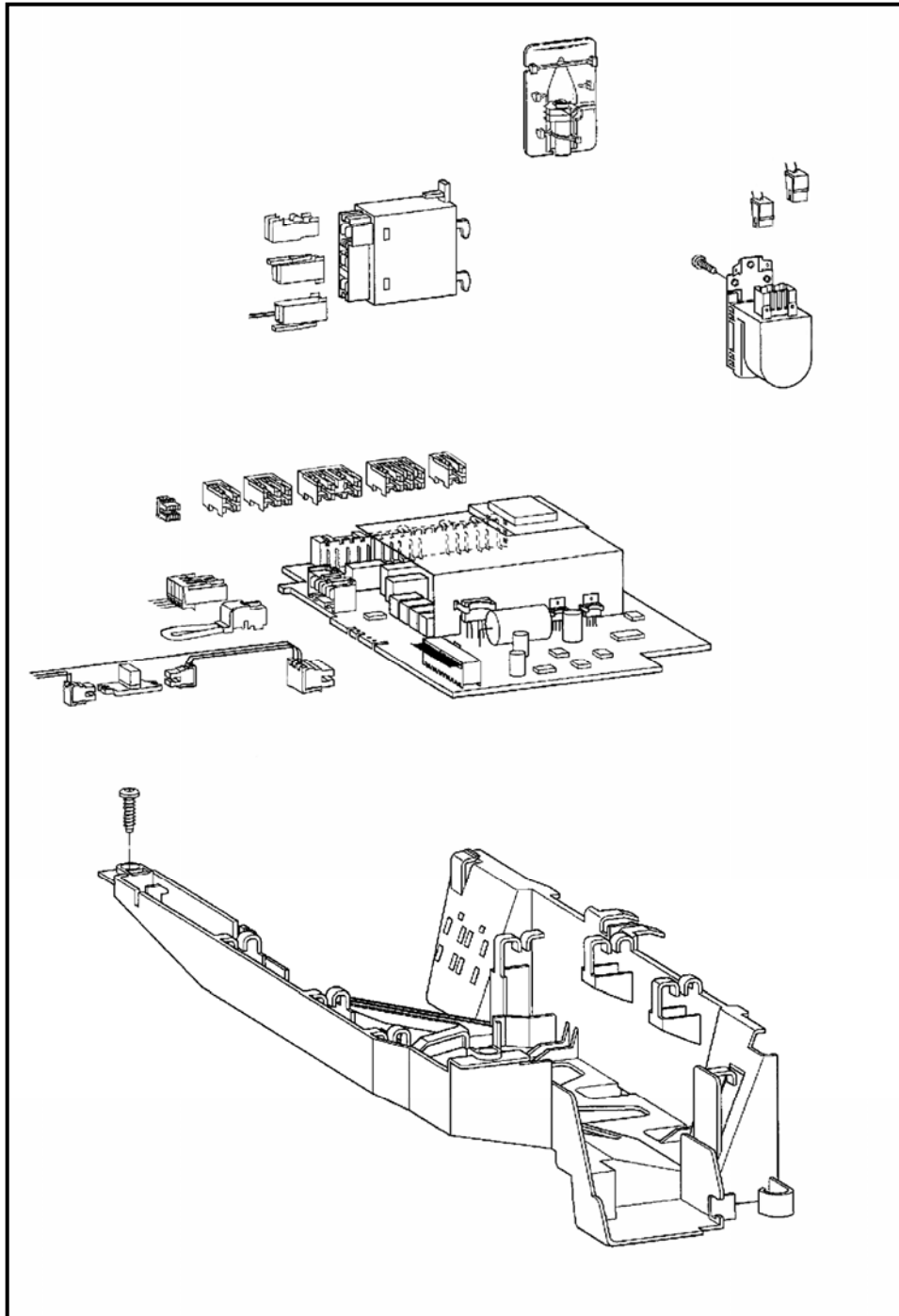
SERVICE LEVEL		TEST STEP					
Flashing rhythm of Buzzer LED		Selection: Press Buzzer button	Selection: Press Start button	Function tested/Machine response	Flashing rhythm of Soak LED		Display
Long	Short				Long	Short	
-	2	Fault register display and deletion	Pressure sensor fault	F 51	5	1	<i>F51</i>
			Tachogenerator fault (speed sensor)	F 53	5	3	<i>F53</i>
			Final spin < 400 rpm	F 56	5	6	<i>F56</i>
			Undefined fault	F 62	6	2	<i>F62</i>
			Water path control unit fault	F 63	6	3	<i>F63</i>
			Drum Lamp not installed / not installed correctly.	F 65	6	5	<i>F65</i>
-	3	**Component Test	Not used	Not active	-	-	<i>U0</i>
			Water path control unit position 1 (only if fitted)	Water intake via door glass for 10 seconds	-	1	<i>U1</i>
			Solenoid valve Y1 or Y14 / Y40 with water path control unit, heating, analog pressure sensor	Water intake via compartment I, until level 1. Then heats to 35°C.	-	2	<i>U2</i>
			Solenoid valve Y 2 or Y14 / Y40 with water path control unit, analog pressure sensor	Water intake via compartment II, until level 2.	-	3	<i>U3</i>
			Solenoid valves Y1 and Y3 or Y14 / Y40 WPS with water path control unit, analog pressure sensor	Water intake via compartment III (fabric conditioner), until level 3.	-	4	<i>U4</i>
			Drain Pump	Drainage	-	5	<i>U5</i>
			Wash drive	Drum rotation with reversing action	-	6	<i>U6</i>

Table 070-10: Service Mode (Continued from 070-9) (Continued 070-11)

SERVICE LEVEL		TEST STEP					
Flashing rhythm of Buzzer LED		Selection: Press Buzzer button	Selection: Press Start button	Function tested/Machine response	Flashing rhythm of Soak LED		Display
Long	Short				Long	Short	
-	3	Component Test	Drainage and spin drive NOTE: Drainage and spin drive cannot be performed on a new unit until one water intake and drain cycle is performed	Drainage and spinning. Spin speed is controlled via the position of the spin speed selector.	-	7	U7
			Solenoid valve Y 12 / 2Y40 (hot water, optional)	Water intake via compartment II until level III is reached	-	8	U8
			Buzzer	Continuous signal	-	9	U9
			Display and LED check	Each individual segment of the digital display and the LEDs flash at the same time			U0
-	-	Sensor / Switch Test (select the desired position using the START button)	1 - Door Switch Test Buzzer ON = Door Closed Buzzer OFF = Door Open		-	1	-
			2 – Float Switch Test Buzzer ON = Not Actuated (normal) Buzzer OFF – Actuated (water present)		-	2	-
-	5	Operating hours counter display	Long flashing pulses for thousands, short flashing pulses for hundreds	Example: 12 x long + 6 x short = 12000 h + 600 h = 12600 h	X for X000 h	Y for Y00 h	-

Table 070-11: Service Mode (Continued from 070-10)

090 Electrical System, Power Module and Heater Relay



1 Technical Data

n/a

2 Function

2.1 Heater Relay - Switching

If a selected program requires higher temperature, than the temperature of the water supply; the water will be heated.

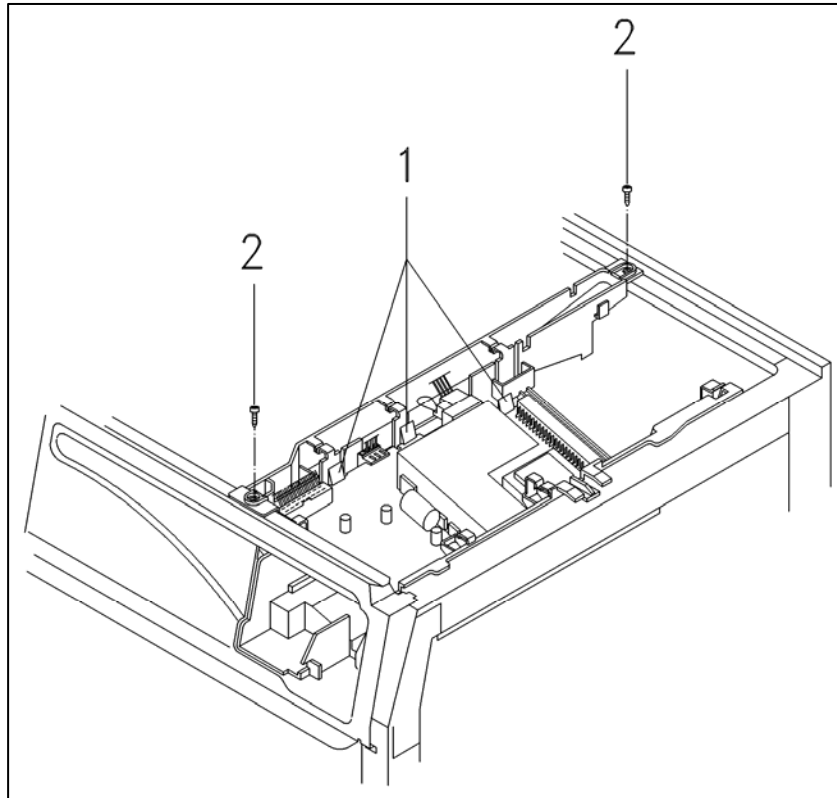
For the heater to operate the Water Level Sensor must have detected at least a Level 1 position. The signal is then provided to the Power Electronic which energizes the Heater Relay (coil).

When the Heater Relay is energized, it's contacts close and supply the Heater Element with power.

3 Fault Repair

n/a

Technical Information

4 Service**4.1 Power Electronic - Removal****Figure 09-1:** Power Electronic - removal

1. Ensure the power is disconnected from the appliance.
2. Remove the Lid (010 4.1)
3. Refer to Figure 090-1.
4. Disconnect all plugs from the power module.
5. Press back the three retaining clips (1), and remove the Power Electronic upwards.

Note

If the bracket is being removed, the two retaining screws (2), must be removed first.

4.2 Heater Relay - Removal

1. Ensure the power is disconnected from the appliance.
2. Remove the Lid (010 4.1)
3. Disconnect the plugs from the Heater Relay.
4. Press down the Heater Relay retaining clips, slide the Heater Relay upwards to remove it from its holder.

4.3 Interference Suppression Filter - Removal

1. Ensure the power is disconnected from the appliance.
2. Remove the Lid (010 4.1)
3. Disconnect the plugs from the Interference Suppression Filter.
4. Remove the retaining screw from the rear panel.