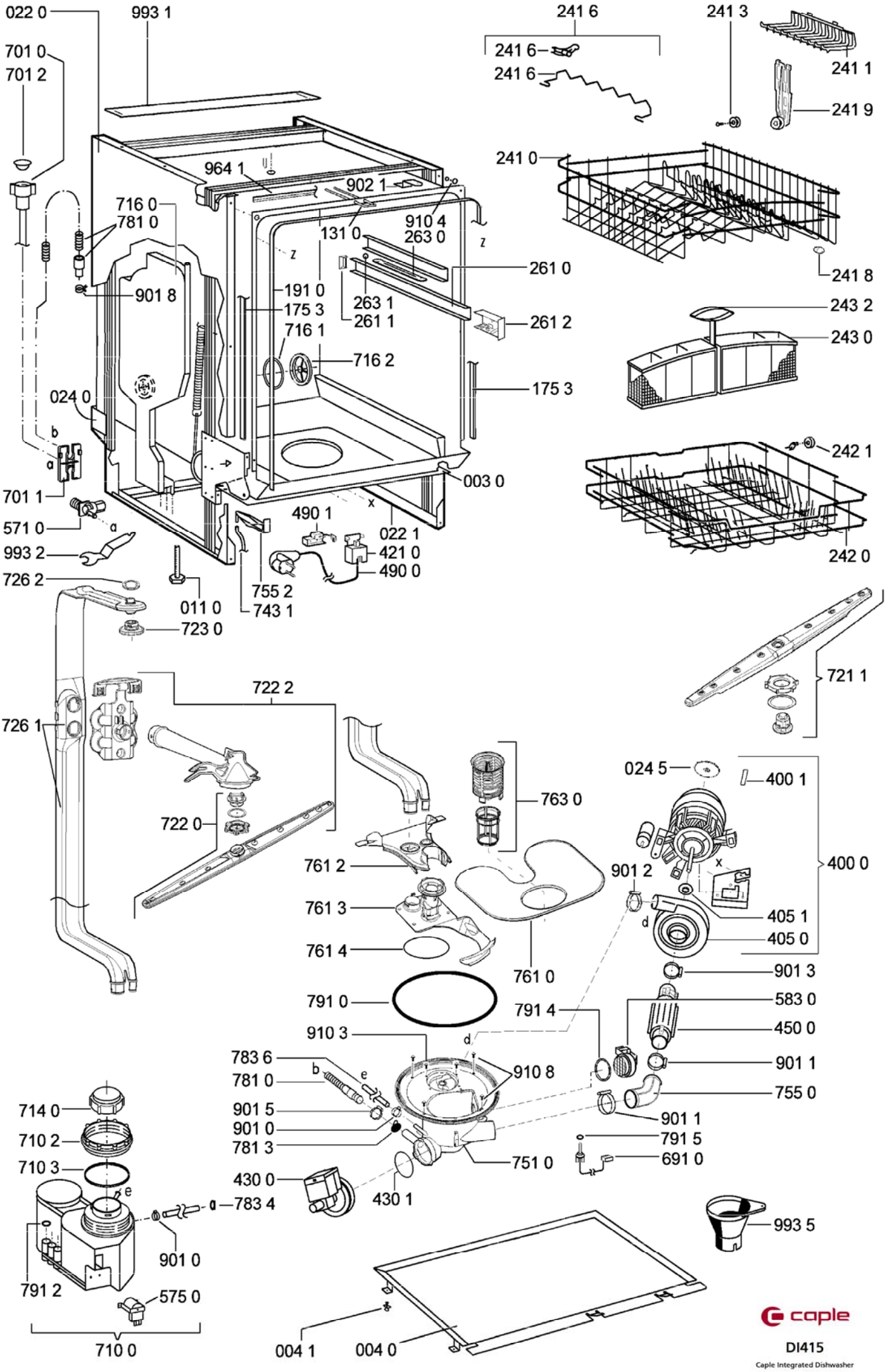
DI415

Caple Integrated Dishwasher

Technical information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261 0
191 0
175 3
263 1
261 1
261 2
901 8
716 1
716 2
175 3
024 0
003 0
701 1
571 0
993 2
726 2
490 1
022 1
421 0
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011 0
755 2
743 1
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726 1
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763 0
761 2
761 3
761 4
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791 0
910 3
783 6
781 0
901 5
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781 3
910 8
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024 5
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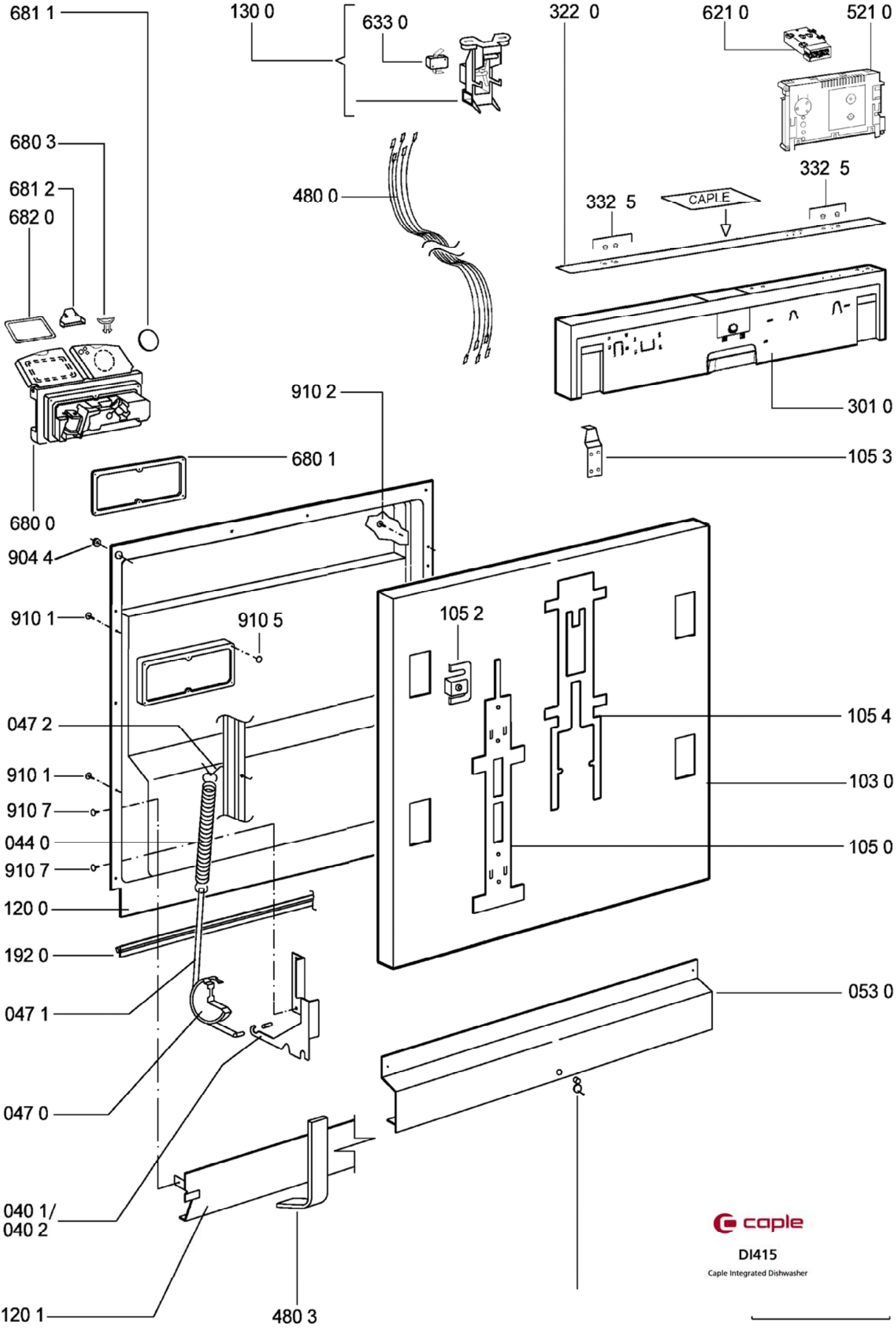
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CAPLE
332 5
910 2
301 0
680 1
105 3
680 0
904 4
910 1
910 5
105 2
047 2
105 4
910 1
103 0
910 7
044 0
105 0
910 7
120 0
192 0
053 0
047 1
047 0
040 1/
040 2
120 1
480 3
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DI415 - Caple Integrated Dishwasher

Item	Part Code	Description
003 0	4812 440 11455	Crossbar
004 0	4812 440 11463	Drip tray assy
004 1	4812 401 18402	Holder
011 0	4812 505 18418	Foot long
022 0	4812 440 11477	Side panel
022 1	4812 440 11476	Side panel right
024 0	4812 440 11468	Panel rear
024 5	4812 440 10944	Damper fix Motor synch.(Askoll)
040 1	4812 417 18774	Hinge left
040 2	4812 417 18773	Hinge right
044 0	4812 492 38362	Spring f.door
047 0	4812 404 48746	Brake f.door
047 1	4812 401 18707	Band, brake
047 2	4812 404 68023	Hook
053 0	4812 440 89138	Plinth w/o hole sheet
103 0	4812 440 11465	Door outer
105 0	4812 404 48611	Fastener door
105 2	4812 505 68022	Clip
105 3	4812 404 48633	Fastener
105 4	4812 310 58116	Template FD
120 0	4812 440 19456	Door,inner
120 1	4812 440 11454	Batten
130 0	4812 417 58393	Tilt lock
131 0	4812 401 18416	Hook lock
175 3	4812 466 68867	Batten, grey
191 0	4812 466 68564	Gasket door
192 0	4812 466 68467	Gasket door lower
241 0	4812 458 19027	Basket upper straight
241 1	4812 458 18324	Holder cups right wh; cups right wh
241 3	4812 528 88068	Set of 4 Basket Wheels
241 6	4812 310 18757	Holder glasses KIT wh; glasses
241 6	4812 458 18333	Holder glasses wh
241 6	4812 535 78036	Bearing wh
241 8	4812 466 68553	Spacer cap set
241 9	4812 528 88101	Wheel,basket basket up; basket upper
242 0	4812 310 28134	Basket lower KIT wh
242 1	4812 528 88069	Wheel,basket lower wh
243 0	4812 458 18272	Basket cutlery; cutlery
243 2	4812 404 48624	Grip cutlery basket white
261 0	4812 462 79831	Rail telescope, inner
261 1	4812 462 79768	Cap rail rear 10809
261 2	4812 310 18972	Cap; rail front
263 0	4819 520 18013	Ball cage cpl.
263 1	4812 310 48026	Service kit balls plas

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Item	Part Code	Description
301 0	4812 453 71765	Control panel
322 0	4812 453 73216	Insert panel
332 5	4812 410 28556	Cap f.beater
400 0	4801 401 03011	Spray pump SKIT SMART UK perm.
400 1	4812 466 68776	Spacer; support motor/sp
405 0	4812 360 18545	Spray pump perm.synchr. ASKOLL
405 1	4812 515 28107	O-ring 92518900
421 0	4812 121 18276	Interf.filter
430 0	4812 360 18558	Pump draining - 72894 - RoHS
430 1	4812 466 68689	Gasket
450 0	4812 259 28892	Heating element 210-240V 2kW
480 0	4812 321 28414	Cable harness; (IC)
480 3	4812 401 18418	Protector f.wiring
490 0	4812 321 18049	Cable mains UK
490 1	4812 321 28367	Strain relief
521 0	4812 218 38347	Control board
521 0	4812 218 38421	User board UCB
571 0	4812 281 28462	Valve
575 0	4812 281 28459	Regen.valve
583 0	4812 271 28556	Switch 327000000
621 0	4812 276 18493	Switch on/off
633 0	4812 271 38488	Microswitch door
680 0	4812 418 68376	Combidosage
680 1	4812 466 68495	Gasket
680 3	4812 440 11209	rinse aid clip; combidos. 442300.XX
681 1	4812 466 68497	Gasket SK 5244.04.04
681 2	4812 440 18975	Flap
682 0	4812 466 68496	Gasket
691 0	4812 282 68051	Resistor NTC - rast 2.5
701 0	4812 530 28081	Hose, inlet 3/8Z cpl.; 3/8Z cpl. 5m
701 0	4819 530 28931	60Bars 90# WRC,VDE, IMQ straight/curve
701 1	4812 310 18302	Yoke
701 2	4822 480 50159	Sieve inlet
710 0	4812 418 68372	Monoblock cpl.mech.
710 2	4812 310 38896	Threaded ring gr.10809
710 3	4819 466 69562	Gasket set
714 0	4812 462 79906	Threaded cap gr. 10809
716 0	4812 418 68368	Reg.dosage SK 5250.10.0
716 1	4812 466 68475	Gasket
716 2	4812 462 78994	Cover reg.dos. gr.10809
721 1	4812 360 68689	Spray arm; lower. cpl. sa
722 0	4812 360 68348	Spray arm upper wh; upper wh
722 2	4812 360 68349	Spray arm 2nd level cp; sub 481236068693
723 0	4812 360 68691	Douche ceiling
726 1	4812 530 29331	Tube; assembly cpl.
726 2	4812 505 18208	Nut
743 1	4812 530 28102	Hose inlet
751 0	4812 418 18338	Water collector ,NTC WI

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Item	Part Code	Description
755 0	4812 530 29119	Bend
755 2	4812 530 48148	Tray,leak
761 0	4812 480 58122	Sieve fine
761 2	4812 418 18337	Cover sieve gr.10809
761 3	4812 418 18341	Cover
761 4	4812 530 58141	O-Ring
763 0	4812 480 58363	Sieve
781 0	4812 530 29113	Hose,draining
781 3	4812 281 28417	Flap non-return
783 4	4812 530 28888	Hose
783 6	4812 530 28796	Hose 10x3x180+10
791 0	4812 532 68099	Gasket
791 2	4812 530 58093	Gasket SK 5199 01 4
791 4	4812 466 68503	Gasket
791 5	4812 466 68504	Gasket
900 1	4812 310 28327	Fastener set n.sh.
901 0	4812 401 18709	Clamp hose S10-16/9-C7W1
901 1	4812 401 18708	Strap 050,0
901 2	4812 401 18705	Strap 033,1
901 3	4812 401 18806	Strap 47,0 mm
901 5	4812 401 48588	Strap 028,6
901 8	4812 401 18711	Clamp hose 25-29
902 1	4812 466 78015	Fastener f.buildt-in models
902 2	4812 404 78241	Holder
904 4	4812 462 79659	Threaded cap
910 1	4812 502 18394	Screw 3,5x17-H
910 2	4812 502 18363	Screw 4,0x12-H
910 3	4812 502 18527	Screw 4x15 T20; 4x15 T20
910 4	4812 502 18741	Screw M3,5x8-T15M
910 5	4812 502 18739	Screw 3,5x8 Tx15
910 7	4812 502 18397	Screw INOX A2 M 5x14 TX20
910 8	4812 502 18389	Screw 5x20 T20
964 1	4812 466 68573	Gasket housing upper, gris
993 1	4812 466 78388	Foil protection
993 2	4812 404 48753	Key foot
993 5	4822 532 80216	SALT FUNNEL

Technical Data

Dimensions + Weight

Product dimensions
- Height ..... 82.0 - 87.0cm
- Width ..... 59.7 cm
- Depth ..... 57.0 cm
- Weight ..... 50 kg

Wooden door for Full Door appliances
- Thickness ..... 16 mm - 20 mm
- Width ..... 592 mm - 595 mm
- Height ..... 620 mm - 718 mm
- Weight ..... 2.5 kg - 6.5 kg
- Max. stick out over lower edge of appliance door ..... 92 mm
- Height of plinth
  - min. ..... 93 mm

Electronic boards

Service boards
- see spare part list

Serial boards

Programmed control board and programing of version , see „Board Service"and „DATA"on rating plate of inner door:

UCB programmed 531612

User/Control Board

Data set 531602
Basic UCB, not programmed 4619 727 14212

see on board itself

For programing please use Service Assistance Module (S.A.M.) 4812 289 98001
plus cable 4812 289 98004

Succession of programs

Programs

see program diagram

Succession P3a-P5b-P7a

Data Energy Label

Reference program P5b
Energy Performance ..... B
Cleaning Performance ..... B
Drying Performance C

Program information

End - Acoustic signal
All programs will be locked after start. Changing the program or ?nishing the program will be possible only after pressing the start button for longer then 1.5 sec. (Break by customer)
A switching off the appliance or unplug the appliance for a while, this will frozen the program step and later on, the program continuos on the same position.
Exception: Switching off the appliance or unplug the appliance during the drying phase, this will lead directly to the end of the program.

Volume

Water	Volume	Level
Regeneration	0.3 l	15 mm
Back rinse 3x	1.0 l	60 mm
Prewash	4.8 l	120 mm
Main wash	4.2 l	118 mm
Intermediate rinse 1	4.2 l	118 mm
Intermediate rinse 2	4.2 l	118 mm
Clear rinse	4.2 l	118 mm
Safety/ overflow	8.5 l	141 mm

Measuring the level

Remove the coarse sieve, put in a measuring meter into the sump, measure the hight of the water level.

Detergent capacity

Prewash ..... 10 cm 3
Main wash ..... 40 cm 3
Rinse aid dosage ..... 135 cm 3
Dosage steps ..... 1 ml - 6 ml

Water softener

Salt container ..... 2 kg
Resin container ..... 700 cm 3
Regeneration dosage ..... 300 cm 3

Water pressure

Inlet pressure ..... 0.3 bar - 10 bar
Spray pump pressure ..... 0.3 bar

Rotations

Spray pump motor	2800 RPM
Drain pump motor	3000 RPM
Spray arm lower	30 RPM - 40 RPM
Spray arm upper	30 RPM - 40 RPM

Flow rates/ Inlet volume

Flow meter	208 Imp/l
Spray pump	67 l/min
Drain pump	16 l/min
Pump height max.	1.1 m
Inlet valve	4 l/min
Spray arm lower	~33 l/min
Spray arm upper	~27 l/min Sprayarm/ Shower top ~8 l/min

Electrical base data

Voltage	230 V - 240 V
Frequency	50 Hz
Total power	2.4 kW
Fuse	13 A

Spray pump motor permant spray system

Voltage	220/ 240 V
Power Consumption	130 W
HI	62 Ω
HA	74,8 Ω
Capacitor	4 µF

Drain pump motor

Voltage	220/ 240 V
Power Consumption	30 W
Resistance	146 Ω

Heating element

1 Element system

Voltage	230 V - 240 V
Power Consumption	2.04 kW - 2.22 kW
Resistance	24.5 Ω
Heating speed	~2.0 °C/min
Temperature on surface	~115 °C
Safety thermostat self reset (Temperature of water)	~85 °C
Fuse	206 °C

Water safety option

Waterstop system
Electronic aqua control

Single electric water inlet valve

Voltage ..... 220/ 240 V
Frequency ..... 50/ 60 Hz
Resistance ..... 3.76 kΩ

Regeneration valve

Voltage ..... 220/ 240 V
Frequency ..... 50/ 60 Hz
Resistance ..... 3.13 kΩ

Coil of dispenser

Voltage ..... 220/ 240 V
Frequency ..... 50/ 60 Hz
Resistance ..... 1.3 kΩ

Reed contacts

Flow meter

NTC

20 °C	58.1	kΩ
25 °C	47.1	kΩ
30 °C	38.2	kΩ
40 °C	25.4	kΩ
50 °C	17.2	kΩ
60 °C	11.8	kΩ
70 °C	8.3	kΩ
80 °C	6	kΩ
85 °C	4	kΩ

Regeneration

Volume ..... 300 cm 3
after wash cycles
Depending on the water hardness
Salt consumption for regeneration ..... ~77 g
Number of cycles with 2 kg salt ..... ~26

Water softener setting

To change the water softener setting:
– · Push the POWER button on
– · Change to program 2
– · Hold the START button for 5 seconds until the LED is flashing
– · Water softener setting is shown by flashing LED
– · By pushing the START button you can change the setting
– · Push the POWER button off to save and exit the water softener setting

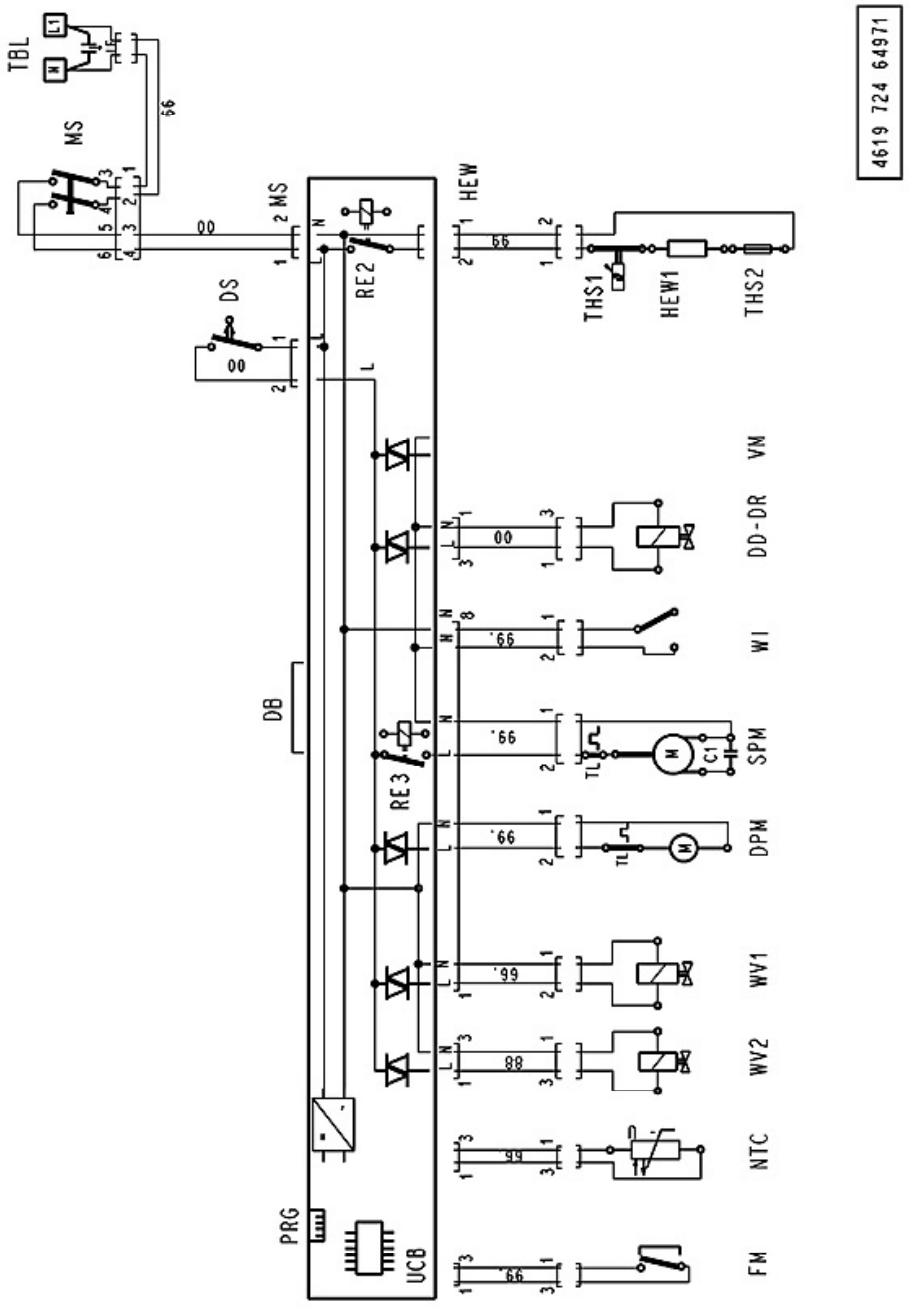
Water hardness

water hardness Water hardness	German degrees °dH	French degrees °fH	English degrees Clarke °e	mmol/l
1 soft	0 - 5	0 - 9	0 - 6,3	0 - 0.9
1 - 2 soft/ medium	6 - 10	10 - 18	7 - 12.6	1 - 1.8
2 medium	11 - 15	19 - 27	13.3 - 18.9	1.9 - 2.
3 medium/ hard	16 - 21	28 - 37	19.6 - 25.9	2.8 - 3.
4 hard	22 - 28	38 - 50	26.6 - 35	3.8 - 5.
4 very hard	29 - 35	51 - 63	35.7 - 44.1	5.1 - 6.
4 extremely hard	36 - 60	64 - 107	44.8 - 74.9	6.4 - 10

Accessory

If you need spare parts apart from the spare part list have a look in the Service Bulletin 4812 718 40084. For higher mounted Dishwashers to prevent the drain off effect - also usable for lower drain pipes and to prevent the failure F8 use Kit 4812 310 18993.

Circuit Diagram

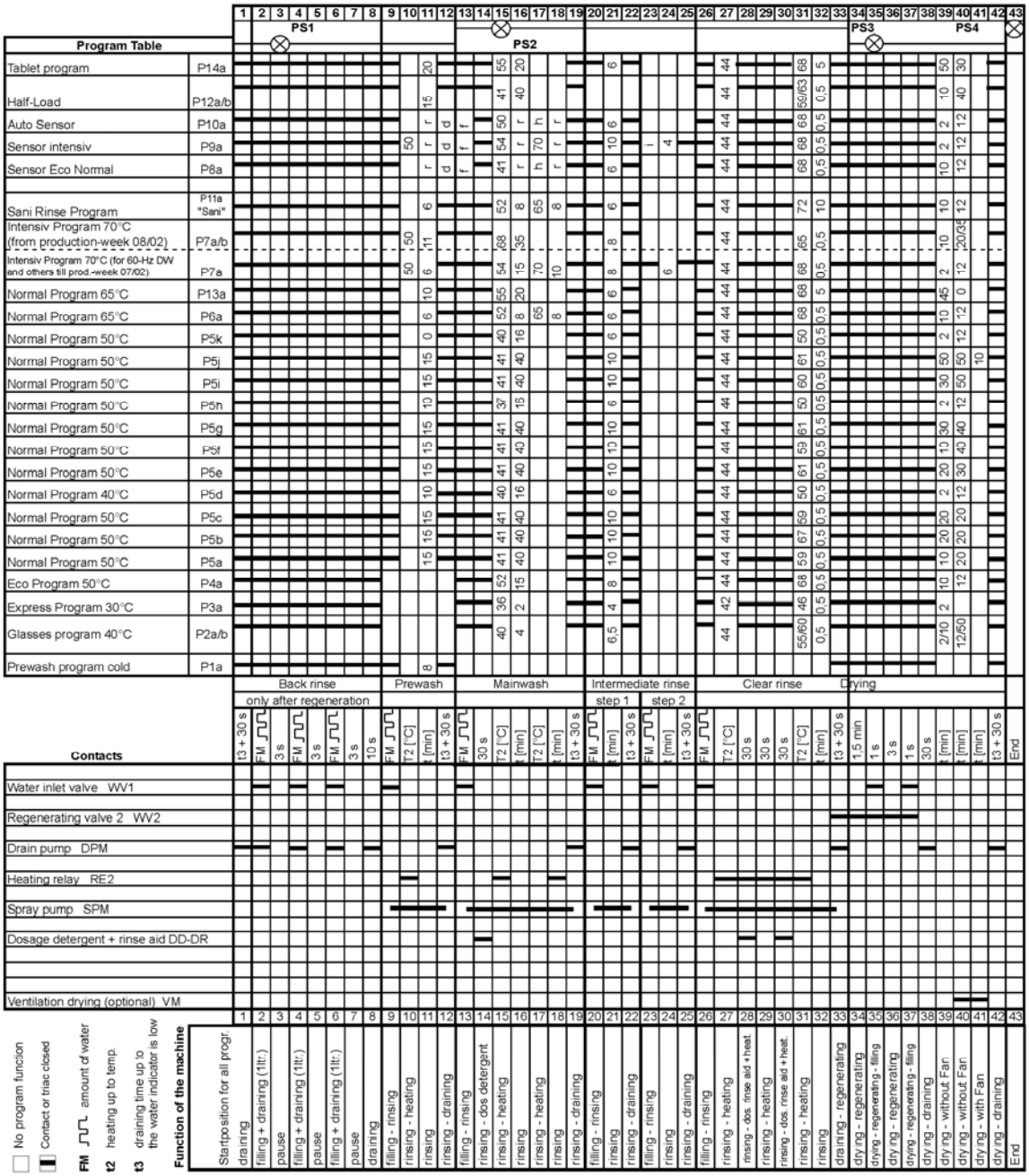


Legend

3IN1	Multi-tablet Micro switch (3in1)
ASA/ WHS	Automatic salt adaption/ Water hardness sensor
C1	Capacitor
CB	Control board
CULCD	Control unit LCD
DB	Display board
DUB	Display- and User board
DLB	Timerswitch Delay
DPM	Drain pump motor
DD	Cleaning agent dosage
DON	Turbidity sensor
DR	Final rinse dosage
DS	Door switch
DVH	Diverter ventil high
DVL	Diverter ventil low
FM	Flow meter
HEWI	Heating
HEX	Valve HEX - Heat exchanger
IF	Interference filter
LS6	Water leakage switch
L	Line
LOTF	Light on the floor module
M	Motor
MS	Main switch
MIX	Mix-Valver for regeneration
NTC	Thermostat temp. sensor
N	Neutral
OWI	Water indicator, optical
PRG	Plug to program
RE	Relay Heating
RE2	Relay Mix valve for Regeneration
RE3	Relay Spray pump motor
RV	Water hardness switch
RR SA	Reed relay salt
RR RA	Reed relay rinsaid
SPM	Sprayarm motor
THS1	Safety thermostat
THS2	Fuse
TBL	Power supply terminal
TL	Winding protective contact
UB	User board
UCB	User- and Control board
UDB	User- and Display board
VM	Fan ventilator
VSM	Variable speed Motor
WI	Water indicator
WV1	Water inlet valve
WV2	Water regenerating valve
ZW	Zone washing valve

00	black
66	blue
88	grey
99	white

Program Chart



d: drain out depends on soil level

f: water fill if (d) water was drained out

h: heating up to 40° C till 70°C depends on soil level

r: rinsing time 0 min. till 12 min. depends on soil level

i: 2nd intermediate rinse depends on soil level

Function diagramm
Point permanent wash

(Ä10: 4619 724 44201/10)
23.10.2006
4619 724 44201-1

Testprogram

Test procedure for SERVICE-TEST-PROGRAM Point dishwashers
appliances with and without 7 Segment Display and an Integrated Board.

Switch on the appliance.

1. If there is a defective component indicated, open up the control board (CB).
2. Check the component.
   Unplug the indicated component from the control board (CB) and check it by using an ohmmeter.
   If the resistance is not correct, check the cables to the component and check the component itself.
3. Visually check the control board (CB).
4. At the end of the repair start the appliance and quit the failure (press in the start button for more the 1.5 sec). After this, start the test program again to see that the failure is solved.

Attention:
Danger of short circuit. Short circuits on components can damage the control board (CB).
If electronic boards are wet, do not switch the appliance on.
To check the appliance, plug in the appliance.
Failures, which occurred during the program will be stored and indicated by flashing the start LED.
The failure will be indicated and can be related to the failure table.
To quit the failure, you must push the start button longer than 1.5 seconds.
The failures: F1 NTC break
F9 continuous water inlet
are checked and indicated immediately after start of the program.
Therefore these failures have to be solved before starting the test program.

When these failures are not solved, the test program does not run.

The electrical components get their voltage via triac from the control board (CB). To test the voltage the voltmeter must be connected in parallel to the component (the component must be connected). If the component is disconnected, then the output voltage from the control board (CB) is reduced.

After starting a program this program is locked. That means neither by unplugging/switching off the appliance nor by setting to another program, the first set program cannot be changed. Changing of the program is only possible by pushing the start button again for longer than 1.5 sec..

Attention: New service control boards start at first with the service test program. This test program is <u>without</u> back rinsing. <u>Dangerous for overfilling the appliance, in case the appliance is not empty</u>. By running the test program or another program a second time, the back rinsing will be carried out as usual.

Remarks:
The test program runs to the failure position and stops or, if there is no failure, it runs to the end.

To leave the test program push the start button for longer than 1.5 second's.

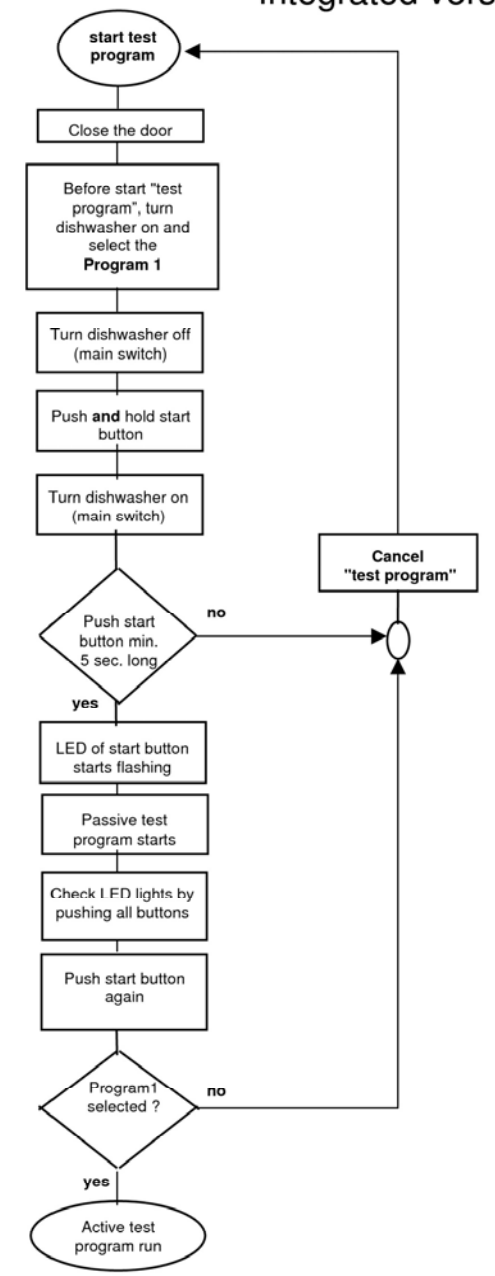
Not enough salt or rinse aid will not stop the running of the appliance.

When the failure position is reached the failure indication is indicated on the page "Failure Codes"

Attention:
If you can't start the test program (Start button doesn't flash), normally there is one of the following failures detected: F1, or F9

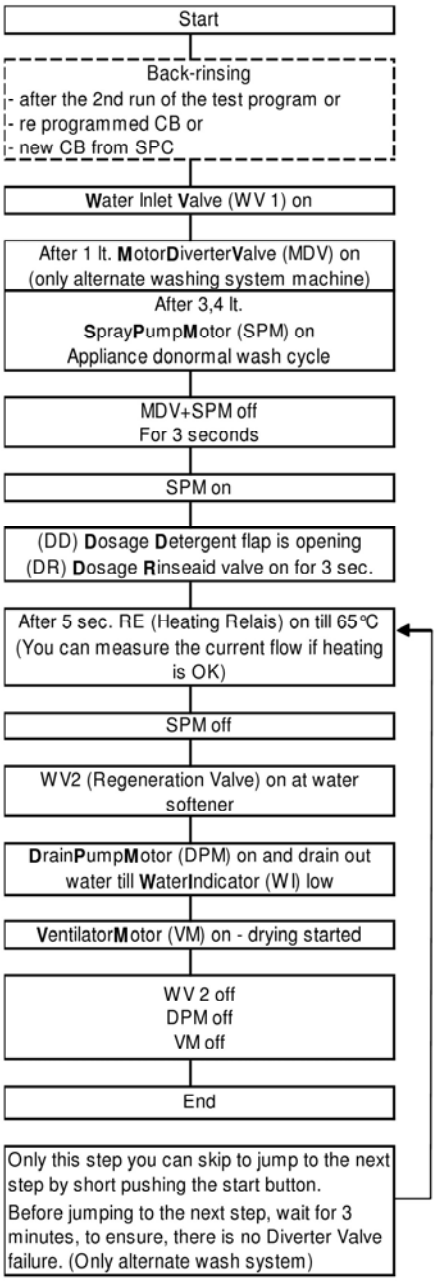
When these failures are not repaired, the test program will not run. After solving the failure you must "sign" (quit) the failure.

Integrated version (Build In)



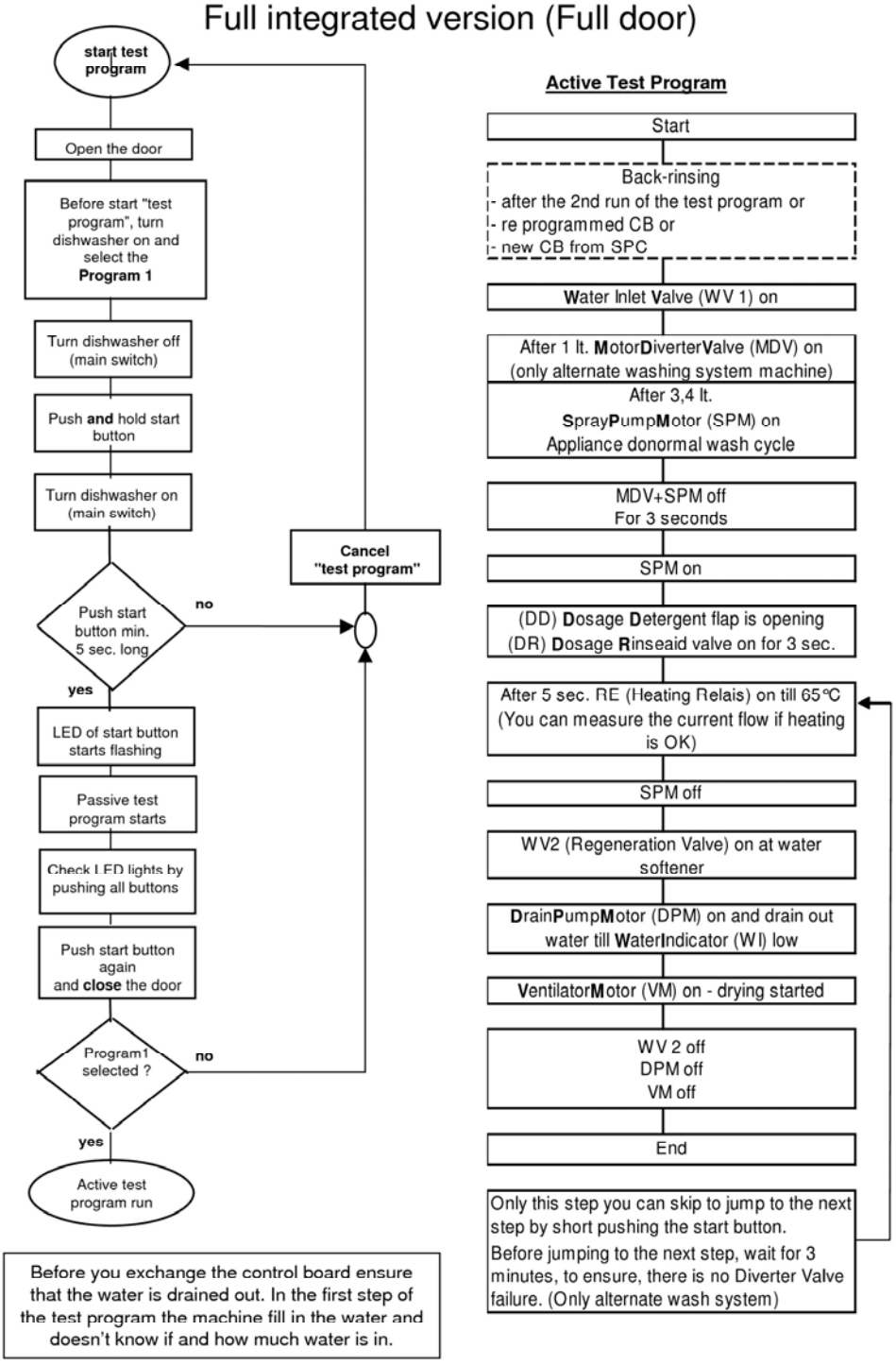
Before you exchange the control board ensure that the water is drained out. In the first step of the test program the machine fill in the water and doesn't know if and how much water is in.

Active Test Program



Only this step you can skip to jump to the next step by short pushing the start button.
Before jumping to the next step, wait for 3 minutes, to ensure, there is no Diverter Valve failure. (Only alternate wash system)

Full integrated version (Full door)



Before you exchange the control board ensure that the water is drained out. In the first step of the test program the machine fill in the water and doesn't know if and how much water is in.

Error Codes

The following failures will only be indicated, when the relevant component is installed.

F0 or 10 times flashing.
Sensor failure (only when a optical sensor is installed)
Reaction:
The program will finish even if this failure is present. The Failure is indicated **only in** the active test program after 10 – 30 seconds. The active test program will finish as well, even with this failure F0.

If the failure appears in a sensor program, the machine will always choose the highest consumption (best cleaning result). It will not be indicated to the customer.
Symptom:

- Customer claims about permanent too long cycles

Reason:

- The sensor is dirty => clean OWI
- Connection between sensor and control board (CB) interrupted => check the wiring
- Defective electronic of the sensor => change OWI
- Optoelectronic parts in the sensor defect => change OWI

Attention: To calibrate the OWI you HAVE TO run the active test program
The failure code will not be stored.
There are two different OWI´s installed and **not** interchangeable.

F1 or 1 time flashing.
NTC break
Symptom:

- Temperature out of the normal value (-3°C till +85°C)

Reason:

- Temperature inside higher than +85°C => check temp. of the incoming water
- NTC defective resistor, short or open circuit => measure the resistor 50 kΩ normally
- Dishwasher is frozen, less than -3°C => Over night in cold environment?

(If the temperature is less than -3°C, fill the appliance with a cup of warm water to warm it up before you start it.)
Reaction:

- Cycle stops, drain pump drains out, failure indication

F2 or 2 times flashing.
Water Leakage
Symptom:

- Water is in the drip tray

Reason:

- Floater (LS6) switches off the Water Inlet Valve (WV1) and the electronic switches on the Drain Pump Motor until Water Indicator reports that the Sump is empty.
- Leakage on the sump, softener, regeneration dosage, tub

Reaction:

- Cycle stops, drain pump drains out, failure indication

F3 or 3 times flashing.
Heating System Defective
Symptom:

- Poor cleaning results
- Poor drying results

Reason:

- Heats too slowly (less than 1,5 °C in 10 min.)
- Heating (HEW) defective (circuit open or to earth) => measure between the connection ca. 25 Ω of the heater plus to the metal cover (over 500kΩ)
- Relay (RE2) on control board (CB) is defective => check if the output of the CB has ca.230V
- NTC - resistance fluctuation => exchange NTC

Indicated after app. 25 minutes (after 5 min. 1st. check after that 2 additional checks, before the failure will be indicated)

Reaction:

- Cycle stops, drain pump drains out, failure indication

F4 or 4 times flashing.
Draining Failure

Symptom:
- Drain pump starts and after 4 min. the WI detects sump "not empty"
- Without WI/OWI the electronic detects a deviation of the motor current consumption.

Reason:
- Outlet hose wrong installed => check the hose and lay it correct (Installation guide)
- Outlet hose squeezed / blocked => check the hose and lay it correct (Installation guide)
- Drain pump (DPM) defective => check the solenoid ca. 150Ω
- Siphon closed => clean & unblock the outlet part
- Control board (CB) defective => check the root cause part then exchange CB
- WI defective (doesn't switch) => clean then exchange

Reaction:
- Cycle stops, drain pump drains out, failure indication

F5 or 5 times flashing.
Variable Speed Motor Failure

Reason:
- Connection between Spray pump (Variable Speed Motor) and control board interrupted.
- Frequency converter on Spray pump broken or control board defective.

=> Check the power voltage on the motor. BUS: 5V DC Motor: 230V AC

Reaction:
- Cycle stops, drain pump drains out, failure indication

F5 or 5 times flashing.
SPM Blocked (MPH motor unit)

Failure condition:
- This failure is only indicated during the active test program
- The electronic detects an irregular deviation of the motor current consumption.

Reason:
- Spray Pump blocked => check pump housing
- Short circuit in motor or wiring => check motor values

Reaction:
- After 5 attempts to reactivate the spray pump motor the cycle stops, drain pump drains out, failure indication

F6 or 6 times flashing.
Water Tap Closed

Symptom:
- Water inlet valve (WV1) is switched on but flow meter (FM) sends no pulses (less than 10 imp. in 10 sec.) and the water indicator (WI) is off (empty)

Reason:
- Water tap closed => open tap
- Water inlet hose blocked => unblock sieve / exchange hose
- Water inlet valve (WV1) defective => measure resistor ca. 3,5kΩ
- Flow meter (FM) defective (count wrong) => exchange flow meter in the reg. dosage

Reaction:
- Opening the water tap within the first 30 sec. of the program cycle resets the failure F6. After more than 30 sec. water inlet valve (WV1) will close due to safety reasons.

F7 or 7 times flashing.
Flow Meter Failure
Symptom:

- Water inlet valve (WV1) is switched on and the water indicator (WI) is on (level reached).

Reason:

- Water tap closed during water inlet => open tap
- Water inlet hose blocked => clean sieve
- Water inlet valve (WV1) defective => measure resistor ca. 3,5kΩ
- Flow meter (FM) sends too few/ much pulses (less than 10 imp. in 10 sec.)
  => Flowmeter counts wrong (or the sump is full in less than 30 sec. Causation: Hose felt down and slipped the disc of the valve. The effect is a displacement of the valve tappet)
  => Aquastop defective
- Aquastop defective => exchange hose
- Flow meter (FM) defective => exchange Flowmeter

Reaction:

- Cycle stops, drain pump drains out, failure indication

F8 or 8 times flashing.
Water Level Failure.
Symptom:

- Foam in the tub / soiled sieve

Reason:

- WI / OWI defect? Should switch on after approx. 1lt. => exchange WI / OWI
- Sieve blocked => clean sieve
- Water strongly foams => poured rinse aid foam under 42°C very strong
- e.g. Pot is turned and is filled with water => advice customer
- No stable spray pump (SPM) working => clean dirty spray arm
  => check the impeller of the pump

Failure condition:
Failures will be indicated over the whole program and appear when:

WI (mech.): the WI switches too often, more than 20 times in 2 minutes.

OWI: The permanent OWI-Signal is missing, after the second measuring for 5 sec. If after the 2nd measuring the OWI-Signal is not present, then it shows the Failure F8.

VWI: The Spray Pump Motor measures permanently the water level. When the water level decrease the motor current will diminish and the control board indicates the failure F8.

Reaction:

- Cycle stops, drain pump drains out, failure indication

F9 or 9 times flashing.
Continuous Water Inlet
Symptom:

- Water inlet valve (WV1) is switched off, water indicator (WI) on, flow meter (FM) sends impulses (more than 10 imp. in 10 sec.)

Reason:

- Water inlet valve (WV1) mechanically not closed => measure resistor ca. 3,5kΩ
- Triac (CB) permanently switched on. (short circuit) => check solenoid resistance of valve then exchange CB

Reaction:

- Cycle stops , failure indication, drain pump drain out until sump is empty.
  When the level of 1,5 lt. is reached, the drain pump runs again.

FA or 11 times flashing.
OWI (Optical Water Indicator) – Failure

Symptom:

- After the flow meter counts 3,4 lt. on permanent washing system or 2,5 lt. on alternating washing system the control board expects a signal from the OWI. The machine try to clean the lens by: Water inlet off for 30 Sec and SPM on for 30 Sec. If the OWI doesn't send the signal "Water in sump" after two checks, the appliance goes into failure mode FA.

Failure condition:

- The Control Board receives no signal

Reason:

- The sensor is dirty (90%) => Lens of the OWI shall be cleaned
- Connection between sensor and control board (CB) interrupted => check the wiring
- Defective electronic of the sensor => change OWI
- Optoelectronic parts in the sensor defect => change OWI

Attention: To calibrate the OWI you HAVE TO run the active test program
The failure code will not be stored.
There are two different OWI´s installed and **not backwards** interchangeable.

Reaction:

- Cycle stops, drain pump drains out, failure indication

FA or 11 times flashing.
WI Failure

Failure condition:

- If the electronic signal of the Flow meter has been received for the 3.4 lt. of water on permanent washing system and the WI signal "Water in the sump" is missing, then the failure occurs.
- The WI needs a level of 1,5 lt. water to react.

Reason:

- Micro switch of the WI defective => measure the switch with an multimeter
- Weak contact => check contact, then exchange WI
- Wiring defective/ interrupted => check wiring and repair it

Reaction:

- Cycle stops, drain pump drains out, failure indication

FB or 12 times flashing.
MDV (Motor Diverter Valve) – Failure

Failure condition:

- The MDV has an inbuilt micro switch. The switch informs the CB about the position of the valve. If after 120 sec. the CB doesn't detect an impulse from MDV, the failure FB will be indicated.

Check:

- Do the upper and lower spray arms alternating in approx. 30-40 sec.?
  If only one turns, then there is a failure. => Check further:
- Is the diverter disc in the sump blocked? Yes. => Unblock it.
- Does 230V come from the control board (ZW,DVH) to the MDV? No.
  => Exchange control board. How to check:
  Start test program and wait until back rinse is over. After the start of the regular water-inlet there have to be 230V within 30 sec. for approx. 20 sec. at the MDV.
- Is the signal cable between the MDV and control board (SAB,DVL) carrying 5V?
- Is the solenoid of the MDV or cable to the MDV interrupted? (ZW,DVH) resistance of the MDV should be approx. 6,5 KW

Reaction: Cycle stops, drain pump drains out, failure indication

FC or 13 times flashing.
ASA (Automatic Salt Adaptation)/ Water hardness sensor Failure
(only indicated in the active test program)

Failure condition:
- Electronic on the water softener detects high electrical resistance in the resin.
- The CB detect a fault in the softener.

Reason:
- Cables on the sensors of the water softener interrupted or weak contact. => correct it
- Cables from the control board (ASA) to the electronic at the water softener interrupted or weak contact. => check and correct wiring
- Electronic of water softener defective. => exchange Softener

Reaction:
- Cycle stops, drain pump drains out, failure indication

FD or 14 times flashing.
Failure on the big green LCD display

Failure condition:
- This failure will be indicated when the wiring between LCD display and control board is faulty

FE or 15 times flashing.
EEPROM Failure

Failure condition:
- After the start of the test program the EEPROM is immediately checked for errors and an error is displayed if any are found.

Reason:
- The control board software has an error. => Reprogram the control board, when ineffective exchange the CB

Reaction:
- Cycle stops, drain pump drains out, failure indication

FF or 16 times flashing.
VWI Failure (Motor characteristic Water Indication) MPH motor unit

Failure condition:
- The failure occurs during permanent motor measurement, when the wiring is interrupted.

Reason:
- Motor defective => check and exchange motor of MPH unit
- Weak contacts => check with multimeter and correct it
- Wiring interrupted => check with multimeter and correct it

Reaction:
- Cycle stops, drain pump drains out, failure indication

No F Codes but can be defective

Appliance jumps to end of program	MPH motor blocked. Start the test program to get the conformation with F5.

Ventilator Fan	ca. 140 Ω
Regeneration Valve	ca. 3,2 kΩ
Dispenser Unit Valve	ca. 1,3 k Ω
Capacitor of the SPM	ca. 2-6 µF
Resistor of the mech. Water Hardness Setting	ca. 2-24 k Ω