INDUSTRIAL WASHER EXTRACTORS

HIGH SPIN WASHER EXTRACTORS:

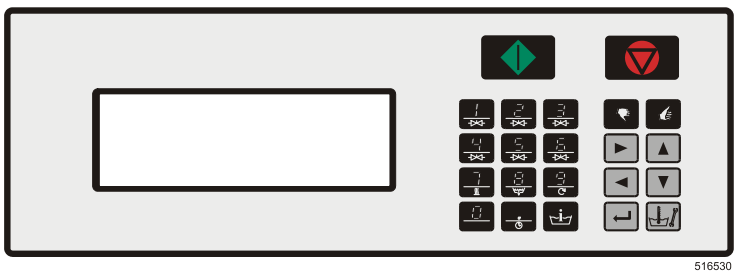
6 kg	16 kg	40 kg
7 kg	22 kg	55 kg
10 kg	22 kg PRO	80 kg
13 kg	33 kg	100 kg
		120 kg

RIGID MOUNTED WASHER EXTRACTORS:

6 kg	18 kg
7 kg	22 kg
10 kg	27 kg
13 kg	35 kg

HIGH SPIN HYGIENIC BARRIER WASHER EXTRACTORS:

16 kg	70 kg
26 kg	90 kg
33 kg	110 kg
44 kg	140 kg
66 kg	180 kg



ORIGINAL PROGRAMMING MANUAL GRAPHITRONIC

531486 B
Publication date: 28 May 2012

Machine type selection:

	Dry load capacity		„Machine type“ selection	
Rigid mounted industrial washer extractors	6 kg / 15 lbs	=>	R6	
	7 kg / 18 lbs	=>	R7	
	10 kg / 25 lbs	=>	R10	
	13 kg / 30 lbs	=>	R13	
	18 kg / 40 lbs	=>	R18	
	22 kg / 50 lbs	=>	R22	
	27 kg / 60 lbs	=>	R27	
	35 kg / 80 lbs	=>	R35	
High spin industrial washer extractors	6 kg / 15 lbs	=>	F6	
	7 kg / 18 lbs	=>	F7	
	10 kg / 25 lbs	=>	F10	
	13 kg / 30 lbs	=>	F13	
	16 kg / 35 lbs	=>	F16	
	22 kg / 50 lbs	=>	F23/3	**Machines with plastic soap dispenser**
	22 kg / 50 lbs	=>	F23/4	**Machines with stainless steel soap dispenser**
	33 kg / 80 lbs	=>	F33	
	40 kg / 100 lbs	=>	F40	
	55 kg / 125 lbs	=>	F55	
	80 kg / 180 lbs	=>	F800	
	100 kg / 220 lb	=>	F1000	
	120 kg / 265 lb	=>	F1200	
High spin hygienic barrier washer extractors	16 kg / 35 lbs	=>	MB16	
	26 kg / 60 lbs	=>	MB26	
	33 kg / 80 lbs	=>	MB33	
	44 kg / 110 lbs	=>	MB44	
	66 kg / 150 lbs	=>	MB66	
	70 kg / 160 lbs	=>	MB70	
	90 kg / 200 lbs	=>	MB90	
	110 kg / 245 lbs	=>	MB110	
	140 kg / 310 lbs	=>	MB140	
	180 kg / 400 lbs	=>	MB180	

1. TABLE OF CONTENTS

2. WARNINGS AND SYMBOLS

2.1. WARNINGS

BEFORE OPERATING A MACHINE CONTROLLED BY AN ELECTRONIC PROGRAMMER, READ THIS MANUAL. INCORRECT USE CAN RESULT IN SERIOUS INJURIES OR DAMAGE TO THE MACHINE CONTROLS. IGNORING INSTRUCTIONS CAN CAUSE AN INCORRECT MACHINE FUNCTION, WHICH MAY RESULT IN INJURIES OR MACHINE AND/OR LINEN DAMAGES.

–Before installation, operating and maintenance of the machine, read complete instructions thoroughly which means the following manuals: „Programming Manual“, „User's Manual“ and „Installation and Maintenance Manual“. Follow these instructions and keep them handy for later use.

– A machine must be installed by following the „Installation and maintenance manual“. Before the first machine start, it must be initialized and tested by a qualified worker. When operating the machine, follow the machine „Users Manual“.

– The electric service line must not be affected by other electrical loading. A nominal voltage, if loaded or not must work in the range ±10% with a maximum permanent frequency deviation of 1% or a short-time one at 2% of a given frequency (50 or 60 Hz). Connecting or starting the machine at an incorrect voltage can damage the programmer.

– The machine must not be exposed to high humidity or extreme high and low temperatures.

– Do not tamper with the controls.

INSTRUCTIONS IN THIS MANUAL DO NOT COVER ALL DANGEROUS SITUATIONS.

IT IS UP TO THE USER TO HANDLE THE MACHINE CAREFULLY.

The manufacturer has the right to change specifications in this manual without prior notice. All the stated information is only for informative purpose and must be considered as general. It is not possible to present all the specific data of the device.

NOTE!

EVERY CIRCUIT BOARD HAS A SERIAL NUMBER AND THE CODE OF THE BOARD (Picture 9.3).

ON THE EPROM MEMORY CHIP ON THE CIRCUIT BOARD IS A LABEL SPECIFYING THE SOFTWARE NUMBER AND VERSION AND/OR THE DATE OF THE SOFTWARE (Picture 9.3).

THESE DATA, AS WELL AS THE MODEL AND SERIAL NUMBER OF THE MACHINE, MUST BE MENTIONED IN ALL CORRESPONDENCE OR INQUIRIES ADDRESSED TO THE DISTRIBUTOR OR MANUFACTURER.

NOTE!

THE „GRAPHITRONIC“ COMPUTER USES „MACHINE TYPE“ CODES TO SELECT THE DIFFERENT PROGRAMMABLE MACHINES EXECUTIONS.

The model number on the machine doesn't indicate the „machine type“ but must be linked with the description of the „machine type“ letters.

- **RS : Rigid mounted Frequency inverter driven machines (MFRxxPNC)**
- **FS : Free standing Frequency inverter driven machines (MFSxxPNF)**
- **MB : Medical Barrier machines.**

2.2. SYMBOLS USED

❑ BUTTONS

OPERATION BUTTONS

- **1 2 3 4 5 6 7 8 9 0**
  - Program number selection buttons

- **START**
  - Starting up a program
  - Advancing the program step by step


100947

- **STOP**
  - Interrupting a program
  - Finishing a program


100948

- **YES**
  - Yes selection


100949

- **NO**
  - No selection


100950

- **ARROW LEFT**
  - Decreasing the sequence time


100951

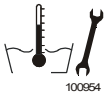
- **ARROW RIGHT**
  - Increasing the sequence time


100952

- **INFO**
  - shows all available wash programs, program steps and functions


100953

- **SERVICE**
  - shows the status and the total number of machine cycles


100954

- **DELAY TIME**
  - activates the time delay function


523392

PROGRAM BUTTONS

- **ARROW UP**
  - Selecting the previous menu item


100955

- **ARROW DOWN**
  - Selecting the next menu item


100956

- **ARROW LEFT**
  - Selecting the previous element of a menu item list


100951

- **ARROW RIGHT**
  - Selecting the next element of a menu item list


100952

- **ENTER**
  - Selecting a new menu
  - Confirmation of a new value or list element and going over to the next menu item


100957

- **YES**
  - Yes Selection


100949

- **NO**
  - No Selection


100950

- **1 2 3 4 5 6 7 8 9 0**
  - Numeric values
  - Numeric Dot


100800

SPECIAL FUNCTION BUTTONS

- **INLET 1 2 3 (4 5 6)**
  - Open the inlet valve


100958

- **HEATING**
  - Activate the heating (if equipped)


100959

- **DRAINAGE**
  - Open the Drain valve


100960

- **SPEED ADJUST**
  - Change the speed value

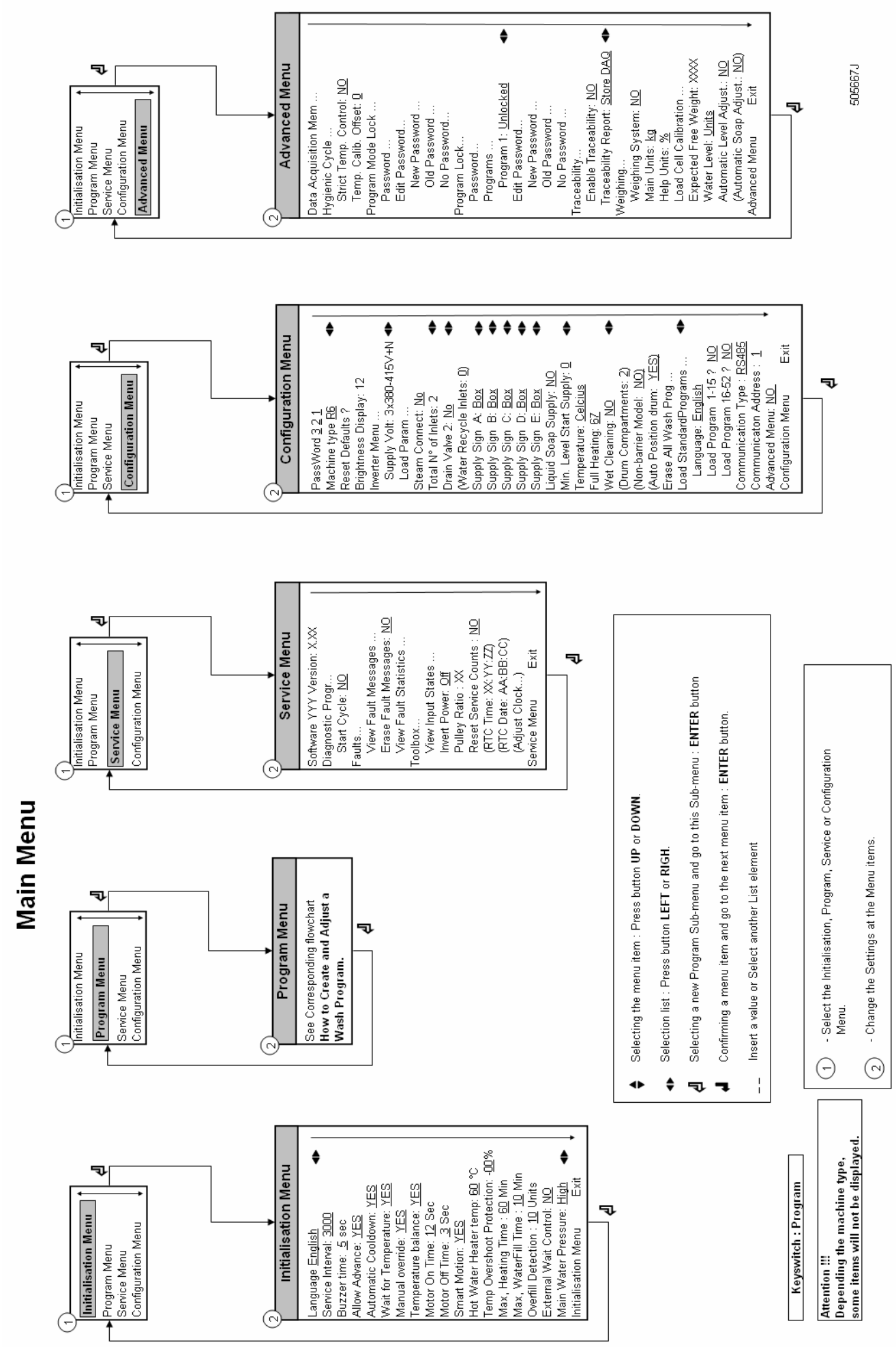

100961

❑ LABELS

On the labels you can find Instructions for the Washing machine Operation and Information about the Wash Programs.

❑ EMERGENCY STOP SWITCH

This emergency stop switch is used by non-coin washer-extractors


Main Menu
Initialisation Menu
Program Menu
Service Menu
Configuration Menu
Advanced Menu
Initialisation Menu
Language English
Service Interval: 3000
Buzzer time: 5 sec
Allow Advance: YES
Automatic Cooldown: YES
Wait for Temperature: YES
Manual override: YES
Temperature balance: YES
Motor On Time: 12 Sec
Motor Off Time: 3 Sec
Smart Motion: YES
Hot Water Heater temp: 60 °C
Temp Overshoot Protection: -00%
Max. Heating Time : 60 Min
Max. WaterFill Time : 10 Min
Overfill Detection : 10 Units
External Wait Control: NO
Main Water Pressure: High
Initialisation Menu Exit
Program Menu
See Corresponding flowchart
How to Create and Adjust a Wash Program.
Service Menu
Software YYY Version: X.XX
Diagnostic Progr...
Start Cycle: NO
Faults...
View Fault Messages ...
Erase Fault Messages: NO
View Fault Statistics ...
Toolbox...
View Input States ...
Invert Power: Off
Pulley Ratio : XX
Reset Service Counts : NO
(RTC Time: XX:YY:ZZ)
(RTC Date: AA:BB:CC)
(Adjust Clock...)
Service Menu Exit
Configuration Menu
PassWord 3 2 1
Machine type R6
Reset Defaults ?
Brightness Display: 12
Inverter Menu ...
Supply Volt: 3x380-415V+N
Load Param ...
Steam Connect: No
Total N° of Inlets: 2
Drain Valve 2: No
(Water Recycle Inlets: 0)
Supply Sign A: Box
Supply Sign B: Box
Supply Sign C: Box
Supply Sign D: Box
Supply Sign E: Box
Liquid Soap Supply: NO
Min. Level Start Supply: 0
Temperature: Celcius
Full Heating: 67
Wet Cleaning: NO
(Drum Compartments: 2)
(Non-barrier Model: NO)
(Auto Position drum: YES)
Erase All Wash Prog ...
Load StandardPrograms ...
Language: English
Load Program 1-15 ? NO
Load Program 16-52 ? NO
Communication Type : RS485
Communicaton Address : 1
Advanced Menu: NO
Configuration Menu Exit
Data Acquisition Mem ...
Hygienic Cycle ...
Strict Temp. Control: NO
Temp. Calib. Offset: 0
Program Mode Lock ...
Password ...
Edit Password...
New Password ...
Old Password ...
No Password ...
Program Lock...
Password...
Programs ...
Program 1: Unlocked
Edit Password...
New Password ...
Old Password ...
No Password ...
Traceability...
Enable Traceability: NO
Traceability Report: Store DAQ
Weighing...
Weighing System: NO
Main Units: kg
Help Units: %
Load Cell Calibration...
Expected Free Weight: XXXX
Water Level: Units
Automatic Level Adjust.: NO
(Automatic Soap Adjust.: NO)
Advanced Menu Exit
Selecting the menu item : Press button UP or DOWN.
Selection list : Press button LEFT or RIGH.
Selecting a new Program Sub-menu and go to this Sub-menu : ENTER button
Confirming a menu item and go to the next menu item : ENTER button.
Insert a value or Select another List element
1 - Select the Initialisation, Program, Service or Configuration Menu.
2 - Change the Settings at the Menu items.
Keyswitch : Program
Attention !!!
Depending the machine type, some items will not be displayed.
505667J

3. BASIC DESCRIPTION OF CONTROLS

3.1. GENERAL

❑ THE CONTROL OFFERS :

- 99 programmable programs (including 15 pre-programmed ones).
- Control of signal voltages for external pumps or liquid supply dispensers.
- Redistribution of the garments to avoid imbalance.
- Automatic temperature balance during the water fill process.
- Setting the machine options and configuration.
- Multiple languages can be selected (one at a time).

❑ IN OPERATION THE FOLLOWING DATA IS DISPLAYED :

- The selected program.
- The active wash step.
- The remaining program time.
- Wash cycle progression bar.
- The name of the sequence.
- Indication of wait for heat (if selected).
- Symbol for water filling.
- Symbol for heating.
- The water level and temperature can be viewed.
- Diagnostic messages.

❑ THE OPERATION MENU :

- A program can be manually Shortened, Extended, Stopped.
- A pause can be programmed.
- Special function buttons allow direct operation of selected components (water valves, etc.).
- Program overview.
- Service information.

❑ THE HARDWARE AND SOFTWARE OF THE GRAPHITRONIC WASH COMPUTER :

- Easy operation by a comprehensive keypad.
- The hardware contains 1 electronic board.
- The GRAPHITRONIC wash computer with Graphic LCD display.
- The wash machine control software is implemented in a Flash Memory and can be easily replaced.
- The Wash Programs are kept in EEPROM memory (non-volatile memory).

3.2. SPECIFIC

❑ The PROGRAM Menu is designated for:

- the creation of a specific **name** for a wash program.
- the creation and implementation of a **new** wash program step by step.
- **editing** a wash program step by step.
- **inserting** and **deleting** steps in the wash program.
- **copying** a wash program.
- **deleting** a wash program.
- inspecting the wash program by the **view** function.

❑ The CONFIGURATION Menu is designated for :

- the selection of the **machine type**.
- **loading** the default **factory settings** for the CONFIGURATION and INITIALIZATION menu.
- the selection of the **Brightness** of the **display**.
- the selection of the **power supply voltage** of the washing machine.
- **loading** the frequency **inverter parameters**.
- **erasing** all the programmed **wash programs** (reset Wash program EEPROM memory).
- **loading** the **standard wash programs**.
- the selection of the **number** of wash machine **water supply inlets**.
- the selection of a **second drain valve**. (water recycling system)
- the selection if the supply has to function as **soap box** or **liquid**.
- the selection if **external liquid pumps** have been connected to the washing machine.
- the selection if the **temperature** must be displayed in degrees **Celsius** or degrees **Fahrenheit**.
- the selection **Full Heating**.
- the selection **Low Water Pressure**
- the selection of **Wet Cleaning** (very low programmable water levels).
- the selection of the **minimum level start supplies**.
- the selection of the number of **compartments** drum for **big MB-machines**.

❑ The INITIALIZATION Menu is designated for :

- the selection of the displayed **Language**.
- programming the **Service due** value.
- the selection of the **Buzzer time** interval.
- the selection of the **Advance** function.
- the selection of the **Wait for temperature** function.
- the selection of the **Manual override** function.
- the selection of the **Temperature balance** function.
- programming the **Default Motor On** and **Off times** for reversing wash action.
- the selection of the **Automatic Cool-down** function.
- the selection of the **Show Economic** function.
- programming the **Boiler temperature** (hot water supply).
- programming the **Temperature Overshoot Protection** value.
- programming the **Maximum Heating time** value.
- programming the **Maximum Fill time** value.
- programming the **Maximum Level overfill** value.

❑ The SERVICE Menu is designated for :

- the inspection of the **error messages** log register and the list with statistics.
- activating the **power** of the frequency inverter.
- the inspection of the functionality of the electric **input** signals.
- resetting the **Cycle counter**.

❑ The DIAGNOSTIC Menu is designated for :

- running a **Diagnostic Program**.

❑ The ADVANCED Menu is designated for :

- special optional applications

3.3. HOW TO GET INTO THE SETUP MODE

For machine with a key switch

Turn the key switch to the setup mode.

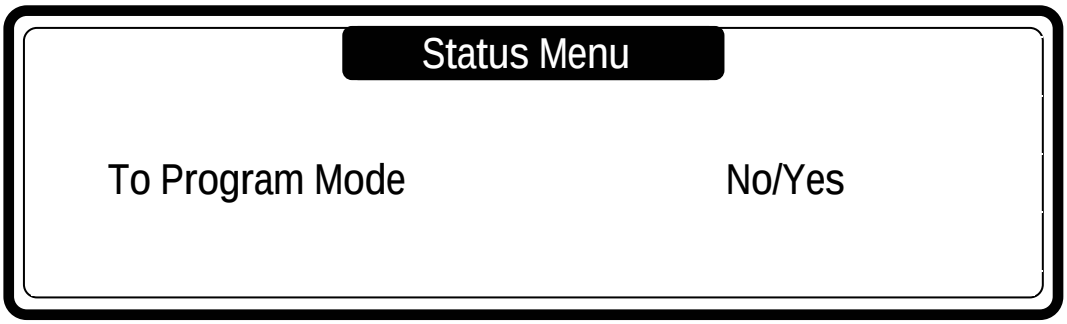
– **RUN MODE:** This is the Normal wash machine operation.

– **PROGRAM MODE:** Only for changing the wash programs and machine settings.

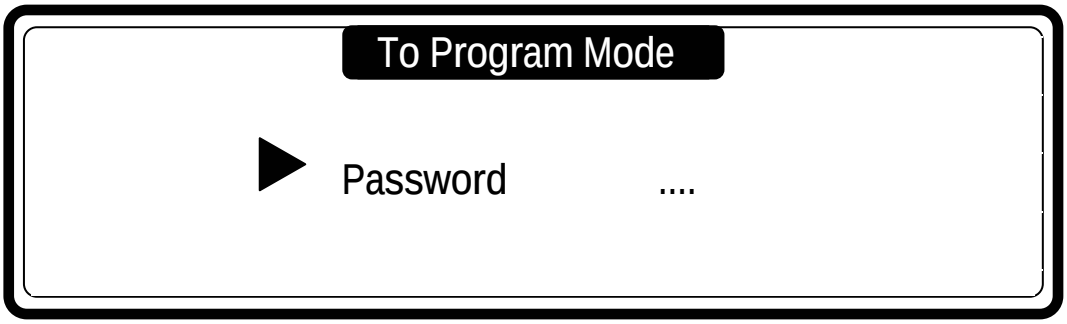
For machines without a key switch (RS6..RS35, FS6..FS23)

Press the Status Button on the keypad.

Press the Arrow Down Button several times until you see the screen with the Menu Selection:
„To Program Mode No/Yes“



Select „Yes“ and by pressing the Enter Button, you will see the Main Menu Screen.
If a Password was enabled first you have to Enter the right Password.



How to leave a setup mode

When the „Main Menu“ screen is shown.

Press the Status Button on the keypad. Then you will return to 'Run Mode“ and
„SELECT CYCLE“ is shown.

99 Wash Programs - 99 Steps

Program 1	Program 2	Program 3	. . .	Program 99
Name Prog	Name Prog	Name Prog		Name Prog
Step 1 Wash Sequence Drain/ Extraction Sequence	**Step 1** Wash Sequence Drain/ Extraction Sequence	**Step 1** Wash Sequence Drain/ Extraction Sequence	. . .	**Step 1** Wash Sequence Drain/ Extraction Sequence
Step 2 Wash Sequence Drain/ Extraction Sequence	**Step 2** Wash Sequence Drain/ Extraction Sequence	. . .		**Step 2** Wash Sequence Drain/ Extraction Sequence
Step 3 Wash Sequence Drain/ Extraction Sequence	. . .			**Step 3** Wash Sequence Drain/ Extraction Sequence
. . .				. . .
Step 99 Wash Sequence Drain/ Extraction Sequence				**Step 99** Wash Sequence Drain/ Extraction Sequence
Tumble Sequence	**Tumble Sequence**	**Tumble Sequence**	. . .	**Tumble Sequence**

Available Wash Sequences : Prewash, Wash, Cooldown, Rinse, Final Rinse, Soak, Flush, Spray, No Wash

AVAILABLE DRAIN/EXTRACTION SEQUENCES : **DRAIN, EXTRACT, NO DRAIN, STATIC DRAIN, REV DRAIN**

3.4. THE CREATION OF A WASH PROGRAM

- **a Wash Program is built up step by step.**
- **each step always consists of a Wash sequence and a Drain/Extraction sequence.**

❑ Top soap dispenser and Front soap dispenser washing machines :

101008

- The GRAPHITRONIC Wash Computer is designated for 2 Main groups of washing machines:

- The washing machines with Top Soap Dispenser

101009

- The washing machines with Front Soap Dispenser

- Depending upon the machine type, more or less machine functions are available.

❑ Programming the Wash sequence :

- First choose the type of Wash sequence.

Washing machine with Top Soap Dispenser	Washing machine with Front (or side) Soap Dispenser
◆ **PREWASH**	◆ **WASH**
◆ **WASH**	◆ **COOLDOWN**
◆ **COOLDOWN**	◆ **RINSE**
◆ **RINSE**	◆ **SOAK**
◆ **FINAL RINSE**	◆ **SPRAY**
◆ **FLUSH**	◆ **No WASH**
◆ **SOAK**	
◆ **SPRAY**	
◆ **No WASH**	

- Then program all the related functions of the sequence.

The available functions are :

- **Temperature**
- **Water Level**
- **Water Inlet Valves**
- **The Wash Speed**
- **The Reversing Interval times**
- **Supplies**
- **Sequence Time (length of step)**
- **Drain valve 1 – 2**
- **Pause Signal**

- You will notice that each step has default settings.
  This feature is very helpful as most of the newly created programs will not require changes to be made to the suggested values.

❑ Programming the Drain sequence :

- After programming the Wash sequence, next program the Drain/Extraction sequence.

Washing Machines with 1 motor

- **DRAIN**
- **EXTRACTION**
- **No DRAIN**
- **Static DRAIN**
- **Reversing DRAIN**

- Then program all the related functions of the Drain/Extraction sequence.

The available functions are :

- **Sequence Time** (length of step)
- **Speed**
- **Drain valve 1 – 2**

- As you will notice it's also possible to skip a sequence between two other sequences by programming **No WASH** or **No Drain**.

Example : The No drain sequence should be programmed between a wash and a cool-down sequence.

⚠ **ATTENTION!**
A MORE DETAILED EXPLANATION FOR THE SPECIFIC SEQUENCES CAN BE FOUND IN CHAPTER 5.

❑ The Tumble sequence :

- The wash cycle will always end with the Tumble sequence.
- The tumble sequence takes 30 Seconds, then the program is finished and the door can be opened.
- **The Tumble sequence cannot be skipped**.

3.5. PROGRAMMING THE FUNCTIONS

❑ Limits

- To ensure the correct functionality of the washing machine you have to program values within certain limits.
- If you program a value that falls below the minimal or above the maximal programmable limit then the new value will not be accepted and the previous value stays valid.

❑ Programming the Water Temperature

- Limits
  - Minimum value : 1 °C
  - Maximum value : 45°C for the PREWASH and SOAK and 92°C for the WASH sequence.
  - For RINSE, FINAL RINSE, FLUSH and SPRAY no Temperature can be programmed.

❑ Programming the Water Inlet valves

- Depending on the programmed temperature the water inlet valves are suggested.
- While the tub is filling with water, the computer controls the water temperature. By switching on and off the hot and cold water inlet valves the correct water temperature is obtained.
- For machines with a Top Soap Dispenser you have to consider that by programming the water inlet valves, at the same time, you are also selecting the soap Box at which the soap must be added.
- If you want to program a wash sequence with :
  - Cold Water : only Cold Inlet Valves must be programmed
  - Warm or Hot water : Cold **and** Hot Inlet Valves must be programmed

Top Soap Dispenser washing machines: MFR

The cold water inlet valves

Inlet Valve 2	corresponds with	Soap Box A (Prewash)
Inlet Valve 5	corresponds with	Soap Box B (Wash)
Inlet Valve 1	corresponds with	Soap Box C (Final Rinse)
Inlet Valve 6	is a direct Inlet Valve and speeds up the water fill process	

The hot water inlet valves

Inlet Valve 4	corresponds with	Soap Box B (Wash)
Inlet Valve 3	is a direct inlet Valve and speeds up the water fill process	

How to select inlet valves : EXAMPLE

◆ For a Prewash :	Programmable temperature:	1 - 45°C
	Inlet Valve 2 (cold)	Soap box A
	+ Inlet Valve 3 (hot) and/or 6 (cold)	Direct Inlets
◆ For a Wash :	Programmable temperature:	1 - 92°C
	Inlet Valve 4 (hot) and/or 5 (cold)	Soap box B
	+ Inlet Valve 3 (hot) and/or 6 (cold)	Direct Inlets
◆ For a Rinse :	Inlet valves 2 + 5 + 6 (cold)	No Soap is added
◆ For a Final Rinse :	Inlet valve 1 (cold hard) (or cold soft)	Soap box C
	+ Inlet valve 6 (cold soft)	only if No cold hard water for Inlet 1

⚠ **ATTENTION!**
FOR MACHINES WITH LIQUID SUPPLY PUMPS, DIRECT WATER INLET VALVES 3 OR 6 MUST BE PROGRAMMED BECAUSE THE LIQUID IS ADDED AT THE DIRECT WATER INLET CHANNEL.
DEPENDING ON THE WASHING MACHINE EXECUTION, WATER INLET VALVE 1 WILL FUNCTION WITH COLD WATER.
FOR WASHING MACHINES WITH WATER RECYCLING, THE WATER RECYCLING SUPPLY MUST BE CONNECTED TO INLET VALVE 2 OR 5

Front or Side Soap Dispenser washing machines :

The cold water inlet valves

Inlet Valve 1 : Cold Hard Water or Recycled Water
Inlet Valve 2 : Cold Soft Water

The hot water inlet valve

Inlet Valve 3 : Warm Soft Water

⚠ **ATTENTION!**
FOR A FRONT SOAP DISPENSER WASHING MACHINE, TO ADD SOAP, THE SUPPLIES MUST BE PROGRAMMED.

❑ Programming the water level

– Water level Limits
- See table 3.4 A and 3.4 B as these values are different for each machine type.
- Minimum value : above the heating elements and the temperature sensor
- Maximum value : below the overflow outlet

– Normal Low Level, Normal High Level
- The Normal Low Level is recommended for the PREWASH, WASH and SOAK sequences.
- The Normal High Level is recommended for the RINSE and FINAL RINSE Sequences.
- At the FLUSH sequence, you can't program a water level as the water will escape by the overflow opening.
- At the COOLDOWN sequence, the GRAPHITRONIC Wash Computer makes use of a low water level and is draining the water automatically.
- At the Spray sequence, the Drain valve stays open.

– Economic water level
- If you prefer a wash cycle with an economic water level :
  – you can select „Show ECONOMIC" in the initialization menu to make use of the standard ECONOMIC function. Then at the start of each wash cycle, the question **ECONOMIC?** will be posed. If you select ECONOMIC then the program will function with 20% units less water.
  – or you may make dedicated programs with a water level 20% units below the Normal water level.

– Wet Cleaning selection Configuration menu
- It's possible to program a level below default minimum programmable level. (see table)
- The heating will not be functional for a water level below the standard minimum programmable water level.

⚠ **ATTENTION!**
FOR WOOLENS AND OTHER DELICATE LINEN A NORMAL HIGH WATER LEVEL IS RECOMMENDED. THE ECONOMIC FUNCTION SHOULD ONLY BE USED FOR LIGHTLY SOILED AND/OR SMALLER VOLUMES OF LAUNDRY. IN OTHER CASES, THE PROGRAM WILL GIVE POOR WASHING QUALITY.

Programmable water level units related to the amount of water in the tub

Programmed water LEVEL (Water level height in units)	RS6	RS7	RS10	RS13	RS18	RS22	RS27	RS35
15								
16	① 9 ℓ	① 10 ℓ	① 14 ℓ					
17	② 10 ℓ	② 11 ℓ	② 15 ℓ	① 16 ℓ				
18	11 ℓ	12 ℓ	16 ℓ	17 ℓ				
19	12 ℓ	13 ℓ	17 ℓ	② 19 ℓ				
20	13 ℓ	14 ℓ	18 ℓ	21 ℓ	19 ℓ	27 ℓ		
21	14 ℓ	15 ℓ	19 ℓ	23 ℓ	① 22 ℓ	① 32 ℓ		
22	**③ 15 ℓ**	**③ 16 ℓ**	**③ 22 ℓ**	25 ℓ	25 ℓ	37 ℓ		① 49 ℓ
23	17 ℓ	18 ℓ	25 ℓ	28 ℓ	② 28 ℓ	② 42 ℓ		55 ℓ
24	**④ 18 ℓ**	**④ 20 ℓ**	**④ 28 ℓ**	**③ 31 ℓ**	31 ℓ	47 ℓ		② 61 ℓ
25	19 ℓ	22 ℓ	31 ℓ	34 ℓ	35 ℓ	52 ℓ	①② 50 ℓ	67 ℓ
26	21 ℓ	24 ℓ	34 ℓ	**④ 37 ℓ**	38 ℓ	57 ℓ	55 ℓ	73 ℓ
27	23 ℓ	26 ℓ	36 ℓ	40 ℓ	41 ℓ	62 ℓ	60 ℓ	78 ℓ
28	25 ℓ	29 ℓ	38 ℓ	43 ℓ	**③ 44 ℓ**	**③ 67 ℓ**	**③ 65 ℓ**	**③ 83 ℓ**
29	27 ℓ	32 ℓ	41 ℓ	46 ℓ	48 ℓ	72 ℓ	70 ℓ	89 ℓ
30	28 ℓ	34 ℓ	43 ℓ	49 ℓ	**④ 52 ℓ**	**④ 77 ℓ**	**④ 76 ℓ**	95 ℓ
31	30 ℓ	36 ℓ	45 ℓ	52 ℓ	56 ℓ	83 ℓ	81 ℓ	**④ 101 ℓ**
32	32 ℓ	38 ℓ	48 ℓ	55 ℓ	60 ℓ	89 ℓ	86 ℓ	107 ℓ
33	33 ℓ	40 ℓ	51 ℓ	58 ℓ	63 ℓ	95 ℓ	91 ℓ	113 ℓ
34	35 ℓ	42 ℓ	54 ℓ	60 ℓ	67 ℓ	101 ℓ	96 ℓ	119 ℓ
35	37 ℓ	45 ℓ	57 ℓ	63 ℓ	71 ℓ	107 ℓ	101 ℓ	125 ℓ
36	39 ℓ	47 ℓ	59 ℓ	66 ℓ	75 ℓ	113 ℓ	106 ℓ	131 ℓ
37	41 ℓ	49 ℓ	61 ℓ	69 ℓ	79 ℓ	119 ℓ	111 ℓ	137 ℓ
38	43 ℓ	51 ℓ	64 ℓ	72 ℓ	83 ℓ	125 ℓ	116 ℓ	144 ℓ
39	45 ℓ	53 ℓ	66 ℓ	76 ℓ	87 ℓ	131 ℓ	121 ℓ	150 ℓ
40	47 ℓ	55 ℓ	68 ℓ	79 ℓ	91 ℓ	137 ℓ	127 ℓ	157 ℓ
41				83 ℓ	96 ℓ	143 ℓ	132 ℓ	164 ℓ
42				86 ℓ	100 ℓ	149 ℓ	137 ℓ	170 ℓ
43				89 ℓ	104 ℓ	155 ℓ	142 ℓ	177 ℓ
44				92 ℓ	108 ℓ	161 ℓ	148 ℓ	184 ℓ
45				95 ℓ	113 ℓ	167 ℓ	153 ℓ	192 ℓ
46					117 ℓ	173 ℓ	159 ℓ	198 ℓ
47					121 ℓ	179 ℓ	164 ℓ	204 ℓ
48					125 ℓ	185 ℓ	170 ℓ	210 ℓ
49					129 ℓ	191 ℓ	175 ℓ	216 ℓ
50					133 ℓ	197 ℓ	181 ℓ	223 ℓ
51							187 ℓ	230 ℓ
52							192 ℓ	
53							198 ℓ	
54							203 ℓ	
55							208 ℓ	
56							214 ℓ	
57							220 ℓ	
58							225 ℓ	
59							231 ℓ	
60							236 ℓ	

① Economic Low Level ② Economic High Level ③ Normal Low Level ④ Normal High Level

Programmable water level units related to the amount of water in the tub

Programmed water LEVEL (Water level height in units)	Machine type FS6	FS7	FS10	FS13	FS16	FS22	FS23
15	① 9 ℓ	① 10 ℓ					
16	10 ℓ	10 ℓ	① 12 ℓ				
17	② 10 ℓ	② 11 ℓ	12 ℓ				
18	11 ℓ	12 ℓ	② 13 ℓ	14 ℓ	15 ℓ		
19	12 ℓ	13 ℓ	14 ℓ	① 16 ℓ	① 17 ℓ		
20	13 ℓ	14 ℓ	15 ℓ	18 ℓ	19 ℓ		24 ℓ
21	14 ℓ	15 ℓ	17 ℓ	② 20 ℓ	② 22 ℓ		① 27 ℓ
22	**③ 16 ℓ**	**③ 17 ℓ**	**③ 20 ℓ**	23 ℓ	25 ℓ		30 ℓ
23	17 ℓ	18 ℓ	23 ℓ	25 ℓ	28 ℓ		② 34 ℓ
24	**④ 18 ℓ**	**④ 20 ℓ**	**④ 25 ℓ**	27 ℓ	31 ℓ		37 ℓ
25	20 ℓ	22 ℓ	28 ℓ	**③ 30 ℓ**	34 ℓ		41 ℓ
26	22 ℓ	24 ℓ	31 ℓ	33 ℓ	37 ℓ		45 ℓ
27	24 ℓ	26 ℓ	33 ℓ	36 ℓ	**③ 40 ℓ**		49 ℓ
28	26 ℓ	28 ℓ	36 ℓ	**④ 38 ℓ**	43 ℓ	29 ℓ	53 ℓ
29	28 ℓ	31 ℓ	38 ℓ	41 ℓ	46 ℓ	33 ℓ	**③ 57 ℓ**
30	30 ℓ	33 ℓ	40 ℓ	44 ℓ	**④ 49 ℓ**	37 ℓ	61 ℓ
31	32 ℓ	35 ℓ	43 ℓ	47 ℓ	53 ℓ	① 41 ℓ	**④ 65 ℓ**
32	33 ℓ	37 ℓ	46 ℓ	50 ℓ	57 ℓ	45 ℓ	69 ℓ
33	35 ℓ	39 ℓ	48 ℓ	53 ℓ	60 ℓ	49 ℓ	73 ℓ
34	37 ℓ	41 ℓ	50 ℓ	56 ℓ	63 ℓ	53 ℓ	78 ℓ
35	38 ℓ	44 ℓ	53 ℓ	59 ℓ	67 ℓ	57 ℓ	83 ℓ
36	40 ℓ	46 ℓ	55 ℓ	62 ℓ	70 ℓ	② 61 ℓ	88 ℓ
37	42 ℓ	48 ℓ	58 ℓ	65 ℓ	74 ℓ	**③ 66 ℓ**	92 ℓ
38	43 ℓ	51 ℓ	61 ℓ	68 ℓ	78 ℓ	71 ℓ	96 ℓ
39	45 ℓ	53 ℓ	63 ℓ	72 ℓ	81 ℓ	75 ℓ	101 ℓ
40	47 ℓ	55 ℓ	65 ℓ	75 ℓ	84 ℓ	79 ℓ	106 ℓ
41				78 ℓ	88 ℓ	83 ℓ	111 ℓ
42				81 ℓ	91 ℓ	**④ 87 ℓ**	115 ℓ
43				85 ℓ	95 ℓ	91 ℓ	119 ℓ
44				88 ℓ	99 ℓ	95 ℓ	124 ℓ
45				91 ℓ	103 ℓ	100 ℓ	129 ℓ
46				94 ℓ	107 ℓ	105 ℓ	134 ℓ
47				97 ℓ	111 ℓ	110 ℓ	139 ℓ
48				100 ℓ	114 ℓ	114 ℓ	144 ℓ
49					118 ℓ	119 ℓ	149 ℓ
50					122 ℓ	124 ℓ	153 ℓ
51					124 ℓ	129 ℓ	157 ℓ
52					127 ℓ	134 ℓ	162 ℓ
53						140 ℓ	167 ℓ
54						145 ℓ	172 ℓ
55						150 ℓ	176 ℓ
56						155 ℓ	
57						160 ℓ	
58						165 ℓ	
59						170 ℓ	
60						175 ℓ	

① Economic Low Level ② Economic High Level ③ Normal Low Level ④ Normal High Level

Programmable water level units related to the amount of water in the tub

Machine type		FS33	FS40	FS55	FS800	FS1000	FS1200
Programmed water LEVEL (Water level height in units)	27				86 ℓ		
	28				91 ℓ		
	29				98 ℓ		
	30				105 ℓ	150 ℓ	160 ℓ
	31				114 ℓ	159 ℓ	170 ℓ
	32				121 ℓ	① 168 ℓ	180 ℓ
	33				① 129 ℓ	177 ℓ	190 ℓ
	34				138 ℓ	186 ℓ	① 200 ℓ
	35				147 ℓ	195 ℓ	210 ℓ
	36				② 155 ℓ	② 206 ℓ	221 ℓ
	37				163 ℓ	217 ℓ	232 ℓ
	38	① 43 ℓ	① 58 ℓ	① 62 ℓ	172 ℓ	228 ℓ	242 ℓ
	39	47 ℓ	62 ℓ	66 ℓ	181 ℓ	239 ℓ	② 253 ℓ
	40	② 51 ℓ	② 66 ℓ	② 70 ℓ	190 ℓ	250 ℓ	264 ℓ
	41	55 ℓ	70 ℓ	76 ℓ	198 ℓ	261 ℓ	276 ℓ
	42	59 ℓ	74 ℓ	82 ℓ	207 ℓ	272 ℓ	288 ℓ
	43	63 ℓ	78 ℓ	88 ℓ	215 ℓ	③ 283 ℓ	299 ℓ
	44	67 ℓ	83 ℓ	95 ℓ	③ 225 ℓ	294 ℓ	311 ℓ
	45	70 ℓ	88 ℓ	101 ℓ	235 ℓ	305 ℓ	323 ℓ
	46	74 ℓ	93 ℓ	107 ℓ	245 ℓ	317 ℓ	③ 335 ℓ
	47	78 ℓ	**③ 99 ℓ**	**③ 115 ℓ**	**255** ℓ	④ 329 ℓ	347 ℓ
	48	**③ 83 ℓ**	105 ℓ	122 ℓ	268 ℓ	341 ℓ	358 ℓ
	49	88 ℓ	111 ℓ	130 ℓ	④ 276 ℓ	353 ℓ	370 ℓ
	50	**④ 93 ℓ**	**④ 118 ℓ**	138 ℓ	285 ℓ	365 ℓ	382 ℓ
	51	97 ℓ	123 ℓ	144 ℓ	294 ℓ	377 ℓ	395 ℓ
	52	101 ℓ	128 ℓ	**④ 150 ℓ**	305 ℓ	389 ℓ	④ 407 ℓ
	53	105 ℓ	133 ℓ	156 ℓ	313 ℓ	401 ℓ	420 ℓ
	54	109 ℓ	139 ℓ	164 ℓ	324 ℓ	413 ℓ	432 ℓ
	55	114 ℓ	145 ℓ	172 ℓ	334 ℓ	425 ℓ	445 ℓ
	56	119 ℓ	152 ℓ	181 ℓ	346 ℓ	437 ℓ	458 ℓ
	57	123 ℓ	158 ℓ	188 ℓ	356 ℓ	449 ℓ	470 ℓ
	58	127 ℓ	164 ℓ	195 ℓ	365 ℓ	461 ℓ	483 ℓ
	59	132 ℓ	171 ℓ	203 ℓ	376 ℓ	473 ℓ	495 ℓ
	60	137 ℓ	175 ℓ	210 ℓ	386 ℓ	485 ℓ	508 ℓ
	61	142 ℓ	179 ℓ	218 ℓ	398 ℓ	496 ℓ	521 ℓ
	62	148 ℓ	184 ℓ	226 ℓ	407 ℓ	507 ℓ	535 ℓ
	63	153 ℓ	191 ℓ	233 ℓ	419 ℓ	518 ℓ	548 ℓ
	64	158 ℓ	198 ℓ	240 ℓ	429 ℓ	529 ℓ	562 ℓ
	65	163 ℓ	205 ℓ	248 ℓ	440 ℓ	540 ℓ	575 ℓ
	66	168 ℓ	211 ℓ	256 ℓ	451 ℓ	552 ℓ	588 ℓ
	67	173 ℓ	217 ℓ	265 ℓ	464 ℓ	564 ℓ	601 ℓ
	68	179 ℓ	224 ℓ	274 ℓ	472 ℓ	576 ℓ	615 ℓ
	69	184 ℓ	229 ℓ	280 ℓ	483 ℓ	588 ℓ	628 ℓ
	70	189 ℓ	234 ℓ	287 ℓ	488 ℓ	600 ℓ	641 ℓ
	71	195 ℓ	239 ℓ	294 ℓ	499 ℓ		
	72	200 ℓ	246 ℓ	302 ℓ	519 ℓ		
	73	206 ℓ	253 ℓ	310 ℓ			
	74	212 ℓ	261 ℓ	318 ℓ			
	75	216 ℓ	266 ℓ	326 ℓ			
	76	220 ℓ	272 ℓ	334 ℓ			
	77	225 ℓ	278 ℓ	343 ℓ			
	78	230 ℓ	282 ℓ	350 ℓ			
	79	235 ℓ	287 ℓ	358 ℓ			
	80	240 ℓ	292 ℓ	366 ℓ			

① Economic Low Level ② Economic High Level ③ Normal Low Level ④ Normal High Level

Machine type		Programmable water level units related to the amount of water in the tub				
		MB16	MB26	MB33	MB44	MB66
Programmed water LEVEL (Water level height in units)	27					
	28					
	29					
	30	30 ℓ	32 ℓ	30 ℓ	59 ℓ	97 ℓ
	31	① 33 ℓ	36 ℓ	34 ℓ	65 ℓ	① 105 ℓ
	32	36 ℓ	① 40 ℓ	38 ℓ	① 71 ℓ	113 ℓ
	33	39 ℓ	44 ℓ	① 43 ℓ	77 ℓ	123 ℓ
	34	② 42 ℓ	48 ℓ	48 ℓ	83 ℓ	② 133 ℓ
	35	45 ℓ	② 52 ℓ	53 ℓ	② 90 ℓ	144 ℓ
	36	49 ℓ	57 ℓ	② 59 ℓ	96 ℓ	153 ℓ
	37	**③ 53 ℓ**	**③ 62 ℓ**	65 ℓ	102 ℓ	**③ 163 ℓ**
	38	57 ℓ	67 ℓ	70 ℓ	**③ 109 ℓ**	173 ℓ
	39	61 ℓ	72 ℓ	75 ℓ	116 ℓ	184 ℓ
	40	**④ 65 ℓ**	**④ 77 ℓ**	**③ 80 ℓ**	124 ℓ	**④ 196 ℓ**
	41	70 ℓ	82 ℓ	86 ℓ	**④ 132 ℓ**	208 ℓ
	42	75 ℓ	87 ℓ	91 ℓ	140 ℓ	220 ℓ
	43	80 ℓ	92 ℓ	**④ 95 ℓ**	148 ℓ	234 ℓ
	44	85 ℓ	98 ℓ	102 ℓ	157 ℓ	246 ℓ
	45	90 ℓ	105 ℓ	107 ℓ	167 ℓ	259 ℓ
	46	95 ℓ	112 ℓ	115 ℓ	177 ℓ	272 ℓ
	47	100 ℓ	119 ℓ	123 ℓ	188 ℓ	286 ℓ
	48	105 ℓ	124 ℓ	131 ℓ	196 ℓ	299 ℓ
	49	112 ℓ	129 ℓ	140 ℓ	204 ℓ	312 ℓ
	50	119 ℓ	134 ℓ	147 ℓ	212 ℓ	325 ℓ
	51	126 ℓ	140 ℓ	156 ℓ	221 ℓ	339 ℓ
	52	133 ℓ	146 ℓ	163 ℓ	230 ℓ	354 ℓ
	53	140 ℓ	153 ℓ	171 ℓ	239 ℓ	368 ℓ
	54	147 ℓ	161 ℓ	179 ℓ	247 ℓ	379 ℓ
	55	154 ℓ	170 ℓ	188 ℓ	255 ℓ	390 ℓ
	56	161 ℓ	179 ℓ	197 ℓ	264 ℓ	402 ℓ
	57	168 ℓ	185 ℓ	206 ℓ	274 ℓ	417 ℓ
	58	175 ℓ	192 ℓ	215 ℓ	284 ℓ	432 ℓ
	59	182 ℓ	199 ℓ	225 ℓ	294 ℓ	448 ℓ
	60	189 ℓ	207 ℓ	234 ℓ	302 ℓ	465 ℓ
	61	197 ℓ	215 ℓ	243 ℓ	310 ℓ	483 ℓ
	62	205 ℓ	224 ℓ	253 ℓ	319 ℓ	501 ℓ
	63	213 ℓ	231 ℓ	262 ℓ	328 ℓ	517 ℓ
	64	221 ℓ	238 ℓ	271 ℓ	338 ℓ	533 ℓ
	65	228 ℓ	245 ℓ	280 ℓ	348 ℓ	550 ℓ
	66					
	67					
	68					
	69					
	70					
	71					
	72					
	73					
	74					
	75					
	76					
	77					
	78					
	79					
	80					

① Economic Low Level ② Economic High Level ③ Normal Low Level ④ Normal High Level

Programmable water level units related to the amount of water in the tub

Machine type		MB70	MB90	MB110	MB140	MB180
Programmed water LEVEL (Water level height in units)	15	115 ℓ				
	16	① 123 ℓ				
	17	129 ℓ	143 ℓ			
	18	138 ℓ	① 154 ℓ			
	19	147 ℓ	165 ℓ	185 ℓ		
	20	② 153 ℓ	176 ℓ	① 196 ℓ		
	21	162 ℓ	185 ℓ	208 ℓ		
	22	170 ℓ	② 196 ℓ	220 ℓ	① 287 ℓ	294 ℓ
	23	180 ℓ	207 ℓ	235 ℓ	301 ℓ	309 ℓ
	24	**③ 189 ℓ**	217 ℓ	② 244 ℓ	317 ℓ	325 ℓ
	25	197 ℓ	**③ 228 ℓ**	258 ℓ	331 ℓ	① 341 ℓ
	26	207 ℓ	239 ℓ	**③ 274 ℓ**	② 345 ℓ	357 ℓ
	27	**④ 217 ℓ**	249 ℓ	283 ℓ	**③ 361 ℓ**	373 ℓ
	28	223 ℓ	**④ 258 ℓ**	299 ℓ	377 ℓ	389 ℓ
	29	233 ℓ	269 ℓ	**④ 316 ℓ**	392 ℓ	② 405 ℓ
	30	243 ℓ	279 ℓ	326 ℓ	**④ 408 ℓ**	421 ℓ
	31	250 ℓ	290 ℓ	342 ℓ	424 ℓ	437 ℓ
	32	262 ℓ	300 ℓ	356 ℓ	440 ℓ	**③ 454 ℓ**
	33	271 ℓ	311 ℓ	367 ℓ	456 ℓ	471 ℓ
	34	285 ℓ	323 ℓ	383 ℓ	472 ℓ	489 ℓ
	35	298 ℓ	334 ℓ	394 ℓ	488 ℓ	**④ 507 ℓ**
	36	307 ℓ	345 ℓ	412 ℓ	504 ℓ	526 ℓ
	37	321 ℓ	357 ℓ	430 ℓ	521 ℓ	545 ℓ
	38	334 ℓ	371 ℓ	444 ℓ	538 ℓ	564 ℓ
	39	342 ℓ	387 ℓ	460 ℓ	555 ℓ	584 ℓ
	40	355 ℓ	405 ℓ	476 ℓ	574 ℓ	604 ℓ
	41	368 ℓ	418 ℓ	489 ℓ	592 ℓ	625 ℓ
	42	376 ℓ	431 ℓ	506 ℓ	610 ℓ	646 ℓ
	43	390 ℓ	444 ℓ	523 ℓ	630 ℓ	667 ℓ
	44	399 ℓ	457 ℓ	543 ℓ	650 ℓ	689 ℓ
	45	412 ℓ	470 ℓ	555 ℓ	670 ℓ	711 ℓ
	46	425 ℓ	483 ℓ	574 ℓ	690 ℓ	733 ℓ
	47	434 ℓ	496 ℓ	590 ℓ	710 ℓ	755 ℓ
	48	446 ℓ	509 ℓ	607 ℓ	729 ℓ	777 ℓ
	49	458 ℓ	523 ℓ	625 ℓ	748 ℓ	799 ℓ
	50	467 ℓ	537 ℓ	643 ℓ	767 ℓ	821 ℓ
	51	479 ℓ	551 ℓ	657 ℓ	785 ℓ	843 ℓ
	52	491 ℓ	565 ℓ	670 ℓ	803 ℓ	864 ℓ
	53	498 ℓ	579 ℓ	690 ℓ	823 ℓ	885 ℓ
	54	509 ℓ	593 ℓ	707 ℓ	842 ℓ	906 ℓ
	55	516 ℓ	607 ℓ	718 ℓ	862 ℓ	927 ℓ
	56	530 ℓ	622 ℓ	736 ℓ	884 ℓ	948 ℓ
	57	543 ℓ	637 ℓ	753 ℓ	906 ℓ	969 ℓ
	58	551 ℓ	652 ℓ	764 ℓ	928 ℓ	990 ℓ
	59	564 ℓ	667 ℓ	782 ℓ	949 ℓ	1010 ℓ
	60	575 ℓ	682 ℓ	803 ℓ	971 ℓ	1030 ℓ
	61		697 ℓ	818 ℓ	991 ℓ	1050 ℓ
	62		712 ℓ	831 ℓ	1011 ℓ	1070 ℓ
	63		727 ℓ	850 ℓ	1031 ℓ	1090 ℓ
	64		742 ℓ	871 ℓ	1051 ℓ	1110 ℓ
	65		757 ℓ	888 ℓ	1071 ℓ	1130 ℓ

Table continues on next page

		Programmable water level units related to the amount of water in the tub				
Typ stroje		MB70	MB90	MB110	MB140	MB180
Programmed water LEVEL (Water level height in units)	66			900 ℓ	1091 ℓ	1150 ℓ
	67			918 ℓ	1109 ℓ	1170 ℓ
	68			933 ℓ	1127 ℓ	1190 ℓ
	69			949 ℓ	1145 ℓ	1210 ℓ
	70			970 ℓ	1163 ℓ	1230 ℓ
	71				1181 ℓ	1250 ℓ
	72				1199 ℓ	1270 ℓ
	73				1217 ℓ	1290 ℓ
	74				1235 ℓ	1310 ℓ
	75				1253 ℓ	1330 ℓ
	76				1271 ℓ	1350 ℓ
	77				1289 ℓ	1370 ℓ
	78				1307 ℓ	1390 ℓ
	79				1325 ℓ	1410 ℓ
	80					
	81					
	82					
	83					
	84					
	85					
	86					
	87					
	88					
	89					
	90					

① Economic Low Level ② Economic High Level ③ Normal Low Level ④ Normal High Level

Machine type	Minimum programmable level	Normal Low Level Default value	Normal High Level Default value	Maximum programmable level
RS 6	16	22	24	40
RS 7	16	22	24	40
RS 10	16	22	24	40
RS 13	17	24	26	45
RS 18	20	28	30	50
RS 22	20	28	30	50
RS 27	25	28	30	60
RS 35	22	28	31	50
FS 6	15	22	24	40
FS 7	15	22	24	40
FS 10	16	22	24	40
FS 13	18	25	28	48
FS 16	18	27	30	52
FS 22	20	27	30	60
FS 23	20	29	31	55
FS 33	33	48	50	80
FS 40	34	47	50	80
FS 55	34	47	52	80
FS 800	27	44	49	72
FS 1000	30	43	47	70
FS 1200	30	46	52	70
MB 16	30	37	40	65
MB 26	30	37	40	65
MB 33	30	40	43	65
MB 44	30	38	41	65
MB 66	30	37	40	65
MB 70	15	24	27	60
MB 90	17	25	28	65
MB 110	19	26	29	70
MB 140	22	27	30	80
MB 180	22	32	35	80

Tab. 3.4.A. Programmable water Level

	Wash Speed			Spin Speed				Low spin Speed
Machine type	**default RPM**	min RPM	max RPM	**default RPM**	min RPM	Blocked frequency	max RPM	default RPM
RS6	**050**	010	060	**570**	95	-	580	350
RS7	**050**	010	060	**570**	95	-	580	350
RS10	**050**	010	060	**570**	95	-	580	350
RS13	**045**	010	055	**515**	85	-	525	350
RS18	**044**	010	050	**495**	85	-	505	350
RS22	**044**	010	050	**470**	85	-	480	350
RS27	**042**	010	050	**480**	75	-	490	350
RS35	**038**	010	045	**500**	75	-	510	350
FS6	**050**	010	060	**980**	95	351-449	999	550
FS7	**050**	010	060	**980**	95	351-449	999	550
FS10	**050**	010	060	**980**	95	351-449	999	550
FS13	**045**	010	055	**980**	85	351-449	999	550
FS16	**045**	010	055	**950**	85	351-449	980	550
FS23/3	**042**	010	050	**860**	80	351-449	915	550
FS23/4	**042**	010	050	**860**	80	351-449	915	550
FS22/5	**042**	010	050	**800**	80	351-449	860	550
FS33	**038**	010	045	**790**	75	351-449	830	550
FS40	**038**	010	045	**790**	75	351-449	830	550
FS55	**038**	010	045	**790**	75	351-449	830	550
FS800	**036**	010	045	**720**	75	351-449	750	550
FS1000	**033**	010	045	**690**	75	351-449	722	550
FS1200	**032**	010	045	**660**	75	351-449	695	550
MB16	**045**	010	055	**940**	75	351-449	960	550
MB26	**045**	010	055	**940**	75	351-449	960	550
MB33	**045**	010	055	**940**	75	351-449	960	550
MB44	**041**	010	050	**880**	70	351-449	915	550
MB66	**041**	010	050	**880**	70	351-449	915	550
MB 70	**036**	010	045	**760**	65	250-380	800	550
MB 90	**036**	010	045	**760**	65	250-380	800	550
MB 110	**035**	010	045	**720**	65	250-380	754	550
MB 140	**033**	010	040	**690**	60	150-280	720	550
MB 180	**036**	010	040	**660**	60	150-280	695	550

Tab. 3.4.B. Speed of machines with frequency inverter.

❑ Programming the Wash Speed

- Standard reversing wash speed is between ≅ 40 and 50 RPM. (≅ Verify exact value at table 3.4.B.)
- For some special applications the drum should only turn very slowly.

- **Speed Limits**
  - The minimum programmable wash speed is 10 RPM.
  - The maximum programmable wash speed is 40 - 60 RPM, depending on machine size.

❑ Programming Extraction speed

RS machines : Extraction ≅ 450 - 500 RPM (MFR)
FS & MB machines : Extraction ≅ [300 - 350] – [450 – (850) 1000] RPM (MFS NN)

- An Intermediate spin between two sequences should be about ½ of the max spin.
- Between 350 and 450 RPM (≅ Verify exact value at table 3.4.B.) it's not allowed to program a steady speed, as the machine could VIBRATE TOO MUCH.

- **Speed Limits**
  - Check table 3.4.B with the minimum and maximum speed limits. The limits differ depending on the maximum allowed g-force at high spin for each washing machine type.

❑ Programming Supplies

- Up to 4 Supplies can be programmed at the same time in a sequence.
- For Front Soap Dispenser washing machines, supplies A, B, C, D and E have to be programmed to inject the soap by the boxes.
- If Liquid soap pumps have been installed on the washing machine, then these pumps will be activated by programming a time value for the corresponding supply signal 1, 2, 3, 4, 5, 6, 7, 8.

- **Time Limits**
  - The maximum programmable time is 99 Seconds
  - If the time is 0 Seconds then the supply will NOT be activated at the wash process.

⚠ **ATTENTION!**
IF FOR SOME SPECIAL APPLICATION MORE THAN 4 SUPPLIES MUST BE PROGRAMMED IN THE SAME SEQUENCE, THIS CAN BE SOLVED BY PROGRAMMING THE SAME SEQUENCE TWICE; ONE AFTER THE OTHER. SPLIT THE WATER LEVEL (SO IT WILL TAKE WATER FOR THE SECOND FILL, say 60%, 100%), STEP TIME, AND THE NUMBER OF SUPPLIES, OVER THE TWO SUBSEQUENT SEQUENCES. PROGRAM A „NO DRAIN" BETWEEN THE TWO SEQUENCES TO AVOID DRAINING THE WATER. SET TEMPERATURE THE SAME FOR BOTH PARTS.

❑ Programming the Motor On and Off times for Reversing

- The standard Reversing Motor On and Off times at Wash speed is 12 Seconds On and 3 Seconds Off.
- For Delicates and Woolens it's recommended to program a gentle wash action with a Reversing On time of 3 Seconds and an Off time of 12 Seconds.

❑ Programming the Sequence time.

- The sequence time starts running after the water level is reached.
- If wait for Temperature has been selected, the sequence time starts only running once the programmed temperature has been reached at the heating process.
- For a Cooldown Sequence, the programmed time corresponds with the time for decreasing the water temperature.

Recommendation :

At least a cooldown of 3 minutes must be programmed. And to avoid the shrinking of the garments, it's recommended to program the time so that the temperature will decrease with about 3°C for each minute.

⚠ **ATTENTION!**
FOR A SPRAY SEQUENCE, IF A SUPPLY HAS BEEN PROGRAMMED, THE SEQUENCE TIME CORRESPONDS WITH THE PROGRAMMED SUPPLY TIME.

❑ Signal

- The signal should be programmed when a running wash cycle has to be interrupted.
- The Buzzer will be activated to alert the operator.
- For most cases, the operator interrupts a program to fill the soap box an additional time.
- The program interruption will always occur at the end of a step.

❑ Programming water recycling Inlets and Outlets

Only MB machines
Optional feature for which the electrical and water installation in and outside the washing machine must be extended.

- Case 1
  - If in the Configuration menu „Drain Valve 2 : Yes“ & „Recycling Inlets : Yes“ is selected, it's possible to program 3 extra water inlets in the wash sequences and 3 extra water outlets in the drain-extraction sequences.
  - In the wash sequences, it's possible to program 3 extra water supply inlets : 4, 5, 6 dedicated for water recycling. These water inlet valves will function as cold water inlet valves for respectively recycle tanks 1, 2, 3.
  - In the drain-extraction sequences, it's possible to program 3 extra outlet valves dedicated for water recycling. Select drain valve 1 if the water must be drained to the sewer and drain valve 2 in combination with outlet valves (selection drain valve : 2>1, 2>2, 2>3) if the water must be pumped to the water recycling tanks respectively tank 1, 2 and 3.
- Case 2
  - If in the Configuration menu „Drain Valve 2 : Yes“ & „Recycling Inlets : No“ is selected, it's possible to select a second drain valve for water recycling in the drain-extraction sequences.
  - Select drain valve 1 if the water must be drained to the sewer and drain valve 2 if the water must be pumped to the water recycling tank.
  - Water supply Inlet 1 can function as water recycle inlet valve. (Replaces the hard water supply).

4. INITIALIZING THE MACHINE

Initializing the machine goes in four steps:

1. Install the machine mechanically. (See Installation Manual)

GRAPHITRONIC Wash Computer only:

2. Select the machine specific settings in the Configuration Menu.
3. Select the operator specific settings in the Initialization Menu.
4. Adjust standard Programs or create new Programs at the Program Menu.

⚠ ATTENTION!
THE INITIALIZATION SHOULD BE PERFORMED BY QUALIFIED PERSONNEL ONLY. AN INCORRECT INITIALIZATION MAY CAUSE SERIOUS INJURIES AND SERIOUS DAMAGE TO THE MACHINE!

⚠ ATTENTION!
BEFORE MAKING CHANGES IN THE CONFIGURATION AND INITIALIZATION MENU READ THIS MANUAL CAREFULLY.
CHANGES YOU HAVE MADE WILL INFLUENCE THE WASH PROGRAM PROCESSES.
WE RECOMMEND BEFORE MAKING CHANGES TO CAREFULLY WRITE DOWN WHAT THE PREVIOUS SETTINGS WERE.

AS THE GRAPHITRONIC WASH COMPUTER IS USED FOR A WHOLE RANGE OF WASHING MACHINES, AFTER THE INSTALLATION OF A NEW GRAPHITRONIC WASH COMPUTER, YOU NEED TO PROGRAM MACHINE SPECIFIC SETTINGS INTO THE CONFIGURATION MENU. See paragraph 4.2.

AT THE INSTALLATION OF NEW SOFTWARE, AFTER LOADING THE FACTORY SETTINGS (see paragraph 4.2) YOU NEED TO CHECK THE DEFAULT SETTINGS ONE BY ONE TO FIND OUT IF THEY CORRESPOND WITH THE SETUP AS YOU PREFER.

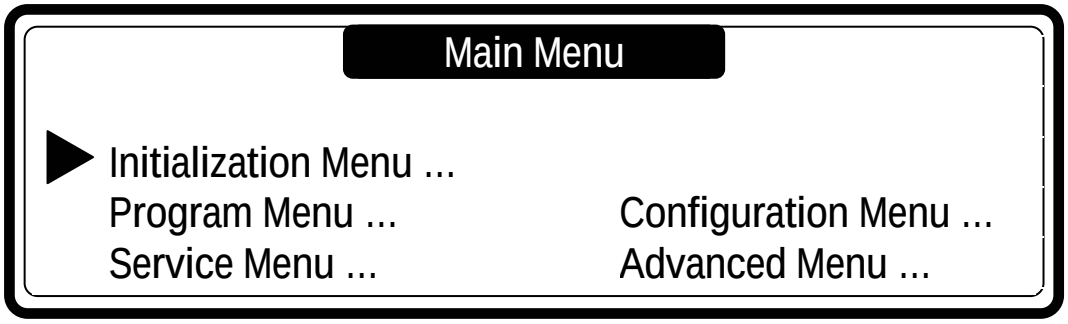
THE CONFIGURATION AND INITIALIZATION OF THE WASHING MACHINE HAS BEEN DONE AT THE FACTORY. FOR THE CREATION OF NEW PROGRAMS, NO CHANGES HAVE TO BE MADE IN THE INITIALIZATION OR CONFIGURATION MENUS.

4.1 INITIALIZATION MENU

❑ HOW TO GET INTO THE INITIALIZATION MENU

The initialization menu can only be accessed when the machine is in standby (the power is switched on, but no program is started).

- **Select Cycle** is displayed.
- Switch the machine to the setup mode (see chapter 3.3).
- The Main menu is now available.
- The Initialization Menu is the first Menu.



- Press the **ENTER** button to make your selection.
- Now you will see the first menu item.
- By pressing the ▼ **ARROW DOWN** or ▲ **UP** button you can select the menu items one by one.

Menu Item	Default	Info	Limits
Language	English	Language selection: English, Spanish, French,…	List
Service Interval	3000 9999	Number of cycles at which maintenance is required. 3000 : top soap dispenser machines 9999 : front soap dispenser machines	1 - 9999
Buzzer Time	5 Sec	The time the Buzzer is beeping at end of wash cycle while „Unload“ is displayed.	0 – 99
Allow Advance	Yes	The Advance function allows to Skip a Sequence or to extend & decrease the time of a sequence. (default MB-machines : No)	No / Yes
Automatic Cooldown	Yes	Automatic Cooldown selection. (see info (*)).	No / Yes
Wait for Temp	Yes	Wash Process time is put on Hold as long as the programmed temperature hasn't been reached. Once the temperature has been reached, the wash cycle time will decrease.	No / Yes
Manual Override	Yes	Turns on the special function buttons on the key board. The operator can directly operate the water inlet, drain, heating and spin speed functions. ⚠ **Attention!** **The special function buttons will only activate the corresponding Outputs if the safety requirements are fulfilled.** **Example : If there is No water in the drum, it will not be possible to switch on the heating by pressing the special function button „HEATING“**	No / Yes

Menu Item	Default	Info	Limits
Temperature Balance	Yes	The right water temperature at the water fill process is obtained by switching the cold and hot water inlet valves. For high temperatures extra heating will be required after the fill process. For some special customer applications, it is allowed to switch off the automatic Temperature Balance control.	No / Yes
Motor On Time	12 Sec	At normal wash action, drum turns for 12 seconds. Recommended 3 Sec for Gentle wash action. (= suggested values for the program menu) FS800, FS1000, FS1200, MB70, MB90, MB110, MB140, MB180: 12 Sec On Time	1 – 99 Sec
Motor Off Time	3 Sec	At normal wash action, drum is stopped for 3 seconds. Recommended 12 Sec for Gentle wash action. (= suggested values for the program menu) FS800, FS1000, FS1200, MB70, MB90, MB110, MB140, MB180:	1 – 99 Sec
Smart Motion	Yes	This option decreases the drum R.P.M. during water filling therefore the laundry absorps water more quickly and washing efficiency increases.	No / Yes
Hot Water Heater Temp.	60 °C	The Hot Water Heater Temperature should correspond with the hot water supply of the washing machine. The value of the hot water supply temperature is required to obtain a correct bath temperature at the water fill process.	50 - 80 °C
Temp. Overshoot Prot.	00 %	To avoid temperature overshoot at steam heating, the % value is the reduced temperature at which the heating is switching off before reaching the target value. In the tub cold and hot water gets mixed and if after 30 seconds the programmed target temperature is not reached, the heating will be started again.	0 - 30 %
Max. Heating Time	60 Min	A diagnostic message is generated by the wash computer when the water hasn't reached the programmed temperature in 60 Minutes. (Err 14) ⚠ **Attention!** **If 99 minutes has been selected, NO error message will be generated at all, even if the heating time exceeds 99 minutes. The machine will only stop heating when the programmed temperature has been reached.**	10 - 90 Min

Menu Item	Default	Info	Limits
Max. Water Fill Time	10 Min	A diagnostic message is generated by the wash computer when the water hasn't reached the programmed level in 10 Minutes. (Err 11) MB70, MB90, MB110, MB140, MB180: 15 Minutes ⚠ **Attention!** **If 99 minutes has been selected, NO error message will be generated at all, even if the heating time exceeds 99 minutes. The machine will only stop filling when the programmed water level has been reached.**	5 - 99 Min
Overfill Detection	10 units	A diagnostic message is generated by the wash computer when the water has reached the programmed level + 10 units. (Err 12) ⚠ **Attention!** **It's strongly recommended that the heating power of the steam installation has enough power to heat the bath quickly. Otherwise the tub will be filled with extra water and an error message will occur that the machine takes more then 10 units extra water. This will also increase the water, energy and detergent supply consumption.** To solve the problem in another way, reduce the programmed target water level so that less energy is needed to heat up the bath and with the extra water of the condensed steam you will wash with a normal amount of water.	10 - 25 units
External Wait Control	No	Liquid soap supply system: Slection for a washing machine connected to a central liquid soap supply system. Some washing machines are connected to a central liquid soap supply system which can only provide 1 washing machine at a time with liquid soap. This central pump system is able to let Wait the washing machine before continuing the wash process until the central pump system is free to pump the liquid soap supply into the machine. Heating, (for installations with limited power supply): You can disable the heating system of the machine by an external signal. The heating will switch on again and the wash process will continue as soon as the external signal is switched off.	No Soap Heating
Main Water Pressure	High	Front Soap Dispenser machines only. If the main water supply pressure is low, it can happen that the plastic soap boxes don't fall during the water intake sequence. In this case you should select „Main Water Pressure“ : „Low“ (main water inlet is closed before the plastic soap box falls down) „High“ => the main water inlet stays open	Low / High

Menu Item	Default	Info	Limits
Door Position Dirty Tune Door Position Hyg. Tune	3 3	MB70, MB90, MB110, MB140, MB180 only At the end of the wash cycle the drum is automatically positioned for loading & unloading. By the value „Door Position Dirty Tune“ & „Door Position Hyg. Tune“, the angle between the drum door and cabinet door can be adjusted. (to allow easier loading & unloading)	0 - 6
Exit		Return to Main Menu	

(*) Automatic Cooldown

- To avoid mechanical temperature shock and to extend the life time of your washing machine, after a hot wash, cold water is injected bit by bit. As a result at the end of the hot wash, the temperature will be lowered to about 65°C.
- The automatic cooldown function will only be functional if a hot wash with a temperature above 65°C has been programmed and if a cold water inlet valve is programmed in the next step. When a Cooldown sequence has been programmed, the automatic cooldown will not function.
- The automatic cooldown differs from a normal cooldown sequence. The purpose of a normal cooldown sequence is to avoid the shrinking of the garments. (Takes more time)
  See Chapter 5.

4.2 CONFIGURATION MENU

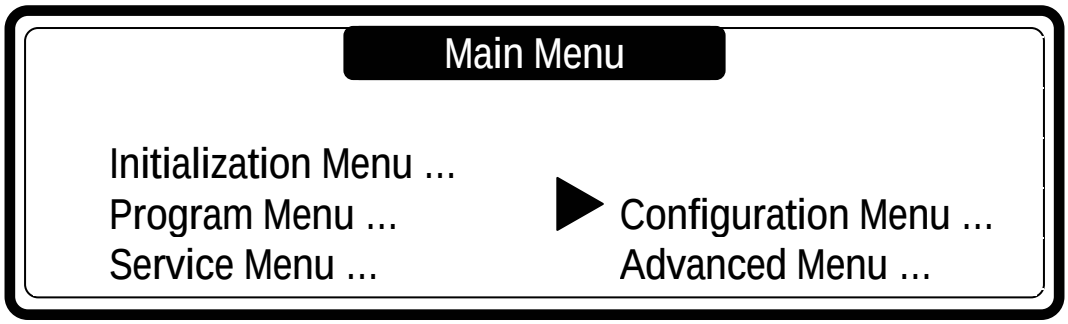
This electronic wash computer has been specially constructed for a wide range of washing machines.
For that reason it must be individually set up with important parameters for various machine types.
Basic machine adjusting is made in the factory.

⚠ **WARNING!**
ONLY A QUALIFIED TECHNICIAN SHOULD CHANGE THE CONFIGURATION SET UP. AN INCORRECT CONFIGURATION CAN CAUSE INJURIES AND SERIOUS MACHINE DAMAGE.

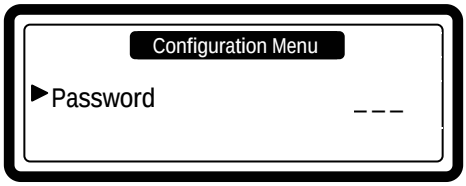
❑ HOW TO GET INTO THE CONFIGURATION MENU

The configuration menu can only be accessed when the machine is in standby (the power is switched on, but no program is started).

SELECT CYCLE is displayed.
Switch the machine to the setup mode (see chapter 3.3).
The Main menu is now available.
Press the **ARROW DOWN** button to select the Configuration Menu.



Press the **ENTER** button to make your selection.
For the Configuration Menu a Pass-Word is required.



Insert **3 2 1** and Press the **ENTER** button
Now you will see the first menu item.
By pressing the **ARROW DOWN** or **UP** button you can select the menu items one by one.

Menu Item	Default	Info	Limits
Machine Type Are You Sure ?	R6 No	Select the right machine type. ☞ Look at Machine Name Plate at the rear of the washing machine. ☞ Confirm that you want to change the machine type. (FS23/3 = Top Soap Dispenser) (FS23/4 & FS22/5 = Front Soap Dispenser) ⚠ **Attention!** **Reset Defaults must (only) be executed for each new installed wash Computer and after selecting a new machine type, to ensure correct EEPROM memory configuration! (just by selecting another machine type the default settings are not reloaded)** ⚠ **Attention!** **By changing the machine type the wash programs kept in EEPROM memory are not changed. After changing the wash machine type it's recommended to erase the program memory and load the standard wash programs again as the wash program settings differ for each machine type.** ⚠ **Attention!** **MAKE SURE THAT YOU HAVE SELECTED THE CORRECT MACHINE TYPE, OTHERWISE THE MACHINE WILL NOT FUNCTION PROPERLY.**	List No / Yes
Reset Defaults ? Are You Sure ?	No No	All the Initialization and Configuration Menu Settings will be reset to its default Factory settings. Should only be used at SETUP of a new wash computer. ☞ Confirm that you want to Reset Defaults. ⚠ **Attention!** **Reset Defaults must (only) be executed for each new installed wash Computer and after selecting a new machine type, to ensure correct EEPROM memory configuration!** ⚠ **Attention!** **BE SURE YOU WANT TO ERASE THE OLD SETTINGS, AS THEY CAN'T BE RECAPTURED.**	No / Yes No / Yes

Menu Item	Default	Info	Limits
Brightness Display	12	The brightness of the display is changed by adjusting the contrast of the optimal viewing angle.	1 - 20
Inverter Menu...		Not for machines RS6, RS7, RS10. Redirects to the Inverter Menu. ⚠ **Attention!** **The washing machine can only operate correctly if the right inverter (same as washing machine) has been set in the Configuration menu.**	
Supply Voltage XXXXXXX (Inverter Type)		Select the right inverter. ☞ Look at Machine Name Plate on the rear of the washing machine. ☞ Select the Supply Voltage as shown on the Machine Name Plate. ☞ Check Inverter Type	List
Load Param... Are You Sure ?	No	⚠ **Attention!** **The washing machine can only perform properly if the inverter contains the right list of inverter parameters. By the wash computer it is possible to load the list of parameters in the inverter. Make sure that the correct Supply Voltage has been selected first.** ⚠ **Attention!** **Loading parameters is only required after installing a new inverter.** Load the inverter Parameters. ☞ Door must be closed. ☞ Check if the SETUP is correct. **- Parameter List Version** **- machine type, inverter type, softw version** ☞ Confirm that you want to load the inverter Parameters. ☞ Check status screen while parameters are loaded. **- Sending Param.: 0 - 100 %** **- Verify Param: 0 - 100 %** **- Inverter Type: XXXX** **- Inverter Softw. Vers.: YYYY**	No / Yes

Menu Item	Default	Info	Limits
Steam Connect	No	**Valid for machines FS6 to FS16, RS6 to RS35 (except RS27).** Steam heating machine option. ⚠ **Warning!** **For machine with steam heating: If this option is not set to „YES“, the laundry may be damaged.**	No / Yes
Total N° of Inlets	3	A washing machine can be delivered with 2 or 3 main water Inlet supplies. A machine with 2 main water inlet supplies is prepared for : - soft warm water - soft cold water A machine with 3 main water inlet supplies is prepared for : - soft warm water - soft cold water - hard or recycled cold water **Depending on this selection other inlet valves will be suggested at the final rinse sequence.** **Depending on this selection other inlet valves will be programmed when the standard programs are loaded.**	2 / 3
Drain Valve 2	No	Some machines function with water recovery and are equipped with a second drain valve. If this second drain valve is a Normal Closed drain Valve, then drain valve 2 must be Selected Yes.	No / Yes
Water Recycle Inlets	0	Front Soap Dispenser machines only. First select menu item „Drain valve 2“. By selecting „Water Recycle Inlets“ 1 / 2 / 3 it's possible to program 1 / 2 / 3 extra water inlet valves I4, I5, I6 in the wash sequences and 3 extra outlet vales for water recycling combined with pump in the drain-extraction sequences ⚠ **Attention!** **Some machines need additional electrical components to complete installation Water Recovery!**	0 / 1 / 2 / 3
Supply Sign. A	Box	Front Soap Dispenser machines only. If equipped with soap supply pump for supply signals A, B, C, D & E , the signal must be set liquid, then NO pulse will interrupt the soap supply signal. Supply Sign A corresponds with the First Soap Box. … Supply Sign E corresponds with the Fifth Soap Box.	Box / Liquid
Liquid Soap Supply	No	Some washing machines function with external Liquid soap supplies and others do not. To program External Liquid soap supplies at the Program Menu, this selection must be Yes.	No / Yes

Menu Item	Default	Info	Limits
Min. Level Start Supply	0 units	Soap Supply signals are only started when the pre-set „Minimum water level Start Supply“ has been reached. Minimum programmable level see water consumption table. Front Soap Dispenser machines : 10 units.	0 - Minimum progr. level
Temperature	Celsius	Select Celsius or Fahrenheit, depending if you prefer that the temperature is displayed in degrees Celsius or degrees Fahrenheit.	Celsius / Fahrenheit
Full Heating	67 %	This function allows to reduce the energy consumption at long hot washes. When the heating has reached the programmed target temperature, heating will be restarted when the bath temperature goes below the temperature hysteresis. - Full Heating 100 %, the heating will be restarted until the end of the hot wash sequence. - Full Heating 0 %, the heating will not be restarted once the target temperature has been reached. - Full Heating 67 %, the heating will be switched Off 1/3 before the end of the hot wash sequence. ⚠ **Attention!** **In case of a hygienic program, 100% must be selected.** MB machines : default 100 %.	0 - 100 %
Wet Cleaning	No	Selection Wet Cleaning allows to program water levels below the standard minimum programmable levels. The heating will not be functional for a water level below the standard minimum programmable water level.	No / Yes
Drum Compartments	2	MB70, MB90, MB110, MB140, MB180 only Selection for Big MB machines executed with 2 or 3 drum compartments.	2 / 3
Non-barrier Model	No	MB machines only (Medical Barrier Washers) If the MB machine is used as a non-barrier model (loading and unloading at the same side) then Yes must be selected.	No / Yes

Menu Item	Default	Info	Limits
Auto Position Drum	Yes	MB70, MB90, MB110, MB140, MB180 only At the end of the wash cycle, the Inner Door of the Drum is positioned automatically at the hole Outer Door Tub. If „Auto Position Drum“ is switched Off (to overrule the system because it is not operational anymore), the operator can position the drum manually just like on a standard MB-machine. ⚠ **Attention!** **Look inside the tub through the door glass before unlocking the outer door, check that the inner door is positioned correctly.**	No / Yes
Erase All Wash Prog ? Are You Sure ?	No No	Allows erasing all the wash programs at once. To be used only at the installation of a new wash computer and if you want to ensure that no old programs stay in the memory of the wash computer anymore. All the memory Blocks will be cleared one by one. ⚠ **Attention!** **Erase All Wash Programs <u>must</u> be executed for each new installed wash Computer, to ensure correct EEPROM memory configuration!**	No / Yes
Load Standard Programs ? Language Load Program 1 - 15 ? Load Program 16-52 ?	No English No No	To use the 15 wash computer Standard Wash programs, these standard programs must be loaded into the Wash Program Memory of the wash computer. Choose the language of the Wash Program name. The Wash Program name shows to the operator the type of wash process. A confirmation is asked to load Standard Programs. Standard programs 1 - 15 see chapter 7. It is also possible to load 37 dedicated programs. ⚠ **Attention!** **After selecting a different machine type, best is to load again the Standard Programs in memory, this to avoid that the washing machine runs with wrong water levels, drum speed.**	No / Yes List No / Yes No / Yes
Communication Type	RS485	The Wash computer is executed with two communication ports. RS485 & Irda. For communication cable select RS485. (for network or direct connection with PC) For Infrared communication select Irda. At the front panel there is a small window dedicated for infrared communication next to button number 4. Both communication ports don't work at the same time. See Manual Trace-Tech for more information. ⚠ **Attention!** **Some handheld computers have very poor light signal Strength. It is possible that you have to point just next to the Irda window.**	RS485 / Irda

Communication Addr.	255	Each washing machine in the serial RS485 washing machine communication network must have a unique Communication Address. (Master - Slave) ⚠ **Attention!** **If 2 or more machines have the same Communication Address the communication network will not function properly.**	1 - 255
Advanced Menu	No	When the Advanced Menu is selected Yes, an extra menu item „Advanced…“ will appear at the Main Menu Screen.	No / Yes
Exit		Return to Main Menu	

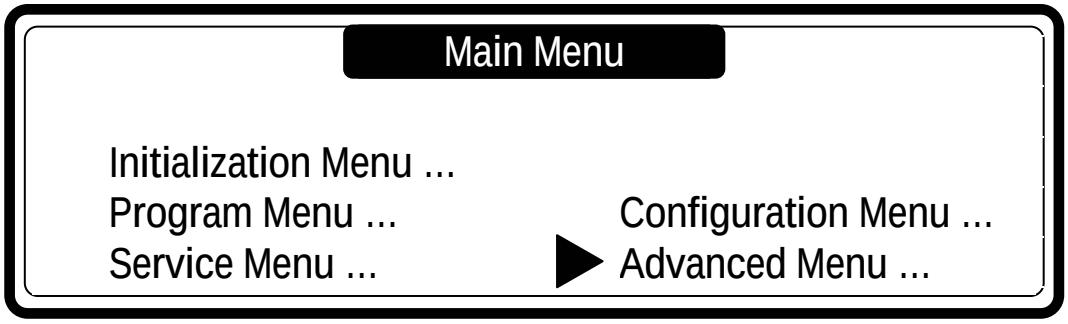
4.3 ADVANCED MENU

Some special wash computer applications are only accessible by the Advanced Menu.
In the advanced menu you can find the not frequently used, optional and special applications.

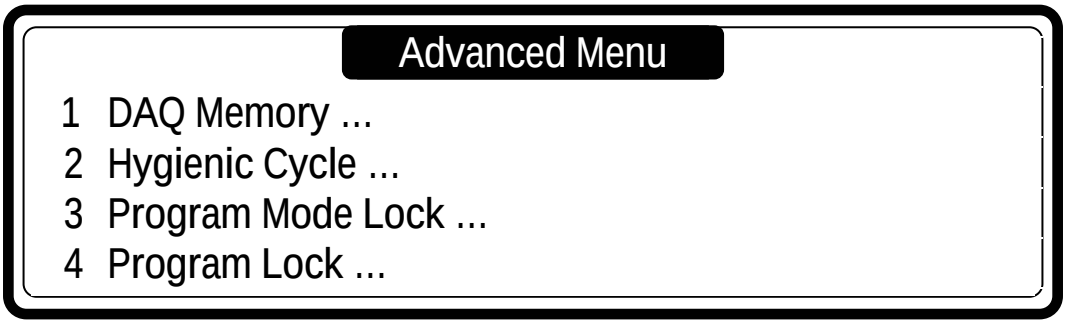
❑ HOW TO GET INTO THE ADVANCED MENU

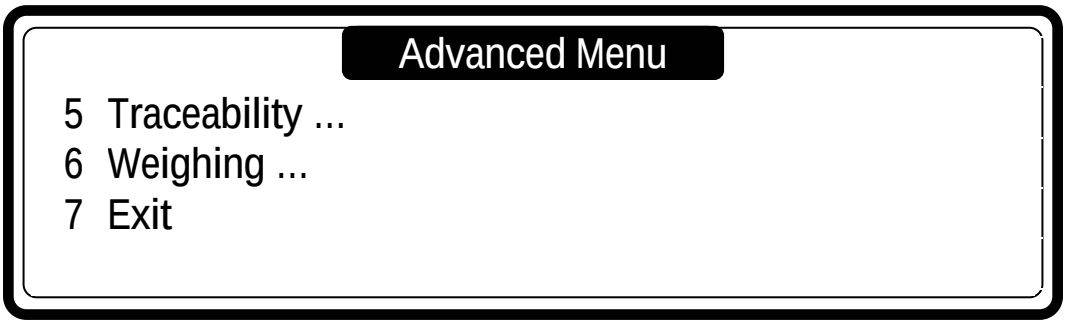
To get access to the Advanced Menu, the menu item „Advanced Menu“ must be selected yes in the Configuration menu.
The Advanced menu can only be accessed when the machine is in standby (the power is switched on, but no program is started).

SELECT CYCLE is displayed.
Switch the machine to the setup mode (see chapter 3.3).
The Main menu is now available.
Select the Advanced Menu after turning it on in the Configuration menu.



The advanced menu contains a list of extra menu's with special functions :





❑ DAQ MEMORY MENU

The wash computer is executed with a big Data Acquisition Storage Memory.

The functional status of this memory can be read at the DAQ Memory Menu.

The DAQ Memory contains separate Memory Segments in which all kinds of data is stored.

The Memory Segment is in operation when the status is „On“. When it is turned „Off“ the Memory Segment is not operational. The DAQ Storage Memory can be reset at the Configuration menu by the reset Defaults function. At that moment all data inside the DAQ Memory will be lost.

The DAQ memory is mainly used in combination with the TRACE-TECH PC-software.

The information in the DAQ memory menu is for informative purposes only.

Menu Item		Info
All Memory Segments	On / Off	Switched on when all Memory segments are operational.
Statistics Segment	On / Off	In the Statistics Memory Segment is stored the Statistical wash computer data.
Traceability Segment	On / Off	In the Traceability Memory Segment is stored the Traceability wash computer data.
Trace-Tech Settings	On / Off	In the Trace-Tech Settings Memory Segment is stored the setup data from the Trace-Tech PC software.
Log Segment	On / Off	In the Log Memory Segment is stored the Event Log wash computer data.
Exit		Return to Advanced Menu.

❑ HYGIENIC CYCLE MENU

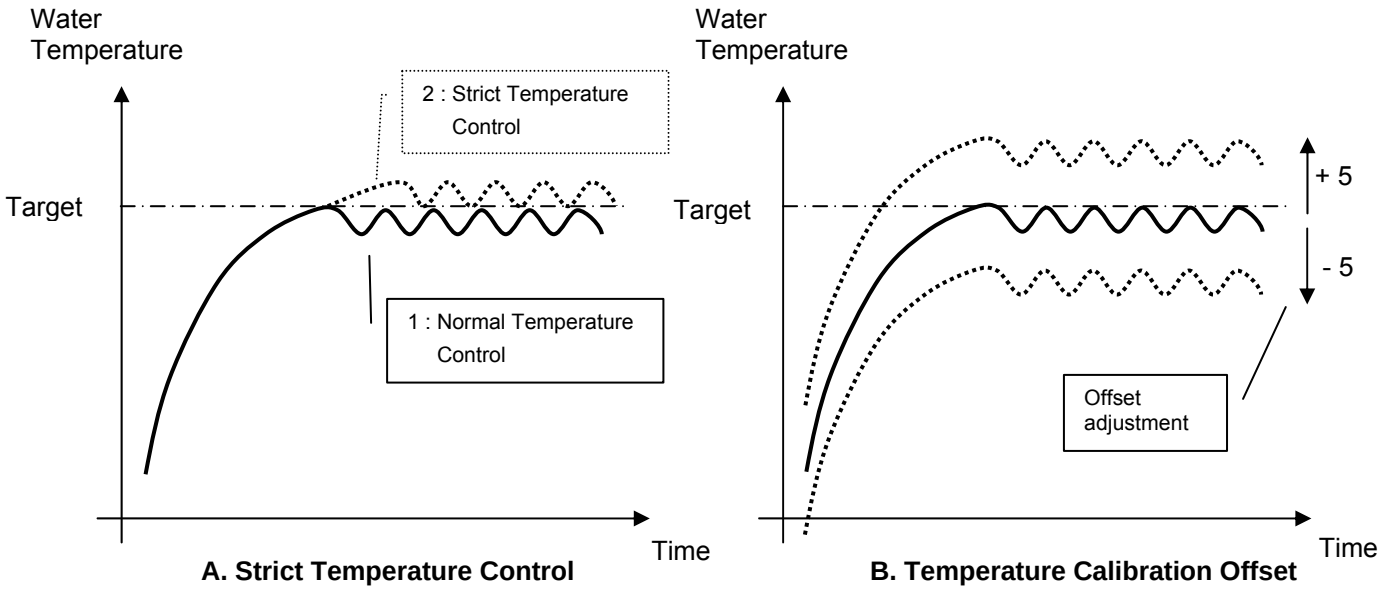
A. Strict Temperature Control

In normal operation, the washing machine heating system works with a temperature control hysteresis below the programmed target temperature value. This corresponds with line 1 at the picture.

Some washing machine operators want a strict temperature control in case of hygienic wash cycles.

Example: this means when 70°C is programmed, the linen must be washed at a temperature that doesn't drop below 70°C. This solution is possible by switching on the „Strict Temperature Control“ function. In this case the wash computer works with a temperature control with a hysteresis above the programmed temperature value. See line 2 at the picture.

Strict Temperature Control is not applicable for delicates and woollens, and will not work for a programmed temperature < 30°C.



A. Strict Temperature Control **B. Temperature Calibration Offset**

❑ Water Heating graphs.

B. Temperature Calibration Offset

The temperature sensor of the washing machine can be calibrated with an external temperature measurement device as reference. The temperature sensor value can be adjusted in a range of +/- 5°C.

For normal washing machine use such calibration is not required.

Menu Item	Default	Info	Limits
Strict Temp. Control	No	The Strict Temperature Control of the wash computer makes that the fabrics is washed at same value like the programmed target temperature.	No / Yes
Temp. Calib. Offset	0	By changing the Temperature Calibration Offset value the water temperature sensor value is adjusted so that it gets equal with the value of an external reference temperature sensor.	-5 / 0 / 5
Exit		Return to Advanced Menu.	

❑ PROGRAM MODE LOCK MENU

The access to the Program Mode can be locked by a password.
It means that without password you can't have access to the Main Menu Screen.

Menu Item	Default	Info	Limits
Password	None	Enter a 4 digit value for the Password and press ENTER. ⚠ **Attention!** **The Password will not be requested if it has not been set.**	0000 - 99999
Edit Password ... New Password .... No Password ... Old Password		Insert a 4 digit numeric value to create a new password. Select the menu item „No Password“ if you want to get rid of the Password. To change the Password insert first the old Password, then you are invited to create a new Password.	
Exit		Return to Advanced Menu	

❑ PROGRAM LOCK MENU

Each wash program can be locked individually.
When the program is locked, it means no settings can be changed anymore.
It avoids that programs once created get changed by somebody else.
To get access to this menu a password is needed if it has been set.

Menu Item	Default	Info	Limits
Password	None	Enter a 4 digit value for the Password and press ENTER. ⚠ **Attention!** **The Password will not be requested if it has not been set.**	0000 - 99999
Programs ... 1 HOT WASH Unlocked 2 WARM WASH Locked ... 99 Program 99 Unlocked EXIT	Unlocked	Each program can be locked – unlocked individually. When the program is locked, it means no Program settings can be changed anymore. It avoids that programs once created get changed by somebody else.	Unlocked / Locked
Edit Password ... New Password .... No Password ... Old Password		Insert a 4 digit numeric value to create a new password. Select the menu item „No Password“ if you want to get rid of the Password. To change the Password insert first the old Password, then you are invited to create a new Password.	
Exit		Return to Advanced Menu	

❑ TRACEABILITY MENU

Traceability is a function to store wash cycle data outside the washing machine, to be able to prove that the laundering process has been correctly executed.

In case of any failure, the Wash Cycle must be stopped and there must be a warning that the wash cycle must be repeated correctly.

For more information about traceability see Manual Traceability Management Software.

Menu Item	Default	Info	Limits
Enable Traceability	No	First you have to select Traceability to obtain the other menu items.	No / Yes
Traceability Report	Store DAQ	A report can be created for each wash cycle. A printer or PC can be connected to the washing machine by Serial RS485 communication bus. ◆ „Store DAQ“: stores all wash process data in the DAQ memory of the wash computer. When the PC is connected to the washing machine, the data is send and stored on the PC. ◆ „Store PC“: sends continuously all wash cycle data to the PC. (where it is stored) ◆ „Print Last“ sends the report directly to a printer. The command is given by „Start Print Last Report“. ◆ „Print All“ sends the report in real time to a printer.	Store DAQ Store PC Print Last Print All
Stored Cycles	XX%	In case of selection Store DAQ, there is shown a menu item how much wash cycles are stored in DAQ memory.	
Start Print Last Report	No	In case of selection Print Last, there is another menu item that allows to Start Printing the Last stored Report.	No / Yes
Disable Traceability Errors	No	Err 81 and Err 82 can be switched off if they disturb to often the wash process.	No / Yes
Exit		Return to Advanced Menu.	

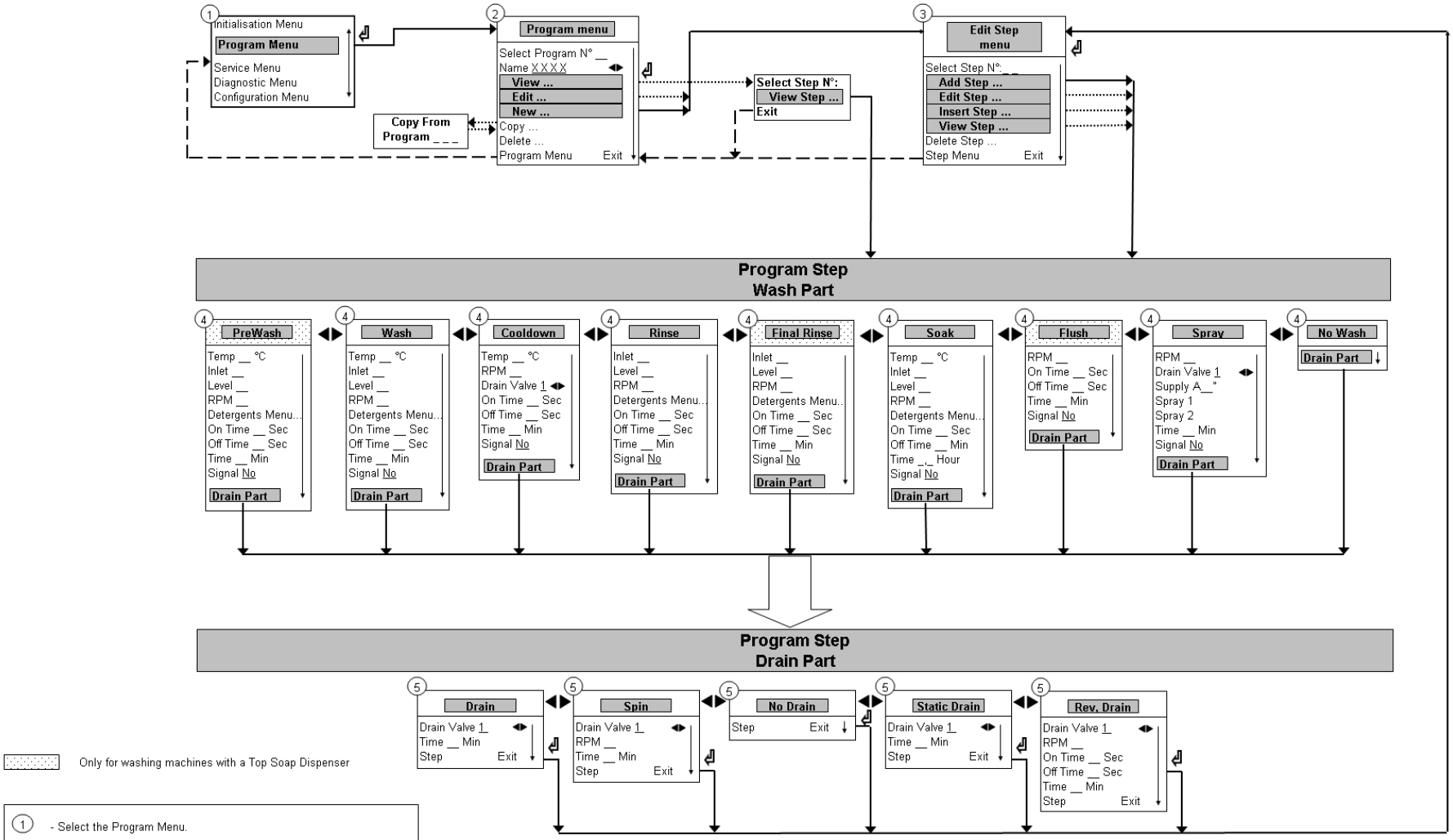
❑ WEIGHING MENU

Only for MB & FS machines executed with a weighing system or the linen weight is entered manually.

Menu Item	Default	Info	Limits
Weighing System	No	No - without weighing system Auto - Automatic weighing system Manual - manual entering of the linen weight	No / Auto / Manual
Main Units	kg	When the weight value is shown, it can be presented in kg or in a percent value (capacity machine). ◆ Main Units correspond with the biggest number size on the display.	Kg / %
Help Units	%	When the weight value is shown, it can be presented in kg or in a percent value (capacity machine). ◆ Help Units correspond with the smallest number size on the display.	% / kg / off
Load Cell Calibration ...		Load Cell Calibration shows the actual weight corresponding with each individual load cell. When Calibrated is shown in the middle of the screen, it means the calibration is done. Consult the weighing system manual for more details.	
Expected Free Weight	XXXX	This is the weight of the washing machine. The value is used to verify the right working of the weighing system. A Diagnostic Error will be shown when the actual measured weight value gets out of range.	0 / 9999
Water Level	Units	Water consumption is programmable in water level (units) or litres. In case units is selected, the machine will take more water then when litres is programmed as for the selection litres the weighing system is measuring the exact amount of the water.	Units / Litre
Correct. Linen absorpt.	No	When Litres is selected, it can occur that not sufficient water is available for washing at the first wash part because dry linen can absorb a big part of the available water. By selecting „Correction Linen Absorption“, extra water will be added at the first wash part to overcome this kind of problem.	No / Yes

Automatic Level Adjust. Automatic Soap Adjust.	No No	If the amount of weighed load in the washing machine is smaller then the capacity of the washing machine, then the washing machine will run automatically with a reduced amount of water. This will reduce the water consumption of the washing machine. Similar like Automatic water Level Adjustment, also the time value of the liquid soap signal is adjusted in relation with the amount of weighed load, which will reduce the liquid soap consumption of the washing machine.	No / Yes No / Yes
Exit		Return to Advanced Menu	

How to Create and Adjust a Wash Program



Only for washing machines with a Top Soap Dispenser

1. - Select the Program Menu.
2. - Enter the desired Program Number.
   - For a new program enter the program name.
   - Select Program View, Edit, Insert, New, Copy or Delete.
3. - Select the appropriate Step function Add, Edit, Insert, View or Delete.
   - Enter the desired Step Number.
4. - Select the appropriate Wash step function.
   - Enter the appropriate Step function settings.
5. - Select the appropriate Drain function.
   - Enter the appropriate Step function settings.
   - Exit the step menu.

Keyswitch : Program

Attention !
Depending the washing machine configuration and initialisation, some menus and menu-items will not be displayed.

- Selecting the menu item : Press button **UP** or **DOWN**.
- Selection list : Press button **LEFT** or **RIGH**.
- Selecting a new Program Sub-menu and go to this Sub-menu : **ENTER** button
- _ _ Insert a value or Select another List element

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5. PROGRAMMING

5.1 GENERAL

Specific functions have been implemented in the GRAPHITRONIC wash computer to allow a detailed programming.

❑ **Functions for the complete program.**

- Program Number : Selecting the wash Program.
- Name : Insert or Modify the Name for the Program.
- View : Inspecting the Program settings without making changes.
- Edit : Adjusting a Program.
- New : Creating a New Program.
- Copy : Making a Copy of an existing Program.
- Delete : Erase the Program.
- Exit : Leave the Program Menu.

❑ **Functions for the program steps.**

- Step Number : Selecting the Program Step.
- Add : Adding a Program Step at the end of the program.
- Edit : Adjusting the Program Step.
- Insert : Adding a Program Step between two other steps.
- View : Inspecting the Step settings without making changes.
- Delete : Deleting a Step.
- Exit : Leave the Program Step Menu.

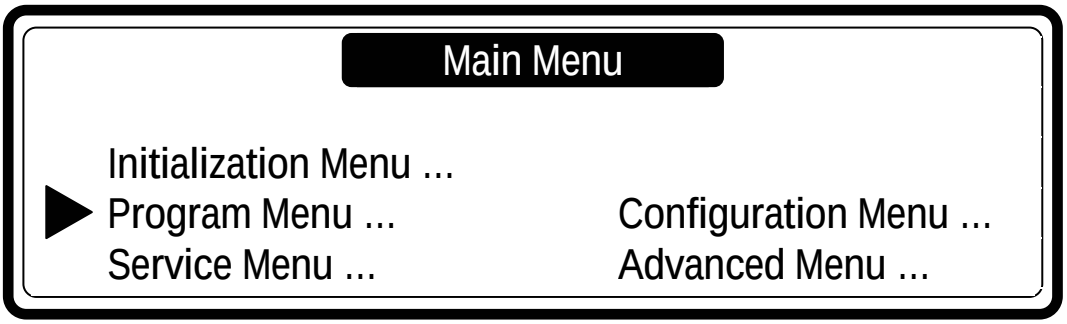
Follow the flowchart step by step.

5.2. STEP ① : PROGRAM MENU

❑ HOW TO GET INTO THE PROGRAM MENU

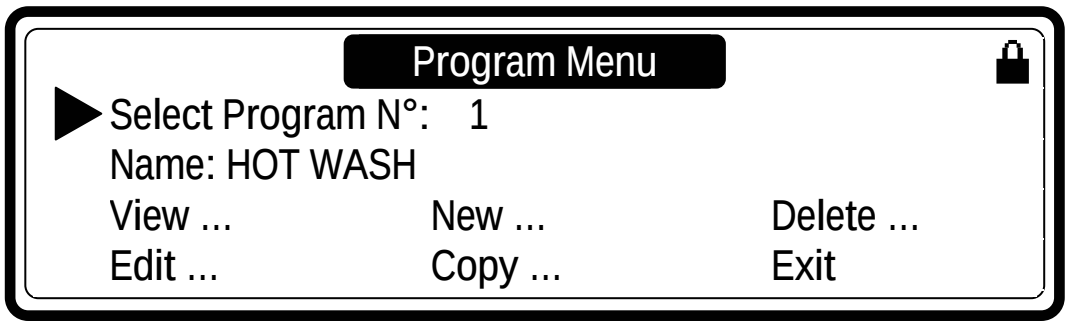
The Program menu can only be accessed when the machine is in standby (the machine is powered up but no program is started).

SELECT CYCLE is displayed.
Switch the machine to the setup mode (see chapter 3.3).
The Main menu is now available.
Press the **ARROW DOWN** button to select the Program Menu.



Press the **ENTER** button to confirm your selection.
Go to ② ➪

5.3. STEP ② : PROGRAM FUNCTIONS



Menu Item	Info
Select Program N°: 1	Insert the desired program number. Program 1 to 99 can be selected.
Name: _ _ _ _ _ _ _ _ _ _ _ _ _ _ _	The Program Name gives info about the type of wash Program. With the ARROW LEFT and RIGHT button you can select the character position. With the ARROW UP and DOWN button you can select the desired character. By pressing the ENTER button, the dashes will disappear.
View	In Program View you can look to the Program Settings, without making any changes.
Edit	Editing a program is changing the program by selecting a new element from a list or by changing values in an existing program. You can also add, insert or delete steps in an existing program.

Menu Item	Info
New	To create a new program, you have to make use of the add step function. By adding steps the program will grow step by step. A confirmation is asked first to delete the old program.
Copy Copy From Program N°: XXX	Sometimes it's easier to make a copy of an existing program and to make some small changes to the copied program. A confirmation is asked first to delete the old program. Insert the desired program number from which you want to copy the program. ⚠ **Attention!** **The standard programs can be selected at the program numbers 101-115.** Program number 101 corresponds with program 1. Program number 102 corresponds with program 2. … Program number 115 corresponds with program 15. A confirmation is asked first to delete the old program.
Delete a Program	To get rid of an existing program, use the delete program function. The complete program will be erased at once. A confirmation is asked first to delete the old program.
Exit	Return to Main Menu

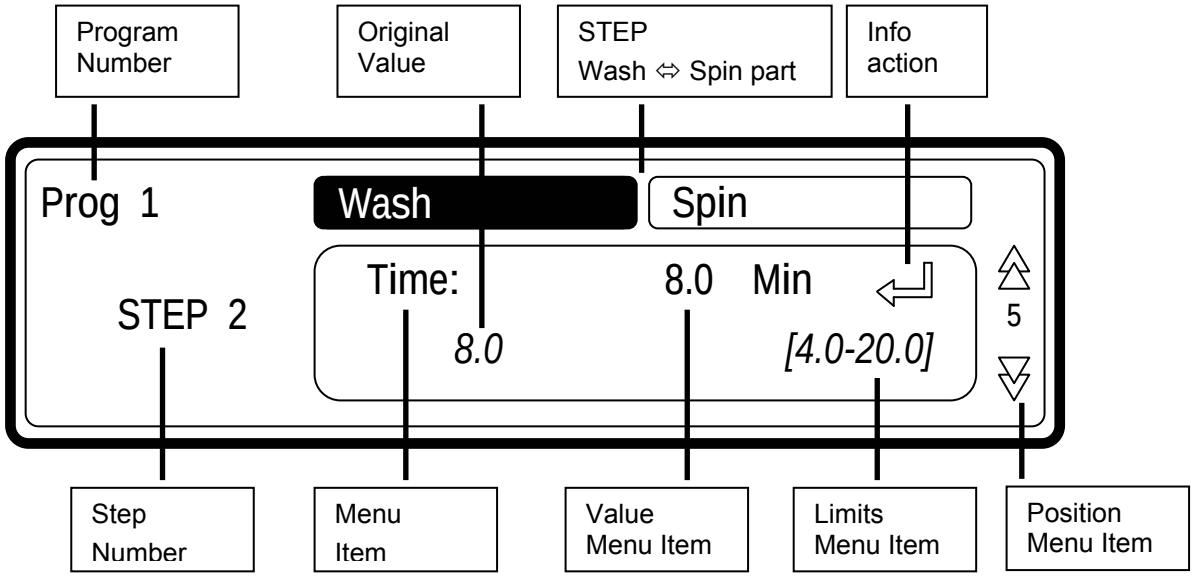
: Program lock symbol

In the Advanced Menu, it is possible to lock – unlock each wash program individually.
It means that no wash programs can be set when the Program lock symbol is displayed.
Only the View function will be functional and the other functions to adjust the program will be disabled.

5.4. STEP ③ : PROGRAM STEP FUNCTION

Menu Item	Info
Select Step N°: 1	Insert the desired step number. Step 1 to 99 can be selected. ⚠ **Attention!** **If the number is not accepted, this means that the step is not available.** **No Step number must be selected for „Add Step“ function.**
Add Step	To create new programs, a new extra step should be added at the end of the program.
Edit Step	To change values and list elements from an existing step.
Insert Step	A new step is inserted in between two existing steps. If the number is not accepted, this means there is no step with a step number = inserted number - 1 available. A new step can only be inserted between two available steps.
View Step	Before making changes in a wash program, it's recommended to have a look at the actual settings by the view function. No changes can be made at the View Step function.
Delete Step	An existing Step in the program disappears when it's deleted. A confirmation is asked first before deleting the Old Step.
Exit	Return to Program Menu

5.5. STEP ④ : PROGRAMMING THE WASH PART

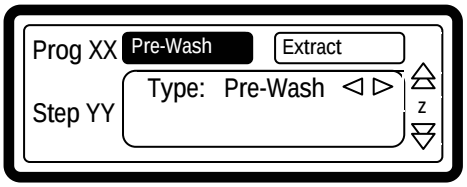


This paragraph gives a detailed explanation about programming the Wash Sequences.

- Each program step contains a wash part and a drain/spin part.
- First the wash part must be selected, item by item can be programmed.
- Next the drain/spin part must be selected, item by item can be programmed. See step ⑤ .
- Without making changes you can watch item by item, by pressing the **ARROW DOWN** or **UP** button.
- If you want to make changes :
  - Insert a new value.
  - Enable or disable a Setting by pressing the **YES** or **NO** button.
  - Select a list element by pressing the **ARROW LEFT** or **RIGHT** button.

  ➔ You always need to confirm by pressing the **ENTER** button.
- Each time you add or insert a new step, default values have been pre-programmed.
  So with less effort, complete programs can be programmed.
  See also chapter 3 for a general explanation concerning the creation of wash programs.
- You can recognize a list element by the LEFT and RIGHT ARROW symbol at the right side on the display.
- The arrow down symbol on the display points to the last Menu Item : EXIT.

❑ SELECTING THE WASH PART



- If you have selected **Add Step**, **Edit Step** or **Insert Step**, you have to select the wash sequence now.
- Depending on the machine type, with top or front soap dispenser, you have more or less sequences available.

For Washing Machines with Top Soap Dispenser :

Prewash | **Wash** | Cooldown | Rinse | Final Rinse | Soak | Flush | Spray | No wash

For Washing Machines with Front Soap Dispenser :

Wash | Cooldown | Rinse | Soak | Spray | No wash

- For a new step, as a default, the first displayed function is the **Wash** sequence.
- Now by pressing the **ARROW LEFT** or **RIGHT** button, you can select the desired sequence.
- Press the **ENTER** button to confirm.
- You can also use the **ARROW DOWN** button if you accept the pre-programmed default value.

❑ THE PREWASH SEQUENCE

Prewash | Wash | Cooldown | Rinse | Final Rinse | Soak | Flush | Spray | No wash

Only for washing machines with a Top Soap Dispenser.

Menu Item	Default	Info	Limits
Temperature	40 °C	The water temperature.	1 - 45 °C
Inlet	I2 - I3 (40°C)	The suggested inlet valves are related to the temperature and the soap box to be used. ⚠ **Attention! If you insert other inlet valves than the suggested ones, problems can occur at the water fill process.**	I1- I2 - I3 I4 - I5 - I6
Level	Normal Low	The suggested water level depends on the machine Type.	See table §3.4
RPM	-	The suggested RPM depends on the machineType.	See table §3.4

Detergents Menu... Supply 1, ..., 8	0 sec	Time selection for external liquid soap supplies. You can program up to 4 supplies at the same time. If you have programmed more then 4 supplies an error message will be generated. Put the time of the supplies back to zero until not more than 4 non-zero time values are remaining. (Liquid soap supplies must be switched on at the configuration Menu)	0 - 99 sec
On Time	12 sec	The wash action, motor On Time. Gentle wash action : 3 sec. (The suggested default values can be adjusted at the Initialization menu)	1 - 99 sec
Off Time	3 sec	The wash action, motor Off Time. Gentle wash action : 12 sec. (The suggested default values can be adjusted at the Initialization menu)	1 - 99 sec
Time	4.0 Min	The Prewash Sequence Time. (for 0 Minutes the Prewash sequence will be skipped) (programmable in steps of 0,5 Minutes)	0 - 99.5 Min
Signal	No	When a signal is programmed, a pause will be introduced at the end of the Wash Step. This allows the operator to add soap for the next step. A buzzer signal warns the operator that the cycle has been interrupted.	No / Yes

❑ THE WASH SEQUENCE

Prewash | **Wash** | Cooldown | Rinse | Last Rinse | Soak | Flush | Spray | No wash

Menu Item	Default	Info	Limits
Temperature	60 °C	The water temperature.	1 - 92 °C
Inlet (top soap dispenser) (front soap dispenser)	I3 - I4 - I5 I2 - I3 (60°C)	The suggested inlet valves are related to the temperature and the soap box to be used. ⚠ **Attention!** **If you insert other inlet valves than the suggested ones, problems can occur at the water fill process.**	I1-I2-I3-I4-I5-I6 I1-I2-I3
Level	Normal Low	The suggested water level depends on the machine Type.	See table §3.4
RPM	-	The suggested RPM depends on the machine Type.	See table §3.4
Detergents Menu... Box A, B, C, D, E Supply 1, ..., 8	 0 sec 0 sec	Time selection for Soap Boxes (hopper) and external liquid soap supplies. You can program up to 4 supplies at the same time. If you have programmed more then 4 supplies an error message will be generated. Put the time of the supplies back to zero until not more than 4 non-zero time values are remaining. (Box A, B, C, D, E are only available on Front Soap Dispenser machines) (Liquid soap supplies must be switched on at the configuration Menu)	0 - 99 sec
On Time	12 sec	The wash action, motor On Time. Gentle wash action : 3 sec. (The suggested default values can be adjusted at the Initialization menu)	1 - 99 sec
Off Time	3 sec	The wash action, motor Off Time. Gentle wash action : 12 sec. (The suggested default values can be adjusted at the Initialization menu)	1 - 99 sec
Time	7.0 Min	The Wash Sequence Time. (for 0 Minutes the Wash sequence will be skipped) (programmable in steps of 0,5 Minutes)	0 - 99.5 Min
Signal	No	When a signal is programmed, a pause will be introduced at the end of the Wash Step. This allows the operator to add soap for the next step. A buzzer signal warns the operator that the cycle has been interrupted.	No / Yes

❑ THE COOLDOWN SEQUENCE

Prewash | Wash | **Cooldown** | Rinse | Final Rinse | Soak | Flush | Spray | No wash

- After a Hot wash you can program a Cool-down Sequence to avoid temperature shock and shrinking of the garments.
- The drain step after the Hot wash must be put on NO DRAIN.
- No inlets are programmable :
  - for Top Soap dispenser machines : inlet 6 is the standard inlet.
  - for Front Soap dispenser machines : inlet 2 is the standard inlet.
- The water level can't be programmed as the process of adding and draining water doesn't allow this.

⚠ **ATTENTION!**
DO NOT PROGRAM A DRAIN SEQUENCE BEFORE A COOLDOWN SEQUENCE

Menu Item	Default	Info	Limits
Temperature	60 °C	The water temperature.	1 - 60 °C
RPM	-	The suggested RPM depends on the machine Type.	See table §3.4
Drain Valve	1	Only available on washing machines with both : a normal Open and normal Closed Drain valve.	1 - 2
On Time	12 sec	The wash action, motor On Time. Gentle wash action : 3 sec. (The suggested default values can be adjusted at the Initialization menu)	1 - 99 sec
Off Time	3 sec	The wash action, motor Off Time. Gentle wash action : 12 sec. (The suggested default values can be adjusted at the Initialization menu)	1 - 99 sec
Time	7.0 Min	The programmed time = time needed to decrease the water temperature. Once the programmed temperature has been reached, the next Sequence will be started. (for 0 Minutes the Cooldown sequence will be skipped) (programmable in steps of 0,5 Minutes) ⚠ **Attention!** **If a short time is programmed, the water temperature will decrease fast.** **Recommendation!** **Program 1 minute for each 3°C temperature drop.** **Example :** **For a hot wash of 90°C and a Cooldown Sequence of 60°C a time of about 30°C/3°C = 10 Minutes should be programmed for the Cooldown Sequence.**	0 - 99.5 Min
Signal	No	When a signal is programmed, a pause will be introduced at the end of the Wash Step. This allows the operator to add soap for the next step. A buzzer signal warns the operator that the cycle has been interrupted.	No / Yes

❑ THE RINSE SEQUENCE

Prewash | Wash | Cooldown | **Rinse** | Final Rinse | Soak | Flush | Spray | No wash

- No temperature can be programmed as a Rinse is only dedicated for cold water.

Menu Item	Default	Info	Limits
Inlet (top soap dispenser) (front soap dispenser)	I2 - I5 - I6 I2	3 Inlets can be programmed. The suggested inlet valves are related to the temperature and the soap box to be used. ⚠ **Attention!** **If you insert other inlet valves than the suggested ones, problems can occur at the water fill process.**	I1-I2-I5-I6 I1-I2
Level	Normal High	The suggested water level depends on the machine Type.	See table §3.4
RPM	-	The suggested RPM depends on the machine Type.	See table §3.4
Detergents Menu... Box A, B, C, D, E Supply 1, ..., 8	 0 sec 0 sec	Time selection for Soap Boxes (hopper) and external liquid soap supplies. You can program up to 4 supplies at the same time. If you have programmed more then 4 supplies an error message will be generated. Put the time of the supplies back to zero until not more than 4 non-zero time values are remaining. (Box A, B, C, D, E are only available on Front Soap Dispenser machines) (Liquid soap supplies must be switched on at the configuration Menu)	0 - 99 sec
On Time	12 sec	The wash action, motor On Time. Gentle wash action : 3 sec. (The suggested default values can be adjusted at the Initialization menu)	1 - 99 sec
Off Time	3 sec	The wash action, motor Off Time. Gentle wash action : 12 sec. (The suggested default values can be adjusted at the Initialization menu)	1 - 99 sec
Time	2.0 Min	The Rinse Sequence Time. (for 0 Minutes the Rinse sequence will be skipped) (programmable in steps of 0,5 Minutes)	0 - 99.5 Min
Signal	No	When a signal is programmed, a pause will be introduced at the end of the Wash Step. This allows the operator to add soap for the next step. A buzzer signal warns the operator that the cycle has been interrupted.	No / Yes

❑ THE FINAL RINSE SEQUENCE

Prewash | Wash | Cooldown | Rinse | **Final Rinse** | Soak | Flush | Spray | No wash

Only for Top Soap Dispenser washing machines.

- No temperature can be programmed as a Last Rinse is only dedicated for cold (hard) water.

Menu Item	Default	Info	Limits
Inlet (top soap dispenser)	I1 (3 inlets) I1 - I6 (2 inlets)	3 Inlets can be programmed. • A machine with 3 water supply inlets functions with Cold Hard water, Cold Soft water and Warm Soft water. ➔ The suggested inlet valve is I1 Cold Hard water. • A machine with 2 water supply inlets functions with Cold Soft water and Warm Soft water. ➔ The suggested inlet valves are I1 + I6 Cold Soft water. The suggested inlet valves are related to the temperature and the soap box to be used. ⚠ **Attention!** **If you insert other inlet valves than the suggested ones, problems can occur at the water fill process.**	I1-I2-I5-I6
Level	Normal High	The suggested water level depends on the machine Type.	See table §3.4
RPM	-	The suggested RPM depends on the machine Type.	See table §3.4
Detergents Menu… Supply 1, …, 8	0 sec	Time selection for external liquid soap supplies. You can program up to 4 supplies at the same time. If you have programmed more then 4 supplies an error message will be generated. Put the time of the supplies back to zero until not more than 4 non-zero time values are remaining. (Liquid soap supplies must be switched on at the configuration Menu)	0 - 99 sec
On Time	12 sec	The wash action, motor On Time. Gentle wash action : 3 sec. (The suggested default values can be adjusted at the Initialization menu)	1 - 99 sec
Off Time	3 sec	The wash action, motor Off Time. Gentle wash action : 12 sec. (The suggested default values can be adjusted at the Initialization menu)	1 - 99 sec
Time	2.0 Min	The Final Rinse Sequence Time. (for 0 Minutes the Final Rinse sequence will be skipped) (programmable in steps of 0,5 Minutes)	0 - 99.5 Min
Signal	No	When a signal is programmed, a pause will be introduced at the end of the Wash Step. This allows the operator to add soap for the next step. A buzzer signal warns the operator that the cycle has been interrupted.	No / Yes

❑ THE SOAK SEQUENCE

Prewash | Wash | Cooldown | Rinse | Final Rinse | **Soak** | Flush | Spray | No wash

Menu Item	Default	Info	Limits
Temperature	40 °C	The water temperature.	1 - 45 °C
Inlet (top soap dispenser) (front soap dispenser)	I2 - I3 I2 - I3 (40°C)	The suggested inlet valves are related to the temperature and the soap box to be used. ⚠ **Attention!** **If you insert other inlet valves than the suggested ones, problems can occur at the water fill process.**	I1-I2-I3-I4-I5-I6 I1-I2-I3
Level	Normal Low	The suggested water level depends on the machine Type.	See table §3.4
RPM	-	The suggested RPM depends on the machine Type.	See table §3.4
Detergents Menu... Box A, B, C, D, E Supply 1, ..., 8	 0 sec 0 sec	Time selection for Soap Boxes (hopper) and external liquid soap supplies. You can program up to 4 supplies at the same time. If you have programmed more then 4 supplies an error message will be generated. Put the time of the supplies back to zero until not more than 4 non-zero time values are remaining. (Box A, B, C, D, E are only available on Front Soap Dispenser machines) (Liquid soap supplies must be switched on at the configuration Menu)	0 - 99 sec
On Time	12 sec	The wash action, motor On Time. (The suggested default values can be adjusted at the Initialization menu)	1 - 99 sec
Off Time	10 Min	The wash action, motor Off Time. (The suggested default values can be adjusted at the Initialization menu)	1 - 99 minutes
Time	1.0 Hour	The Soak Sequence Time. (for 0 Hour the Soak sequence will be skipped) (programmable in steps of 0,1 Hour)	0 - 25.5 Hour
Signal	No	When a signal is programmed, a pause will be introduced at the end of the Wash Step. This allows the operator to add soap for the next step. A buzzer signal warns the operator that the cycle has been interrupted.	No / Yes

❑ THE FLUSH SEQUENCE

Prewash | Wash | Cooldown | Rinse | Final Rinse | Soak | **Flush** | Spray | No wash

Only for Top Soap Dispenser washing machines.

- No water level can be programmed as the water will raise and escape by the overflow hole.
- No water inlets can be programmed as only cold water from water inlet 6 is used.
- No supplies can be programmed.

Menu Item	Default	Info	Limits
RPM	-	The suggested RPM depends on the machine Type.	See table §3.4
On Time	12 sec	The wash action, motor On Time. Gentle wash action : 3 sec. (The suggested default values can be adjusted at the Initialization menu)	1 - 99 sec
Off Time	3 sec	The wash action, motor Off Time. Gentle wash action : 12 sec. (The suggested default values can be adjusted at the Initialization menu)	1 - 99 sec
Time	10.0 Min	The Flush Sequence Time. (for 0 Minutes the Flush sequence will be skipped) (programmable in steps of 0,5 Minutes)	0 - 99.5 Min
Signal	No	When a signal is programmed, a pause will be introduced at the end of the Wash Step. This allows the operator to add soap for the next step. A buzzer signal warns the operator that the cycle has been interrupted.	No / Yes

❑ THE SPRAY SEQUENCE

Prewash | Wash | Cooldown | Rinse | Final Rinse | Soak | Flush | **Spray** | No wash

- Water or Liquid is injected at Distribution or Low Spin Speed
- No standard water inlets can be programmed in this function.
- The liquid will be injected based on soap supply programming.

Menu Item	Default	Info	Limits
RPM	-	The suggested RPM depends on the machine Type.	See table §3.4
Drain Valve	1	Only available on washing machines with both : a normal Open and normal Closed Drain valve.	1 - 2
Detergents Menu... Box A, B, C, D, E Supply 1, ..., 8	 0 sec 0 sec	Time selection for Soap Boxes (hopper) and external liquid soap supplies. The Spray sequence only functions with 1 Supply. If you have programmed more then 1 supply an error message will be generated. Put the time of the supplies back to zero until not more than 1 non-zero time value is remaining. If No supply has been programmed : the Spray sequence will be skipped. (Box A, B, C, D, E are only available on Front Soap Dispenser machines) (Liquid soap supplies must be switched on at the configuration	0 - 99 sec
Signal	No	When a signal is programmed, a pause will be introduced at the end of the Wash Step. This allows the operator to add soap for the next step. A buzzer signal warns the operator that the cycle has been interrupted.	No / Yes

❑ THE NO WASH SEQUENCE

Prewash | Wash | Cooldown | Rinse | Final Rinse | Soak | Flush | Spray | **No wash**

- In case of a No Wash Sequence, the wash function of the programmed step is skipped.
  Goto ⑤

5.6. STEP ⑤ : PROGRAMMING THE DRAIN STEP

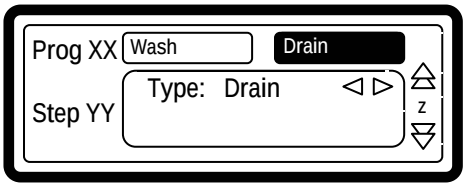
This paragraph gives a detailed explanation about programming the Drain/Extraction Sequences.

After programming the wash step, the drain/extraction step still has to be programmed.

> ⚠ **ATTENTION!**
> **YOU DON'T HAVE TO PROGRAM A DRAIN SEQUENCE BEFORE AN EXTRACTION SEQUENCE AS THE WATER WILL AUTOMATICALLY BE DRAINED AT THE EXTRACTION SEQUENCE**

❑ SELECTING THE DRAIN/EXTRACTION STEP

Depending on the machine type, you have more or less functions.



- For a new step, the first sequence that is displayed is the Drain sequence (default).
- Select the desired Drain step sequence from the list by pressing the **ARROW LEFT** or **RIGHT** button.
- Press the **ENTER** button to confirm your selection.
- You can also use the **ARROW DOWN** button if you accept the pre-programmed default value.

❑ THE DRAIN SEQUENCE

Drain | Extract | No Drain | Static Drain | Reversing Drain

Menu Item	Default	Info	Limits
Drain Valve	1	Only available on washing machines with both : a normal Open and normal Closed Drain valve.	1 - 2
Time	0.5 Min	The Drain Sequence Time. (for 0 Minutes the Drain sequence will be skipped) (programmable in steps of 0,5 Minutes)	0 - 9.5 Min
Exit		Return to Edit Program Menu.	

❑ THE EXTRACT SEQUENCE

Drain | **Extract** | No Drain | Static Drain | Reversing Drain

Menu Item	Default	Info	Limits
Drain Valve	1	Only available on washing machines with both : a normal Open and normal Closed Drain valve.	1 - 2
RPM	-	The suggested RPM depends on the machine Type.	See table §3.4
Time	4.5 Min	The Extract Sequence Time. (for 0 Minutes the Extract sequence will be skipped) (programmable in steps of 0,5 Minutes)	0 - 9.5 Min
Exit		Return to Edit Program Menu.	

❑ THE NO DRAIN SEQUENCE

Drain | Extract | **No Drain** | Static Drain | Reversing Drain

- The Drain/Extraction part of the programmed step is skipped.

⚠ **Attention!**

For some specific functions „No Drain“ must be programmed.

Example:

If you want to program a Cool-down Sequence, then „No Drain“ must be programmed between the Hot Wash and the Cool-down Sequence.

Menu Item	Default	Info	Limits
Exit		Return to Edit Program Menu.	

❑ THE STATIC DRAIN SEQUENCE

Drain | Extract | No Drain | **Static Drain** | Reversing Drain

The drum is at standstill while the water is drained.

Menu Item	Default	Info	Limits
Drain Valve	1	Only available on washing machines with both : a normal Open and normal Closed Drain valve.	1 - 2
RPM	-	The suggested RPM depends on the machine Type.	See table §3.4
Time	0.5 Min	The Static Drain Sequence Time. (for 0 Minutes the Static Drain sequence will be skipped) (programmable in steps of 0,5 Minutes)	0 - 9.5 Min
Exit		Return to Edit Program Menu.	

⚠ **Attention!**

It's not recommended to program a spin sequence just after a Static Drain Sequence.

At a Static Drain sequence, the garments are not distributed around the drum while the water is drained.

When the spin sequence starts, the garments are a big imbalance and the imbalance (tilt) function will be activated.

❑ THE REVERSING DRAIN SEQUENCE

Drain | Extract | No Drain | Static Drain | **Reversing Drain**

The drum is reversing while the water is drained.

Menu Item	Default	Info	Limits
Drain Valve	1	Only available on washing machines with both : a normal Open and normal Closed Drain valve.	1 - 2
RPM	-	The suggested RPM depends on the machine Type.	See table §3.4
On Time	12 sec	The mechanical action, motor On Time. (The suggested default values can be adjusted at the Initialization menu)	1 - 99 sec
Off Time	3 sec	The mechanical action, motor Off Time. (The suggested default values can be adjusted at the Initialization menu)	1 - 99 sec
Time	0.5 Min	The Static Drain Sequence Time. (for 0 Minutes the Static Drain sequence will be skipped) (programmable in steps of 0,5 Minutes)	0 - 9.5 Min
Exit		Return to Edit Program Menu.	

6. OPERATION MENU

6.1. STARTING UP

⚠ **ATTENTION!**
BEFORE STARTING UP THE FIRST TIME, BE SURE THAT THE MACHINE IS WELL INSTALLED. SEE INSTALLATION MANUAL.
MAKE SURE THAT THE CONFIGURATION AND INITIALIZATION MENU HAVE THE RIGHT SETTINGS. SEE CHAPTER 4.

⚠ **ATTENTION!**
WASH CYCLES CAN ONLY BE STARTED WHEN THE KEY SWITCH IS IN RUN MODE.

6.2. SWITCHING ON THE POWER

☞ The display lights up when you switch on the power.
- If the program is ready to be started, **Select CYCLE** is displayed.

6.3. LOAD THE WASHING MACHINE

☞ Open the door and load the laundry into the drum. When the drum is loaded, close the door.

6.4. PUT SOAP INTO THE SOAP DISPENSER

☞ Put the correct amount of soap into the soap dispenser.

Front Soap Dispenser washing machines,

101009

- At the wash sequence, it depends of the pre-programmed soap supply signals in which boxes A, B, C, D or E you have to add soap.

Top Soap Dispenser washing machines:

101008

- At the wash sequence, it depends of the pre-programmed water inlets in which compartment A, B or C you have to add soap.
  ➔ See paragraph 3.4. for more information

6.5. STARTING A WASH PROGRAM

- Up to 99 programs can be selected. The first 15 are the standard Wash programs you can find in this manual at Paragraph 7.2.

☞ Insert the program number.

☞ Press the „**START**“ button.
- If there is no program available for a specific program number, **INVALID** is displayed.

MB-machines only.

- After pressing the **„START“** button a message appears with the request to verify if you have locked the Inner Door.

☞ Press the **„START“** button if you are sure that you have locked the Inner Doors mechanically. If you are not sure press the „**STOP**“ button and check the Inner Doors visually.

6.6. PROGRAMMING A DELAY TIME

☞ Enter the selected Program Number.

☞ Press the Dot button.

The Delay time message will be displayed.

➔ The Door and the Soap Door must be closed first.

☞ Now you can insert the value for a delay time

Machine will start after _ _ : _ _

➔ First insert a value for the Hours, then insert a value for the Minutes

➔ The minimum delay time is 1 minute [00:01]

➔ The maximum delay time is 99 hours and 59 minutes [99:59]

☞ By pressing the **START** button, the delay time will start to decrease.

➔ The Door will be locked immediately.
Once the delay time is over, the wash cycle will start automatically.

➔ The Delay Time Sequence can be interrupted by pressing the **Stop** button.
The program will return to the Start Up menu : **SELECT CYCLE**.

6.7. ECONOMIC

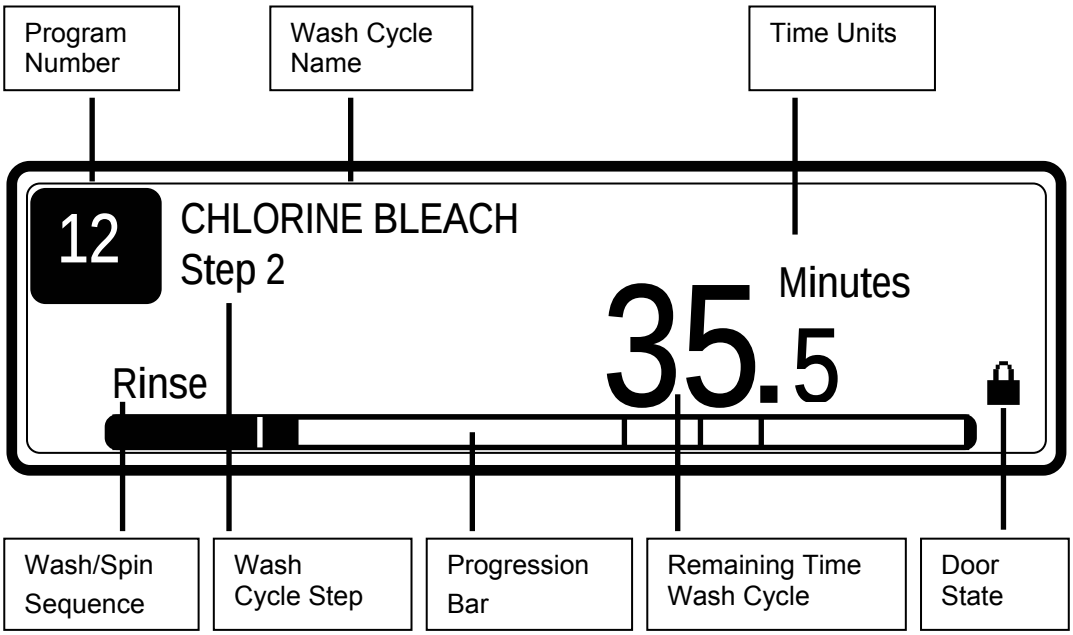
☞ If you accept the selection ECONOMIC at the Start of a new cycle by pressing the **YES** button, the water level will be lowered by 20% (in units) in accordance with the programmed level.

☞ If you don‘t want an ECONOMIC level, press the **NO** button.

- ECONOMIC water levels should only be used for lightly soiled and/or smaller volumes of garments.
  In other cases these reduced water levels will give poor washing quality.
- In the Initialization Menu you can enable/disable the request for ECONOMIC at Start UP.

6.8. THE ACTIVE PROGRAM

- The cycle time will decrease minute by minute and gives you an indication how long it will take before the cycle is finished.
- For each Wash program Step :
  - first you will see the Wash Sequence
  - then you will see the Drain / Extraction Sequence
- A Progression Bar shows the progression of the wash cycle.



6.9. ADVANCING A WASH PROGRAM

- ☞ Press the **ARROW RIGHT** button to increase the wash sequence time.
- ☞ Press the **ARROW LEFT** button to decrease the wash sequence time.
- ☞ Press the **START** button to skip the current step.

⚠ **ATTENTION!**
EVEN IF THE ADVANCE FUNCTION HAS BEEN SWITCHED OFF IN THE INITIALIZATION MENU, THE ADVANCE FUNCTION WILL WORK IF THE KEY SWITCH IS TURNED INTO PROGRAM MODE.

6.10. WASH TIME

- Once the program has been started, the remaining cycle time is displayed.
- Sometimes the dot of the displayed time stops blinking to indicate that the time on the display stops counting down.
- The time that the dot stops blinking is extra time.
- The total wash time = programmed time (1) + the extra time (2+3+4+5)
    1. The programmed time of the processes.
    2. The extra time for taking water.
    3. The extra time for draining (if the water is not drained in 30 sec and the extended drain time is started)
    4. The extra time for heating if „Wait for temperature“ is selected.
    5. The extra free run time at the end of the spin sequence.

6.11. PROGRAM END

- The time on the display counts down until 0.
- Once the program cycle is finished, **END PROGRAM** is displayed.
- The Door Lock will be released. You can open the Door when **UNLOAD** appears on the Display.

☞ Open the door and unload the machine.

- The Message **UNLOAD** will be erased and the machine is ready to start a new program.

  SELECT CYCLE is displayed.

❑ **MB washing machines only**

- When the message Unload is displayed, the indication lights **TURN DRUM** and **UNLOCK DOOR** will be illuminated.
- The buttons will only be functional if their indication lights are illuminated at the dirty or the hygienic side of the washing machine.

The Unload Sequence.

- By pressing the **TURN DRUM** push button, you have to turn the drum so that the Door of the drum can be opened just in front of the Main door of the MB washing machine. By releasing the push button the Drum stops turning.
- If the weight of the garments in the drum is not well balanced, then it can happen that you have to try to position the Door of the Drum a few times.
- By pressing the **DOOR UNLOCK** button the Main door of the MB machine will be Unlocked.
- Open the doors by hand.
- Now you can Unload the garments.

The Load Sequence.

The garments are always loaded at the Dirty side.

- If the program has not been interrupted, the doors are now open at the Hygienic side.
- Close and Lock the Doors.
- The indication lights **TURN DRUM** and **UNLOCK DOOR** will be extinguished at the Hygienic side and be Illuminated at the Dirty side.
- Now you have to position the Drum Door just in front of the Main Door at the Dirty Side.
- If the Door of the drum is well positioned, Unlock and open the Doors.
- Now you can Load the garments.
- After closing the doors, you can start a new wash cycle.

⚠ **ATTENTION!**
THE GRAPHITRONIC WASH COMPUTER FOR A MB WASHING MACHINE WILL ONLY ALLOW TO UNLOAD THE GARMETS AT THE HYGENIC SIDE OF THE MACHINE IF THE WASH CYCLE HAS NOT BEEN INTERRUPTED.

⚠ ATTENTION!
IN CASE OF HYGIENIC DESINFECTIVE WASH PROGRAMS IN THE INITIALIZATION MENU „MANUAL OVERRIDE“ & „ALLOW ADVANCE“ MUST BE SWITCHED OFF

❑ **MB washing machines 90 – 140 – 180 only**

- The biggest MB washing machines contain two or three drum compartments.
- After unloading / loading the linen at one compartment you have to turn the drum to the next compartment.
- Close and lock the Inner Door.
- Close the Outer Door and press the door lock button to lock the Outer Door.
- When the Outer Door is closed and locked, the indication lights TURN DRUM and UNLOCK DOOR will be illuminated.
- By pressing the TURN DRUM push button the drum will turn automatically to the next drum compartment.
- When the drum has stopped and the indication light UNLOCK DOOR is illuminated, press the UNLOCK DOOR button.
- Now you can unload / load the drum at the next compartment.

- On the small MB washing machines after closing and locking the Outer Door at the Hygienic Side automatically the wash computer switches the door and turn drum control to the Dirty Side.
- For the big MB washing machines with multiple drum compartments, you have to press the „**SWITCH SIDE**“ button to switch over from Hygienic to Dirty Side.

6.12. WATER FILL PROCESS

- When the water fill process is running, a picture of a tap is shown on the display.
- Depending on the water temperature the cold and hot inlet valves will be opened.
- The water level is measured by an electronic water level sensor.
- If the Temperature Balance function is enabled, the GRAPHITRONIC Wash Computer will control the water temperature until the target temperature is reached. For Hot wash programs, extra heating will be required after the fill process to reach the programmed hot water temperature.
- In the standard wash tables you will find a Normal Low and Normal High water level.
- These are the standard water levels :
  - The Normal Low water level is used for the Prewash, Wash and Soak sequence.
  - The Normal High water level is used for the Rinse and Final Rinse sequence.

- The water level can only be programmed between two limits:
  - The lower limit is above the heating elements and the temperature sensor.
  - The upper limit is below the overflow hole.

6.13. HEATING PROCESS

- When the water heating process is running, a picture of a boiler is shown on the display.
- When „No Wait for Temperature“ (No Wait for Heat) is selected :
  - The machine will heat until the time of the specific wash step is over or if the programmed temperature was reached.
  - Even if the programmed temperature is not reached, the program will start the next sequence if the time of the sequence is over.
- When „Wait for Temperature“ (Wait for Heat) is selected:

- The machine will heat until the programmed temperature is reached. The programmed time of the wash sequence will only start counting down from the moment that the target temperature was reached.

⚠ **ATTENTION!**
WHEN THE MACHINES DO NOT HAVE ELECTRICAL OR STEAM HEATING NO „WAIT FOR TEMPERATURE“ SHOULD BE SELECTED IN THE INITIALIZATION MENU.

6.14. COOLDOWN FUNCTION

- AUTOMATIC COOLDOWN : this function avoids thermal shock in the washing machine.
  ➔ For Hot washes above 65°C, Cold water is added at the end of the step.
- PROGRAMMED COOLDOWN : this function is recommended to avoid the shrinking of the garments.
  ➔ Water is drained and cold water is added bit by bit. The temperature of the water in the tub will decrease slowly as a function of the programmed Cool-down Sequence (temperature and time).

6.15. FLUSH FUNCTION

Only for machines with a Top Soap Dispenser.

- At the Fill process of the Flush sequence, No water level is programmed and the water will escape by the overflow hole.
- The larger soil particles will get separated from the garments due to the water that is draining through the overflow hole.

6.16. SPRAY FUNCTION

- The special product is injected while the drain valve is open and depending the programmed speed, the drum will spin at distribution or low spin speed.

6.17. UNBALANCE

- When the machine is badly loaded during the spin sequence, then the tilt switch will get activated.
- The spin sequence will be interrupted and the garments in the drum will be redistributed.
- The washing machine will try up to 10 times to redistribute the garments.

6.18. PAUSE

- When a signal has been programmed, at the end of a wash sequence, the machine will stop the Program and the message „**Pause, Press Start to Continue“** will be displayed.
- The buzzer will give a warning for the operator.
- Now the operator can add Soap.
- By opening the Soap Door, the buzzer is switched off.
  (Only for Front Soap Dispenser Washing Machines)
- By pressing the **START** button the PROGRAM will go on with the next Program step.

6.19. STOP

- By pressing the **STOP** button the program is interrupted.
- First the machine will go over to a safe state.
- Then the message **CONTINUE ?** is displayed.

☞ **STOP** : the program is stopped. (A tumble sequence will be executed before the door can be opened.)

☞ **START** : the program restarts the last active step, and goes on with the rest of the program.

6.20. OPEN SOAP BOX

ONLY FOR WASHING MACHINES WITH FRONT SOAP DISPENSER

- By opening the soap dispenser door, the Program is interrupted at once.
- First the machine will go over to a safe state.
- Then the message **CLOSE SOAP DOOR** is displayed.
- Once the soap dispenser door is closed again, the message **CONTINUE ?** will be displayed.

☞ **STOP** : the program is stopped. (A tumble sequence will be executed before the door can be opened.)

☞ **START** : the program restarts the last active step, and goes on with rest of the program.

- It's recommended to program a pause (signal) if you want to fill the same soap box twice while the program is running.

6.21. WAIT STATE

- It can occur that the normal machine operation has been interrupted and that you have to wait until the GRAPHITRONIC Wash Computer allows you to go on.
- You can recognize the wait state by a display that shows **WAIT** and a decreasing counter.
- This will occur when the power has been switched off and on at a running wash cycle.
- As the software doesn't know how fast the motor was spinning, a delay time is respected before the machine can be restarted.

6.22. HOW TO HANDLE FAILURE MESSAGES

- When a failure has been detected by the GRAPHITRONIC Wash Computer, a failure message is generated, to inform the operator about the problem.

Out Of Order (Pr: XX St: YY)

Ask For Service

(Err ZZZ : Fault Message)

XX : The Program number
YY : The Step number
Err ZZZ : The error number
Fault Message : The name of the error message

- At the upper line, the program number and step number of the interrupted program are displayed.
- The message **UNLOAD!** will inform you if it‘s allowed to open the door.

❑ **Safety conditions**

- If there is still water in the drum or if the temperature is too high, it‘s not possible to open the door.
- The messages „**WATER IN CAGE**“ or „**TOO HOT** “ will be displayed together with the level and the temperature.

⚠ **ATTENTION!**
IT’S UP TO THE OPERATOR TO TAKE THE NECESSARY PRECAUTIONS IF THE DRAIN VALVE IS NOT FUNCTIONAL AND THERE IS STILL HOT WATER IN THE TUB AT THE END OF THE WASH CYCLE.
ON THE DISPLAY THE ACTUAL WATER TEMPERATURE AND LEVEL WILL BE DISPLAYED.
WAIT UNTIL THE WATER IS DRAINED AND UNTIL THE WATER HAS COOLED BEFORE ALL INTERVENTIONS AS HOT WATER CAN CAUSE BURNS.

- If something goes wrong with the door lock, the program will be finished immediately.
- For safety purposes, the door will stay locked.

⚠ **ATTENTION!**
GO TO THE CHAPTER 8 TROUBLE SHOOTING TO FIND OUT MORE ABOUT ERROR HANDLING.

6.23. HOW TO HANDLE POWER INTERRUPTIONS

- When a power interruption occurs while the machine is in standby mode and no program cycle was started, the machine will stay in standby mode.
- When a power interruption occurs while the machine is washing or spinning, after the power interruption, the message **Continue ?** will be displayed.

☞ **STOP** : the program is stopped. (A tumble sequence will be executed before the door can be opened.)

☞ **START** : the program restarts the last active step, and goes on with the rest of the program.

6.24. SPECIAL FUNCTION BUTTONS

The Special Function buttons **Info** and **Service** are dedicated to supply the operator with more information about the wash programs and the wash machine functions.
The other Special Function buttons allow direct operation.

6.24.1. INFO

☞ Press the **INFO** button if you want to find out what a program looks like.

- If no Program is running, you will get an overview of all available programs.
- If a Program is running, you will get a detailed list of program functions, step by step.
- At each step are shown all the menu items.
- You can leave the Info menu by pressing the **INFO** button again.

6.24.2. SERVICE - STATE

☞ Press the **SERVICE-STATE** button if you want to inspect the actual water temperature and level.

- At the Service - State menu, you can inspect :
  - the water temperature and water level
  - the number of cycles that have been accumulated (service due)
  - the actual wash machine states at the running wash cycle
- By turning the key switch to Program, the Service-State menu will not disappear after 1 minute.
- By pressing the **ARROW DOWN** button you will see all the menu items.
- You can leave the Service - State menu by pressing the **SERVICE-STATE** button again.

6.24.3. INLETS 1, 2, 3 (4, 5, 6)

☞ Press **INLET** button **1, 2, 3 (4 , 5, 6)** if you want to open a water Inlet valve at a running process.

- Only functional at a running wash sequence.
- The corresponding inlet valve will be opened while you are pressing the button.

⚠ **ATTENTION!**
ALL THE SAFETY FUNCTIONS WILL STILL BE FUNCTIONAL, SO IT CAN OCCUR THAT YOU CAN'T ACTIVATE THE INLETS.

6.24.4. DRAIN

☞ Press the **DRAIN** button if you want to open the drain valve at a running process.

- Only functional at a running **wash** sequence.
- The drain valve will be opened for the time you are pressing the button.

6.24.5. HEATING

☞ Press the **HEATING** button if you want to switch On the heating at a running process.

- Only functional at a running wash sequence.
- The Heating will be switched on for the time you are pressing the button.

⚠ **ATTENTION!**
ALL THE SAFETY FUNCTIONS WILL STILL BE FUNCTIONAL, SO IT CAN OCCUR THAT YOU CAN'T ACTIVATE THE HEATING.

6.24.6. SPEED ADJUST

☞ Press the **SPEED ADJUST** button if you want to change the drum speed at a running process.

- You can adjust the drum speed by inserting a new value.
- The speed limits will be respected depending on the washing machine type.

⚠ **ATTENTION!**
ALL THE SAFETY FUNCTIONS WILL STILL BE FUNCTIONAL, SO IT CAN OCCUR THAT YOU CAN'T CHANGE THE SPIN SPEED.

6.25. WATER RECYCLING

- If the washing machine is connected with a water recycling system, a signal from the water recycling tank can be connected to the GRAPHITRONIC washing machine computer.
- If the tank is empty, then the diagnostic message „Err 40 no fill recycle." will be shown on the display of the GRAPHITRONIC Wash Computer.
- For the Washing machines with Front Soap Dispenser, automatically the Inlet valve for the water recycling tank will be switched off and the Cold water inlet valve will be switched on.

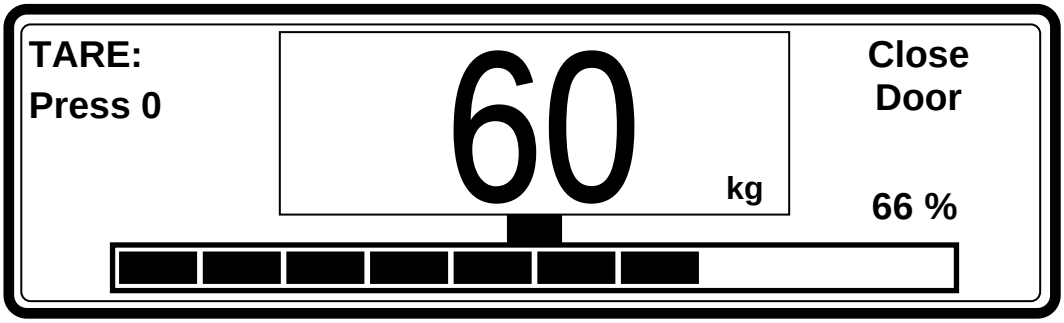
6.26. EXTERNAL LIQUID SOAP BOXES

- If the washing machine is connected with external soap pumps, a signal from the soap supply reservoir can be connected to the GRAPHITRONIC washing machine computer.
- If the Soap box is almost empty, then the diagnostic message „Err 39 out of soap" will be shown on the display of the GRAPHITRONIC Wash Computer.
- So the operator does not have to check the soap supply reservoirs continuously to avoid washing without soap.

6.27. AUTOMATIC WEIGHING SYSTEM

- MB, F23/4 to FS1200 machines can be equipped with an automatic weighing system. When the door is open, a screen with a weighing scale is displayed.
- The operator is invited to press the „0" number button (TARE) to put the scale on „0" kg. By pressing the „0" button, the message „Reference weight is set to 0" is shown.
- The operator loads the machine and can follow on the display how much linen is put in the washing machine.

- If the load exceeds the capacity of the washing machine, the wash computer shows an „Overload“ message.
- At the bottom of the display is shown a progress bar as simple indicator how much linen has been loaded.
- By closing the door, the display with weighing information is replaced by the display to select a wash cycle.



- In case of a washing machine with weighing system, the water consumption is programmable in litres to obtain a more precise water consumption.
- Another feature is automatically adjusting the water consumption (and liquid soap supply) in relation with the measured weight of the linen.

6.28. SYSTEM WITH MANUAL ENTERING OF THE LINEN WEIGHT

FOR MACHINES WHICH ARE NOT EQUIPPED WITH AN AUTOMATIC WEIGHING SYSTEM

- If you now the weight of the linen load (e.g. you weight it before washing), you can activate the function of manual entering of the linen weight (Advanced menu / Weighing).
- If the door is open there is shown „0kg“ as the linen load weight on the display.
  Enter the weight value. When you close the door, you will be able to select a wash cycle.
- Depending on the entered weight value of the linen you can enable an automatic setting of the water consumption and liquid soap supply.

7. PRE-PROGRAMMED PROGRAMS

The GRAPHITRONIC Wash Computer contains 15 pre-programmed Standard Wash Programs.

(Standard Programs : 1 to 15. Programs 16 to 52 are dedicated.)

⚠ **ATTENTION!**
THE PRE-PROGRAMMED PROCESSES ARE GIVEN AS AN EXAMPLE ONLY.
FOR THE CREATION OF YOUR OWN WASH PROGRAMS, CONTACT YOUR SOAP SUPPLIER.

7.1. LEGEND

❑ SUPPLY TIMES

The liquid soap supply time for front soap dispenser boxes A, B, C, D and E is default 30 seconds and can be adjusted in the Program menu.

❑ WATER INLETS (VALVES)

- Machines with TOP SOAP DISPENSER
  - Inlet Valve **1** : Cold Hard Water *(*)* Soap Dispenser Compartment „C“ Final Rinse
  - Inlet Valve **2** : Cold Soft Water Soap Dispenser Compartment „A“ Pre wash
  - Inlet Valve **3** : Hot Soft Water Direct Inlet (Liquid)
  - Inlet Valve **4** : Hot Soft Water Soap Dispenser Compartment „B“ Main Wash
  - Inlet Valve **5** : Cold Soft Water Soap Dispenser Compartment „B“ Main Wash
  - Inlet Valve **6** : Cold Soft Water Direct Inlet (Liquid)

(*) If No Cold Hard water is available, then Inlet Valve 1 will function with Cold Soft Water.

- Machines with FRONT SOAP DISPENSER
  - Inlet Valve **1** : Cold Hard water (Inlet Valve 1 is not operational, if no hard water is available)
  - Inlet Valve **2** : Cold Soft water
  - Inlet Valve **3** : Hot Soft water

❑ WATER LEVEL

- **NL**: **N**ormal **L**ow level
- **NH**: **N**ormal **H**igh level

❑ WASH ACTION

- Normal Wash Action
  - **A = 12“** 12 Seconds Action
  - **R = 3**“ 3 Seconds Rest

- Gentle Wash Action
  - **A = 3“** 3 Seconds Action
  - **R = 12“** 12 Seconds Rest

❑ RPM (REVOLUTIONS PER MINUTE)

- **W** : type RS/FS/MB = Washing Speed (≈ 32 – 50 RPM)
- **D** : type RS/FS/MB = Distribution Speed (not changeable) (≈ 100 RPM)
- **L** : type RS/FS/MB = Low extraction speed, standard (≈ 500 RPM)
- **H** : type FS/MB = High extraction speed (≈ 625 – 1000 RPM) (depending on the size of the machine)

7.2. WASH PROGRAMS

❑ WASH PROGRAM 1: HOT WASH - 90°C

	Sequence	Inlet		Temp.	Level	Time	R.P.M (x)	Soap Supply	
		Top Soap dispenser	Stainless steel S. D.					Top Soap dispenser	Stainless steel S. D.
Step 1	Prewash / wash	2- 3	2 - 3	30°C	NL	5 min	W (normal)	A	A=30“
	Spin	-		-	-	1 min	L	-	-
Step 2	Main wash	5-4-3	2 - 3	90°C	NL	10 min	W (normal)	B	B=30“
	Drain	-		-	-	30 sec	D		-
Step 3	Rinse 1	2-5-6	2	-	NH	2 min	W (normal)	-	-
	Spin	-		-	-	1 min	L	-	-
Step 4	Rinse 2	2-5-6	2	-	NH	2 min	W (normal)	-	-
	Spin	-		-	-	1 min	L	-	-
Step 5	Rinse 3	1(+6)	1 (2)	-	NL	3 min	W (normal)	C	D=30“
	Final spin/Spin	-		-	-	5.5 min	H	-	-
	Slowdown	-		-	-	x	-	-	-
	Tumble	-		-	-	30 sec	W (5s / 5s)	-	-

❑ WASH PROGRAM 2: WARM WASH - 60°C

	Sequence	Inlet		Temp.	Level	Time	R.P.M (x)	Soap Supply	
		Top Soap dispenser	Stainless steel S. D.					Top Soap dispenser	Stainless steel S. D.
Step 1	Prewash / wash	2- 3	2 - 3	30°C	NL	5 min	W (normal)	A	A=30“
	Spin	-		-	-	1 min	L	-	-
Step 2	Main wash	5-4-3	2 - 3	60°C	NL	10 min	W (normal)	B	B=30“
	Drain	-		-	-	30 sec	D		-
Step 3	Rinse 1	2-5-6	2	-	NH	2 min	W (normal)	-	-
	Spin	-		-	-	1 min	L	-	-
Step 4	Rinse 2	2-5-6	2	-	NH	2 min	W (normal)	-	-
	Spin	-		-	-	1 min	L	-	-
Step 5	Rinse 3	1(+6)	1 (2)	-	NL	3 min	W (normal)	C	D=30“
	Final spin/Spin	-		-	-	5.5 min	H	-	-
	Slowdown	-		-	-	X	-	-	-
	Tumble	-		-	-	30 sec	W (5s / 5s)	-	-

❑ WASH PROGRAM 3: COLORED WASH - 40°C

	Sequence	Inlet		Temp.	Level	Time	R.P.M (x)	Soap Supply	
		Top Soap dispenser	Stainless steel S. D.					Top Soap dispenser	Stainless steel S. D.
Step 1	Prewash / wash	2- 3	2 - 3	30°C	NL	5 min	W (normal)	A	A=30“
	Spin	-		-	-	1 min	L	-	-
Step 2	Main wash	5-4-3	2 - 3	40°C	NL	10 min	W (normal)	B	B=30“
	Drain	-		-	-	30 sec	D		-
Step 3	Rinse 1	2-5-6	2	-	NH	2 min	W (normal)	-	-
	Spin	-		-	-	1 min	L	-	-
Step 4	Rinse 2	2-5-6	2	-	NH	2 min	W (normal)	-	-
	Spin	-		-	-	1 min	L	-	-
Step 5	Rinse 3	1(+6)	1 (2)	-	NL	3 min	W (normal)	C	D=30“
	Final spin/Spin	-		-	-	5.5 min	H	-	-
	Slowdown	-		-	-	x	-	-	-
	Tumble	-		-	-	30 sec	W (5s / 5s)	-	-

❑ WASH PROGRAM 4: BRIGHT COLORED WASH - 30°C

NO PREWASH

	Sequence	Inlet		Temp.	Level	Time	R.P.M (x)	Soap Supply	
		Top Soap dispenser	Stainless steel S. D.					Top Soap dispenser	Stainless steel S. D.
Step 1	Main wash	5-6-3	2 - 3	30°C	NL	8 min	W (normal)	B	B=30“
	Drain	-		-	-	30 sec	D		-
Step 2	Rinse 1	2-5-6	2	-	NH	2 min	W (normal)	-	-
	Drain	-		-	-	30 sec	D	-	-
Step 3	Rinse 2	2-5-6	2	-	NH	2 min	W (normal)	-	-
	Drain	-		-	-	30 sec	D	-	-
Step 4	Rinse 3	1(+6)	1 (2)	-	NL	3 min	W (normal)	C	D=30“
	Final spin/Spin	-		-	-	4 min	H	-	-
	Slowdown	-		-	-	x	-	-	-
	Tumble	-		-	-	30 sec	W (5s / 5s)	-	-

❑ WASH PROGRAM 5: WOOLENS - 15°C

NO PREWASH

	Sequence	Inlet		Temp.	Level	Time	R.P.M (x)	Soap Supply	
		Top Soap dispenser	Stainless steel S. D.					Top Soap dispenser	Stainless steel S. D.
Step 1	Main wash	5-6	2	15°C	NH	6 min	W (gentle)	B	B=30“
	Drain	-		-	-	30 sec	D		-
Step 2	Rinse 1	2-5-6	2	-	NH	2 min	W (gentle)	-	-
	Drain	-		-	-	30 sec	D	-	-
Step 3	Rinse 2	2-5-6	2	-	NH	2 min	W (gentle)	-	-
	Drain	-		-	-	30 sec	D	-	-
Step 4	Rinse 3	1(+6)	1 (2)	-	NH	3 min	W (gentle)	C	D=30“
	Final spin/Spin	-		-	-	2,5 min	L	-	-
	Slowdown	-		-	-	X	-	-	-
	Tumble	-		-	-	30 sec	W (gentle)	-	-

❑ WASH PROGRAM 6: ECO HOT WASH - 90°C

NO PREWASH

	Sequence	Inlet		Temp.	Level	Time	R.P.M (x)	Soap Supply	
		Top Soap dispenser	Stainless steel S. D.					Top Soap dispenser	Stainless steel S. D.
Step 1	Main wash	5-4-3	2 - 3	90°C	EL	25 min	W (normal)	B	B=30“
	Drain	-		-	-	30 sec	D		-
Step 2	Rinse 1	2-5-6	2	-	EH	4 min	W (normal)	-	-
	Spin	-		-	-	1 min	L	-	-
Step 3	Rinse 2	2-5-6	2	-	NL	4 min	W (normal)	-	-
	Spin	-		-	-	1 min	L	-	-
Step 4	Rinse 3	1(+6)	1 (2)	-	EH	6 min	W (normal)	C	D=30“
	Final spin/Spin	-		-	-	5,5 min	H	-	-
	Slowdown	-		-	-	X	-	-	-
	Tumble	-		-	-	30 sec	W (5s /5s)	-	-

❑ WASH PROGRAM 7: ECO WARM WASH - 60°C

NO PREWASH

	Sequence	Inlet		Temp.	Level	Time	R.P.M (x)	Soap Supply	
		Top Soap dispenser	Stainless steel S. D.					Top Soap dispenser	Stainless steel S. D.
Step 1	Main wash	5-4-3	2 - 3	60°C	EL	20 min	W (normal)	B	B=30“
	Drain	-		-	-	30 sec	D		-
Step 2	Rinse 1	2-5-6	2	-	EH	4 min	W (normal)	-	-
	Spin	-		-	-	1 min	L	-	-
Step 3	Rinse 2	2-5-6	2	-	NL	4 min	W (normal)	-	-
	Spin	-		-	-	1 min	L	-	-
Step 4	Rinse 3	1(+6)	1 (2)	-	EH	6 min	W (normal)	C	D=30“
	Final spin/Spin	-		-	-	5,5 min	H	-	-
	Slowdown	-		-	-	x	-	-	-
	Tumble	-		-	-	30 sec	W (5s / 5s)	-	-

❑ WASH PROGRAM 8: ECO COLORED WASH - 40°C

NO PREWASH

	Sequence	Inlet		Temp.	Level	Time	R.P.M (x)	Soap Supply	
		Top Soap dispenser	Stainless steel S. D.					Top Soap dispenser	Stainless steel S. D.
Step 1	Main wash	5-4-3	2 - 3	43°C	EL	20 min	W (normal)	B	B=30“
	Drain	-		-	-	30 sec	D		-
Step 2	Rinse 1	2-5-6	2	-	EH	4 min	W (normal)	-	-
	Spin	-		-	-	1 min	L	-	-
Step 3	Rinse 2	2-5-6	2	-	NL	4 min	W (normal)	-	-
	Spin	-		-	-	1 min	L	-	-
Step 4	Rinse 3	1(+6)	1 (2)	-	EH	6 min	W (normal)	C	D=30“
	Final spin/Spin	-		-	-	5.5 min	H	-	-
	Slowdown	-		-	-	x	-	-	-
	Tumble	-		-	-	30 sec	W (5s / 5s)	-	-

❑ WASH PROGRAM 9: ECO BRIGHT COLORED WASH - 30°C

NO PREWASH

	Sequence	Inlet		Temp.	Level	Time	R.P.M (x)	Soap Supply	
		Top Soap dispenser	Stainless steel S. D.					Top Soap dispenser	Stainless steel S. D.
Step 1	Main wash	5-6-3	2 - 3	34°C	EL	20 min	W (normal)	B	B=30“
	Drain	-		-	-	30 sec	D		-
Step 2	Rinse 1	2-5-6	2	-	EH	4 min	W (normal)	-	-
	Drain	-		-	-	1 min	D	-	-
Step 3	Rinse 2	2-5-6	2	-	NL	4 min	W (normal)	-	-
	Drain	-		-	-	1 min	D	-	-
Step 4	Rinse 3	1(+6)	1 (2)	-	EH	6 min	W (normal)	C	D=30“
	Final spin/Spin	-		-	-	4 min	H	-	-
	Slowdown	-		-	-	X	-	-	-
	Tumble	-		-	-	30 sec	W (5s / 5s)	-	-

❑ WASH PROGRAM 10: SUPER ECO HOT WASH - 90°C

NO PREWASH

	Sequence	Inlet		Temp.	Level	Time	R.P.M (x)	Soap Supply	
		Top Soap dispenser	Stainless steel S. D.					Top Soap dispenser	Stainless steel S. D.
Step 1	Main wash	5-4-3	2 - 3	90°C	EL	10 min	W (normal)	B	B=30“
	Drain	-		-	-	1 min	L		-
Step 2	Rinse 1	2-5-6	2	-	EH	2 min	W (normal)	-	-
	Spin	-		-	-	1 min	L	-	-
Step 3	Rinse 3	1(+6)	1 (2)	-	EH	3 min	W (normal)	C	D=30“
	Final spin/Spin	-		-	-	5.5 min	H	-	-
	Slowdown	-		-	-	x	-	-	-
	Tumble	-		-	-	30 sec	W (5s/5s)	-	-

❑ WASH PROGRAM 11: SUPER ECO WARM WASH - 60°C

NO PREWASH

	Sequence	Inlet		Temp.	Level	Time	R.P.M (x)	Soap Supply	
		Top Soap dispenser	Stainless steel S. D.					Top Soap dispenser	Stainless steel S. D.
Step 1	Main wash	5-4-3	2 - 3	60°C	EL	10 min	W (normal)	B	B=30“
	Drain	-		-	-	1 min	L		-
Step 2	Rinse 1	2-5-6	2	-	EH	2 min	W (normal)	-	-
	Spin	-		-	-	1 min	L	-	-
Step 3	Rinse 3	1(+6)	1 (2)	-	EH	3 min	W (normal)	C	D=30“
	Final spin/Spin	-		-	-	5.5 min	H	-	-
	Slowdown	-		-	-	x	-	-	-
	Tumble	-		-	-	30 sec	W (5s/5s)	-	-

❑ WASH PROGRAM 12: SUPER ECO COLOR WASH - 40°C

NO PREWASH

	Sequence	Inlet		Temp.	Level	Time	R.P.M (x)	Soap Supply	
		Top Soap dispenser	Stainless steel S. D.					Top Soap dispenser	Stainless steel S. D.
Step 1	Main wash	5-4-3	2 - 3	40°C	EL	10 min	W (normal)	B	B=30“
	Drain	-		-	-	1 min	L		-
Step 2	Rinse 1	2-5-6	2	-	EH	2 min	W (normal)	-	-
	Spin	-		-	-	1 min	L	-	-
Step 3	Rinse 3	1(+6)	1 (2)	-	EH	3 min	W (normal)	C	D=30“
	Final spin/Spin	-		-	-	5.5 min	H	-	-
	Slowdown	-		-	-	x	-	-	-
	Tumble	-		-	-	30 sec	W (5s/5s)	-	-

❑ WASH PROGRAM 13: SUPER ECO BRIGHT COLOR WASH - 30°C

NO PREWASH

	Sequence	Inlet		Temp.	Level	Time	R.P.M (x)	Soap Supply	
		Top Soap dispenser	Stainless steel S. D.					Top Soap dispenser	Stainless steel S. D.
Step 1	Main wash	5-6-3	2 - 3	30°C	EL	8 min	W (normal)	B	B=30“
	Drain	-		-	-	1 min	D		-
Step 2	Rinse 1	2-5-6	2	-	EH	2 min	W (normal)	-	-
	Spin	-		-	-	1 min	D	-	-
Step 3	Rinse 3	1(+6)	1 (2)	-	EH	3 min	W (normal)	C	D=30“
	Final spin/Spin	-		-	-	4 min	H	-	-
	Slowdown	-		-	-	x	-	-	-
	Tumble	-		-	-	30 sec	W (5s/5s)	-	-

❑ WASH PROGRAM 14: EXTRACTION - LOW SPEED

	Sequence	Inlet		Temp.	Level	Time	R.P.M (x)	Soap Supply	
		Top Soap dispenser	Stainless steel S. D.					Top Soap dispenser	Stainless steel S. D.
Step 1	Rinse	1(+6)	1 (2)	-	NH	3 min	W (normal)	C	D=30“
	Final spin/Spin	-		-	-	5,5 min	L	-	-
	Slowdown	-		-	-	x	-	-	-
	Tumble	-		-	-	30 sec	W (normal)	-	-

❑ WASH PROGRAM 15: EXTRACTION - HIGH SPEED

	Sequence	Inlet		Temp.	Level	Time	R.P.M (x)	Soap Supply	
		Top Soap dispenser	Stainless steel S. D.					Top Soap dispenser	Stainless steel S. D.
Step 1	Rinse	1(+6)	1 (2)	-	NH	3 min	W (normal)	C	D=30“
	Final spin/Spin	-		-	-	5,5 min	H	-	-
	Slowdown	-		-	-	x	-	-	-
	Tumble	-		-	-	30 sec	W (normal)	-	-

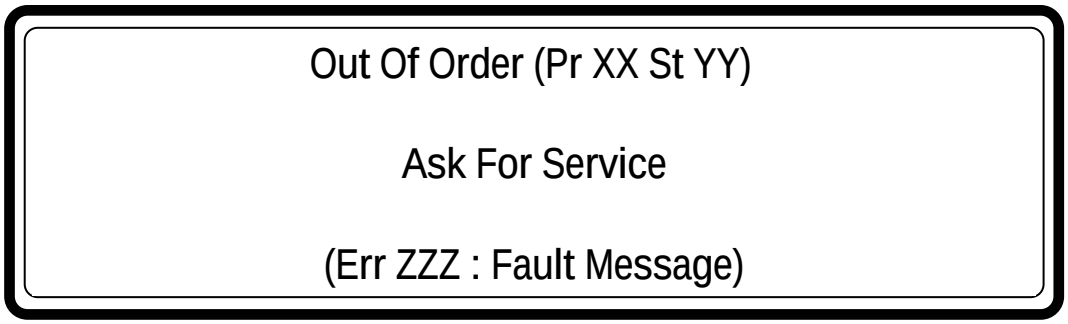
8. TROUBLESHOOTING

8.1. DISPLAY MESSAGES

- Various messages may appear on the display at the start, during or at the end of a washing cycle.
- In some specific cases, an acoustic signal will alert the operator.
- When an error occurs the machine will automatically go over to a safe state. With the diagnostic program you can determine the problem. This program will test the individual functions of the washing machine one by one.

8.2. FAULT MESSAGES

- If a failure occurs the computer will display a diagnostic error message.
- The program number and step at which the interruption has occurred are displayed.
- The fault message itself contains a number and a corresponding text label by which it's easy to find the related information in the manual.
- If **UNLOAD** is displayed, the door can be opened.



XX	: the program number
YY	: the program step number
Err ZZZ	: the number of the occurred error
Fault Message	: the text label of the error message

8.3. HOW TO HANDLE FAULT MESSAGES

⚠ ATTENTION!
CHECK IN THE MANUAL TO SEE WHAT PROBLEM THE ERROR MESSAGE CORRESPONDS WITH.
ASK THE ASSISTANCE OF AN EXPERIENCED TECHNICIAN TO SOLVE THE PROBLEM.
ALL THE SAFETY PRECAUTIONS MUST BE FOLLOWED BEFORE EACH INTERVENTION.

- You can overrule and erase fault messages by:

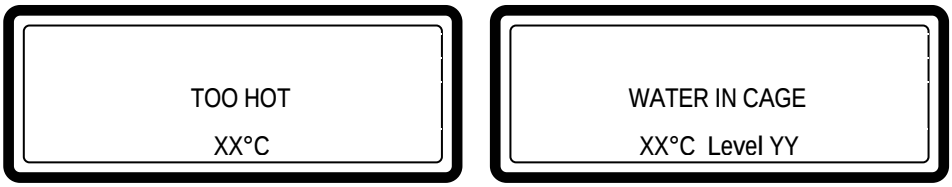
☞ pressing the **STOP** or **ENTER** button (key switch in program mode)

☞ switching the power off/on

☞ opening the door (fault 4 and 41)

- For safety reasons the door will not be unlocked if :
  - there is still water in the drum
  - the water temperature is above 55°C
  - the drum is still turning (a safety time will be respected until the drum comes to a standstill)
  - there is a problem with the door lock system

- Each time at the end of the cycle, the GRAPHITRONIC Wash computer will fulfill a safety test sequence.
- If at the end of the cycle the safety conditions are not fulfilled, the messages **TOO HOT** or **WATER IN CAGE** will be displayed.



- If the problem disappears (the water has dropped below the safety level for spin or the water temperature has dropped below 55°C) the Error message **TOO HOT** or **WATER IN CAGE** will disappear automatically.

⚠ ATTENTION!
IT'S UP TO THE OPERATOR TO TAKE THE NECESSARY PRECAUTIONS IF THE DRAIN VALVE IS NOT FUNCTIONAL AND IF THERE IS STILL HOT WATER IN THE TUB AT THE END OF THE WASH CYCLE.
ON THE DISPLAY THE ACTUAL WATER TEMPERATURE AND LEVEL WILL BE DISPLAYED.
WAIT UNTIL THE WATER IS DRAINED AND UNTIL THE WATER HAS COOLED BEFORE ALL INTERVENTIONS AS HOT WATER CAN CAUSE SEVERE BURNS.
CARE MUST BE TAKEN THAT NOBODY GETS BURNED DUE TO HOT WATER.

⚠ ATTENTION!
THE ERROR MESSAGE TOO HOT CAN ALSO APPEAR AT THE END OF A CYCLE EVEN IF NO FAILURE HAS OCCURED
AS AN EXAMPLE, SUPPOSE A WASH PROGRAM WITH A HOT WASH.
AFTER THIS HOT WASH SEQUENCE, NO SEQUENCE WITH A LOW WATER TEMPERATURE HAS BEEN PROGRAMMED.
AT THE END OF SUCH A WASH CYCLE, THE TEMPERATURE IN THE TUB WILL STAY HIGH EVEN IF THERE IS NO WATER IN THE TUB.
AS A RESULT THE GRAPHITRONIC WASH COMPUTER WILL DECIDE THAT IT'S NOT SAFE TO OPEN THE DOOR AS THE MEASURED TEMPERATURE INSIDE THE TUB IS TOO HIGH.
WITHOUT INSERTING COLD WATER INSIDE THE TUB, IT CAN TAKE A LONG TIME BEFORE THE TEMPERATURE DROPS TO AN ACCEPTABLE SAFE LEVEL.
ONCE THE TEMPERATURE IN THE DRUM HAS DROPPED SUFFICIENTLY, THE FAILURE MESSAGE WILL DISAPPEAR AND THE DOOR WILL BE UNLOCKED AUTOMATICALLY.

DEPENDING ON THE FAILURE TYPE THE GRAPHITRONIC COMPUTER WILL START A SPECIFIC PROCEDURE:

❑ **WHEN SAFETY IS INVOLVED**

- Full stop + tumble : the program is stopped but will run the tumble sequence
- Full stop + safety time : the program is stopped and a safety time is started
- Don't start : the program will not be started as long as the safety conditions are not fulfilled

❑ **WHEN SAFETY IS NOT INVOLVED**

- Full stop + request for continue : a request to **Continue ?** the program is displayed
- Skip + continue : the actual cycle step is skipped and the program continues with the next step
- Continue : the program continues

SPECIAL CASES :

- For **E11: Fill Time failure** and **E14: Heating time failure** after overruling and erasing the failure message, you can restart or stop the sequence, as **Continue ?** will be displayed.
  Possible cause : - water supply inlets closed
  - decreasing capacity of the heating elements

- For **E24: Defective Level sensor**, **E25: Defective Temperature sensor and E35:Wrong software version** the Failure message can **only** be erased by switching the power off and back on.

- Fault **31: Initialization fault inverter** and **32: Verification fault inverter** can be erased by switching off the power. But as Fault 31 and 32 indicates that the frequency inverter is not loaded with the correct parameter settings, the washing machine can be damaged when the inverter is functioning with the wrong settings.
  Do not use the washing machine before a technician has inspected the problem.

- Fault **41: Service Due** will occur over and over again until you have reset the cycle counter.
  See Paragraph 8.5 how to reset the cycle counter.

- Fault **57: Door Locked Continue >> START** will occur when the „Door Lock Switch" stays locked when opening the outer door on a MB70-90-110-140-180.
  You can still unload the linen at the other compartments by overruling the error message by Pressing the START button.

RESET KEY :

- When you have overruled an error message and opened the door, **Reset Key** will be displayed.
- This message warns the operator that the Key Switch is still in Program mode.
- Before you can start a new program you have to turn the key switch back to Run mode.

☞ Turn the key switch to Run mode.

8.4. OVERVIEW

N°	Failure message	Failure	Action	Fault occurrence
E1	No Drain Co	Drain failure Cooldown	Full Stop + tumble	Draining sequence Cooldown
E2	No Drain	Drain failure	Full Stop + tumble	Draining sequence
E3	Tilt Fault	Out of balance : Before spin	Full stop + tumble	Start spin
E4	Imbalance	Out of balance : Normal spin	Skip + continue	After 10 x tilt
E5	Tilt High Sp	Out of balance : high spin	Full stop + safety time	>500 or 750 RPM
E6	Door Coil	Door switch failure	Full stop + safety time	Whole cycle
E7	Door Switch	Door solenoid switch failure	Full stop + safety time	Whole cycle
E8	Door Start	Door lock check at start failure	Don't start	At start up
E9	Door Unload	Door lock switch closed failure	Don't start	End cycle
E10	Bimetal/Spring	Bimetal/Spring	Continue	2 min 30 sec after start cycle
E11	No Fill	Fill failure	Full stop + request for Continue	While filling
E12	Overfill	Overfill failure	Full stop + tumble	While filling
E13	No Heating	Heating failure	Full stop + tumble	While heating
E14	Heat Time	Heating time failure	Full stop + request for Continue	While heating
E15	Too Hot	Too Hot	Full stop + tumble	While heating
E21	Overflow	Overflow failure	Full stop + tumble	Wash step
E22	Flush fault	Flush failure	Full stop + tumble	Flush step
E24	Level Sens	Defective level sensor	Full stop + tumble	Whole cycle
E25	Temp Sensor	Defective temperature sensor	Full stop + tumble	Whole cycle
E26	Mitsub code	Undefined frequency inverter error code	Full stop + tumble	Whole cycle
E27	Comm fault	Communication fault inverter	Full stop + safety time	Whole cycle
E28	THT time / E.OL	THT Time out / E.OL	Full stop + safety time	At spin sequence
E29	OV3 time / E.OP	OV3 Time out / E.OP	Full stop + safety time	At spin sequence
E31	Load Parr	Initialization fault inverter	Don't start	At initialization
E32	Verify Parr	Verification fault inverter	Don't start	At loading parameters
E33	Stall prev	Stall prevention function active	Continue	At spin sequence
E35	Wrong Softw	Wrong software version	Don't start	New software version
E37	No Drain Sp	Drain failure at the Spray Sequence	Full stop + tumble	Spray Sequence
E38	No Recycle	The Tank with recycle water is empty	Warning at the End. Front soap dispenser Mach. only	Wash step
E39	Out of Soap	The Soap Supplies are running Out of Soap	For Info only	Wash step
E40	No Fill Rec	Fill failure due to an empty water recycle Tank	Full stop + Request for Continue Top soap dispenser Mach. only	Wash step

E41	Service Due	Service Due Warning	For Info only Open door = reset	End cycle
E42	Connection	No Network Connection	For Info only	Data Transfer Networking
E43	Voltage Par	Wrong Voltage Range Selection	Make correct selection	Configuration menu
E44	Model type	Wrong Inverter Model Type	Make correct selection	Configuration menu
E45	No Speed Sensor Signal	No Speed pulses when drum turns.	Continue + Warning	At spin sequence (only MB70-90-110-140-180)
E46	Brake Closed	Brake Stays Closed	Full stop + safety time	At spin sequence (only MB70-90-110-140-180)
E47	Brake Wear Out	Friction blocks brake are wear-out	Full stop + safety time	Any time (only MB70-90-110-140-180)
E48	Brake Open	Brake Stays Open	Continue + Warning	At spin sequence (only MB70-90-110-140-180)
E49	UnBalance Switch At Wash	Air suspension without compressed air	Full stop + safety time	Wash action (only MB70-90-110-140-180)
E50	No Second Acceleration Ramp	Missing wire bridge inverter / wrong inverter parameters	Continue	At spin sequence (only MB70-90-110-140-180)
E51	No Third Acceleration Ramp	Missing wire bridge inverter / wrong inverter parameters	Continue	At spin sequence (only MB70-90-110-140-180)
E52	Board Memory	PCB-EEPRROM CRC failure	Don't start	At Power Up
E53	Board Data	PCB-EEPROM Data out of range failure	Don't Start	At Power Up
E57	Lock System	Door Lock Switch stays closed when the outer door is open.	Don't Start	At locking sequence (MB70-90-110-140-180 only)
E58	No Free Run	Deceleration end of spin while brake is closed.	Full stop + safety time	At spin sequence (only MB70-90-110-140-180)
E59	Run Free Run	Run Status inverter =1 while brake is closed.	Full stop + safety time	At spin sequence (only MB70-90-110-140-180)
E60	No reset Drive	No detection motor speed signal at wash	Full stop + safety time	Wash Sequence
E61	Continue spin	Motor doesn't stop spinning anymore	Full stop + safety time	Whole cycle
E62	Extended speed	Motor spins too fast	Full stop + safety time	Whole cycle
E63-E67	Motor Drive	Reset Motor Drive for E60, E61 & E62	Reset Motor Drive	Wash Sequence
E68	No Sign Spin	No detection motor speed signal at spin	Full stop + tumble	Spin Sequence
E69	RS Unbalance	Unbalance input should not be high on R machines	Don't Start Full stop + tumble	Start Spin sequence Whole cycle
E70	RS7 Select	RS7 selected in case of RS10	Don't Start	Start Cycle
E71	RS10 Select	RS10 selected in case of RS7	Don't Start	Start Cycle
E72	KEB ST LOW	No wire bridge terminals 16-20	Don't Start	Start cycle
E73	KEB ST HIGH	No KEB parameters loaded in inverter	Full stop + safety time	Start cycle
E74	CFIStuck	Inverter not switched off at end of cycle.	For Info only	End of cycle

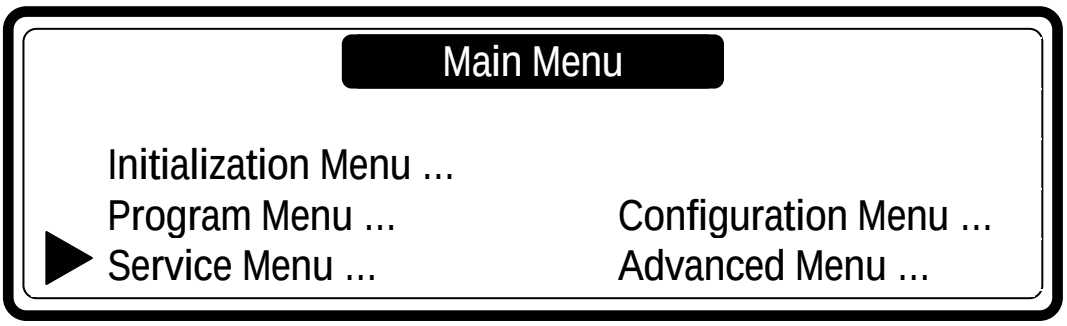
E75	KEB code	Undefined frequency inverter error code	Full stop + tumble	Whole cycle
E78	Lock Active	At standby door lock is locked nevertheless door is open.	Don't Start	At Standby
E79	Lock Start	After pressing Start door lock is locked nevertheless door is open.	Don't Start	At Start Cycle
E80	Time Out Input16	On Hold Signal Failure Soap Dispensing System	Full stop + tumble.	Whole cycle
E81	No Reheat	Heating Failure	Full stop + tumble.	Wash Step (MB only)
E82	No Refill	Refill failure	Full stop + request for Continue	Wash Step (MB only)
E83	Cycle Fail	No successful wash cycle termination	Info that the wash cycle has to be repeated.	Abnormal Cycle Termination (MB only)
E84	No Store PC	Communication failure with PC	For Info only.	End cycle (MB only)
E85	RTC Low Batt	Real Time Clock, No Battery or battery low power	For Info only.	End cycle (MB only)
E86	No RTC Comm	Real Time Clock is not available	For Info only.	End cycle (MB only)
E100	Weigh No Comm	Communication fault weighing system	Full Stop Tumble	Before Start (MB16-MB180) Whole Cycle (MB16-MB66) (MB & FS23-55 only)
E101	Weigh Low	Weight machine is too low	Don't Start	Before Start (MB & FS23-55 only)
E102	Weigh High	Weight machine is too high	Don't Start	Before Start (MB & FS23-55 only)
E103	Weigh Balance	Weight is not balanced over 4 load cell's.	Don't Start	Before Start (MB & FS23-55 only)
E104	Weigh Overload	Weight on individual load cell exceeds max.	Full Stop Tumble	Whole Cycle (MB16-66 & FS23-55 only)
E105	Weigh Airbags	No functional air pressure system	Don't Start	Before Start (MB70-180 only)
E300-E353	Mits Err	Specific Mitsubishi Inverter Alarm	Full stop + safety time	Whole cycle
E400-E441	KEB Err	Specific KEB Inverter Alarm	Full stop + safety time	Whole cycle
E500-E520	Memory Err	Memory Error	Full stop + safety time	Any time
E550	DAQ Version Err	Wrong DAQ Memory version	For Info only	Installation new softw
E551	DAQ Write Err	Problem writing DAQ Memory	For Info only	Traceability function, whole cycle
E552	DAQ Full Err	DAQ Traceability Memory is Full	For Info only	Traceability function, whole cycle
E553	Store DAQ>PC	DAQ Traceability Memory is almost Full	For Info only	Traceability function, whole cycle
E600-E628	Softw Err	Software Error	Full stop + safety time	Any time

8.5. SERVICE MENU

In the Service menu you have some extra utilities:

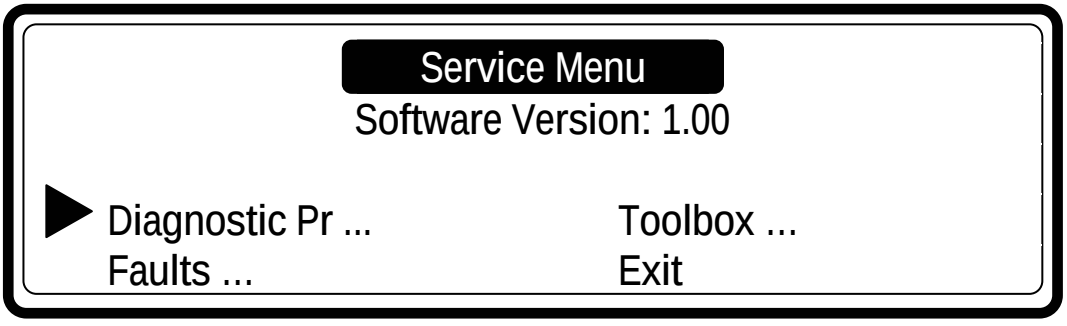
- The Software Version Number.
- An overview of the 20 last failure messages.
- Statistics for 10 general error messages.
- Pulley ratio.
- An overview of the input states.
- Switching On the Inverter for a technical intervention.
- Reset Cycle Counter and Statistics Error Messages.

❑ HOW TO GET INTO THE SERVICE MENU



The SERVICE menu can only be accessed when the machine is in standby (the power is switched on, but no program is started).

- **SELECT CYCLE** is displayed.
- Turn the key switch to the program mode.
- The Main menu is now available.
- Press the **ARROW DOWN** button to select the SERVICE menu.
- Press the **ENTER** button to make your selection.
- Now you will see the Service Menu Screen.



Menu Item	Info
Software XXX Version: 1.00	The software version number.

❑ FAULTS MENU

Menu Item	Info
View Fault Messages ... 1 Fault 1: E XXX: YYYYYYYYYYYY ... 20 Fault 20: E XXX: YYYYYYYYYYYY	- check the last 20 fault messages from the Err log Fault N° 1 : the last occurred error message … Fault N° 20 : the last - 19 occurred error message E XXX : The Error message number YYYYYYYYYYYY : The Error message name (If no messages are displayed, this means that no Errors have occurred.)
Erase Fault Messages No	- the Error log is reset by erasing the Fault Messages.
View Fault Statistics ... 1 No Drain 0x ...	The Fault Statistics are an accumulation of Error messages that have appeared over a long period. With this information the technician has an indication on which parts an intervention should be needed. (the statistics are reset by the „Reset Service Counts“ menu item in the toolbox menu) **The List with Statistics :** ◆ No Drain : E1 + E2 + E37 ◆ Door Switch : E6 + E7 + E8 + E9 ◆ Bimetal / Spring : E10 ◆ No Fill : E11 + E40 ◆ No Heating : E13 + E14 ◆ Temp Sensor : E25 ◆ Level Sensor : E24 ◆ Invert Com : E27 ◆ Invert Alarm : E26 + E28 + E29 + E30 + E60 + E61 + E62 + E72 + E73 + E74 + E75 ◆ Lock Active : E78 + E79

❑ TOOLBOX MENU

The purpose of the Toolbox Menu is to give support at technical interventions.

Menu Item	Info
View Input States ? 1 Input 1 On ... 16 Input 16 Off	The Input states for Input 1, …, Input 16. The exact function of the inputs can be found on the electrical drawing of the GRAPHITRONIC Washing Machine. - if the Input state is Off, the Input signal is low. - if the input state is On, the Input signal is high.
Inverter Power Off	By this function it's possible to switch on the power of the inverter if a technical intervention is needed. ⚠ **Attention!** **SPECIAL CARE HAS BEEN TAKEN AT THE INITIALIZATION OF THE PARAMETERS OF THE FREQUENCY INVERTER. THE MANUFACTURER IS NOT RESPONSIBLE FOR THE WRONG BEHAVIOR OF THE WASHING MACHINE IF THE OWNER HAS INSTALLED NEW PARAMETER SETTINGS IN THE INVERTER THAT DO NOT CORRESPOND WITH THE ORIGINAL SETTINGS AT THE FACTORY.**
Pulley Ratio X.XX	The Pulley Ratio allows to verify if the motor pulley and the drum pulley have the correct size by calculating the pulley ratio.
RTC Time XX:YY:ZZ	Only shown when Traceability function is turned on in Advanced Menu. The Time value of the Real Time Clock. XX : Hours, YY : Minutes, ZZ : Seconds When 165:165:165 is displayed, no RTC is connected.
RTC Date AA:BB:CC	Only shown when Traceability function is turned on in Advanced Menu. The Date value of the Real Time Clock. AA : Day, BB : Month, CC : Year When 165:165:165 is displayed, no RTC is connected.
Adjust Clock ... Hour XX Minutes YY Day AA Month BB Year CC	Only shown when Traceability function is turned on in Advanced Menu. Set the correct Date and Time for the RTC.
Reset Service Counts No	Once the washing machine has reached the total number of wash cycles like set at the „Service Interval" a warning is given at the end of each cycle until the Cycle Counter has been reset.
Exit	Return to Service Menu

8.6. DIAGNOSTIC PROGRAM

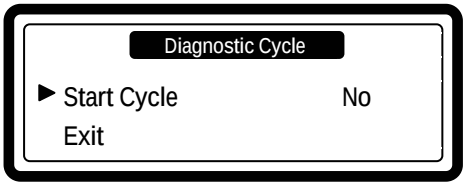
The purpose of the diagnostic program is to test the wash machine functions one by one.

❑ HOW TO GET INTO THE DIAGNOSTIC MENU

The Diagnostic menu can only be accessed when the machine is in standby (the power is switched on, but no program is started).

1. **Select Cycle** is displayed.
   Turn the key switch to the program mode.
   The Main menu is now available.
   Press the **ARROW DOWN** button to select the Service menu.
   Select the Diagnostic Program menu at the Service menu.

- Select diagnostic program.



- Press **START** if you want to start the diagnostic program.

❑ TEST SEQUENCE

- **Display test and door lock test**
- **Sensor test**
- **Motor test**
- **Water fill, heating and drain test**
- **BASIC Diagnostic Wash program**

❑ Diagnostic Test Sequence for Machines with Top Soap Dispenser.

- **Test (R) : For Rigid Mounted washing machines.**
- **Test (F) : For Free Standing washing machines.**

Test (R)	Test (F)	Info	Explanation
1	**1**	Black display followed by a Text display.	➔ Door lock test (locks and unlocks 5 x the door) ➔ Display test
***	***	None	➔ Sensor test (all wash machine sensors are tested)
3	**3**	Motor Reverse	➔ Wash speed (inverse direction high spin)
4	**4**	Motor Stop	⇒ Standstill motor
5	**5**	Motor Forward	➔ Wash speed (same direction high spin)
6	**6**	Motor Distribute	➔ Distribution speed (same direction high spin)
7	**7**	Motor Low spin	➔ Low spin speed (same direction high spin)
	8	Motor High spin	➔ High spin speed (the drum is turning away from the soap box)
8	**9**	Motor Stop	➔ Free run or controlled deceleration
20	**20**	Inlet I1	➔ The machine takes water by inlet 1
21	**21**	Drain 1	➔ The water is drained by drain valve 1
22	**22**	Inlet I2	➔ The machine takes water by inlet 2 until the safety level for heating is reached ➔ Heating activated (only if **Wait temp = on**)
23	**23**	Drain 1 (2)*	➔ The water is drained by drain valve 1
24	**24**	Inlet I3	➔ The machine takes water by inlet 3
25	**25**	Drain 1	➔ The water is drained by drain valve 1
26	**26**	Inlet I4	➔ The machine takes water by inlet 4
27	**27**	Drain 1	➔ The water is drained by drain valve 1
28	**28**	Inlet I5	➔ The machine takes water by inlet 5
29	**29**	Drain 1	➔ The water is drained by drain valve 1
30	**30**	Inlet I6	➔ The machine takes water by inlet 6
31	**31**	Drain 1	➔ The water is drained by drain valve 1
50	**50**	Tumble	⇒ The tumble sequence
		Unload	⇒ End of the Diagnostic Cycle

Note : * The second drain valve will be opened if a second drain valve has been selected in the Configuration menu.

*** No number 2 is displayed at the sensor test as this takes only a fraction of a second.

❑ **Diagnostic Test Sequence for Machines with Front Soap Dispenser.**

- **Test (2) : For washing machines with 2 Main Water Supplies.**
- **Test (3) : For washing machines with 3 Main Water Supplies.**

Test (2)	Test (3)	Info	Explanation
1	**1**	Black display followed by a Text display.	➔ Door lock test (locks and unlocks 5 x the door) ➔ Display test (**)
***	***	None	➔ Sensor test (all wash machine sensors are tested)
3	**3**	Motor Reverse	➔ Wash speed (inverse direction high spin)
4	**4**	Motor Stop	⇒ Standstill motor
5	**5**	Motor Forward	➔ Wash speed (same direction high spin)
6	**6**	Motor Distribute	➔ Distribution speed (same direction high spin)
7	**7**	Motor Low Extract	➔ Low spin speed (same direction high spin)
8	**8**	Motor High Extract	➔ High spin speed (the drum is turning away from the soap box)
9	**9**	Motor Stop	➔ Free run or controlled deceleration
	20	Inlet I1	➔ The machine takes water by inlet 1
	21	Drain 1	➔ The water is drained by drain valve 1
20	**22**	Inlet I2 Heater	➔ The machine takes water by inlet 2 until the safety level for heating is reached ➔ Heating activated (only if **Wait temp = on**)
21	**23**	Drain 1 (2)*	➔ The water is drained by drain valve 1
22	**24**	Inlet I3	➔ The machine takes water by inlet 3
24	**26**	Supply A	➔ Supply A is activated for 30“
26	**28**	Supply B	➔ Supply B is activated for 30“
28	**30**	Supply C	➔ Supply C is activated for 30“
30	**32**	Supply D	➔ Supply D is activated for 30“
32	**34**	Supply E	➔ Supply E is activated for 30“
50	**50**	Tumble	⇒ The tumble sequence
		Unload	⇒ End of the Diagnostic Cycle

Note : * The second drain valve will be opened if the second drain valve has been selected in the Configuration menu.

** For MB Door lock test only 1x

*** No number 2 is displayed at the sensor test as this takes only a fraction of a second.

Remark!

If **++ ++** is displayed at the motor test sequence, then you can Advance (Press **START**) the test Sequence.

❑ BASIC Diagnostic Wash program

	Sequence		Supply		Inlet		Temp.	Level	Wash action	Time	R.P.M.
	Top	Front	Top	Front	Top	Front					
Step 1	Wash	Wash	B	-	3-4-5	2-3	40°C	NL	A=12“ R=3“	6 min	W
	Drain	Drain	-	-	-	-	-	-	-	30 sec	D
Step 2	Rinse 1	Rinse 1	-	-	2-5-6	2	-	NH	A=12“ R=3“	1.5 min	W
	Spin	Spin	-	-	-	-	-	-	-	1 min	L
Step 3	Final Rinse	Rinse 2	C	-	1(+6)	1(2)	-	NL	A=12“ R=3“	2 min	W
	Spin	Spin	-	-	-	-	-	-	-	4.5 min	H
	Slowdown		-	-	-	-	-	-	-	1 min	-
	Tumble		-	-	-	-	-	-	A=12“ R=3“	30 sec	W

Error messages :

- If the computer detects some problem during the Diagnostic Help Program, a diagnostic error message is generated.
- Check also the Error Log List in the Service-menu.
- Check the error handling and explanation of the error messages.

8.7. PROBLEM CHECK LIST

Problem	Cause	Solving the problem
When the power is switched on : the display is not illuminated Remark : The display must always light up when the power connector is connected to the wash computer (Flash memory with software must be implemented)	• no external power • the emergency button is activated • the power connector is not connected on the board • the power connector is inverse connected • the fuse on the wash computer has burned • disconnect the input connector A & B • check if the Flash Memory that contains the software is inserted in it's socket	• Switch on the external power supply • verify the external power to the machine • deactivate the emergency button • connect the power connector • check the wiring and connect the connector as it must be • if the transformer is broken replace the wash computer Check the wiring and the voltage at the power Connector If the transformer is still OK change the Fuse • if the display is lighting up: verify if the input signals or the +16Vdc Supply Signal are touching the cabinet • if there is no Flash Memory inserted in it's socket on the wash computer, put the right Flash Memory with software into the socket
The display is illuminated, but it's difficult to read the text on the display.	• the brightness is not Ok	• Change the value for Brightness, Viewing Angle in the Configuration Menu until you get a bright display.
The machine is not starting up	• the key switch stands in „Program mode"	• set the Key switch to „Run mode"
The machine is not responding on pressing the keyboard buttons	• the key switch is not functional • the „START" button is not functional (the key switch stands in Program mode) • no button is functional and the key switch is in the right position • there is no beep signal when the buttons are pressed	• check if the input connector „A" is well connected and check the wiring between the input connector and the key-switch • set the Key switch to „Run mode" • check if the connector „K" of the keyboard is well connected • check if the connector „K" of the keyboard is well connected
The machine is not behaving as expected	• if the wrong machine type is selected the wrong outputs will be activated	• check if the right machine type is selected in the Configuration Menu.
A program is started, but the outputs are not activated	• check if connector „R" and „Q" are connected	• connect the connector at the correct position
Wait is displayed and a counter is counting down	• this is a wait state caused by a power interruption or a safety sequence at the end of the process	• wait until the counter has reached 0 • do not switch off/on the power again as you will restart the counter
Unload is displayed and the Door is Open	• Check if the „Door Switch" is still closed	• If the „Door Switch" is broken, replace the Door Switch"
Wrong water level (the water level sensor must not be calibrated)	• check if the programmed water levels are the correct ones • check if the right machine type is selected in the Configuration Menu • you have changed the machine type, but the standard water levels do not change	• set the right water levels • select the right machine type in the Configuration Menu • the standard water levels can only be reinitialized by programming new values or by loading the Standard Wash programs again.
The drum is not turning (No error message will be generated)	• Check if the belt is broken • Check the applied motor voltage • Check if the motor is still functional • Check the Inverter	• Check the tension of the belt or replace the belt • repair the motor power supply circuit • change the motor if needed • send a request for more info to the manufacturer

8.8. EXTERNAL COMMUNICATION PROBLEMS

In the „Configuration“ Menu you can select „RS485“ communication or „Irda“.
Only one of both communication channels is operational at the same time depending your selection.
So if external communication (PC-Laptop-handheld computer) is not operational check this menu setting first.
Check also if you have selected the right machine communication address.

8.9. EXPLANATION ERROR MESSAGES

FAILURE 1 : DRAIN FAILURE COOLDOWN SEQUENCE

Failure 1 occurs when the electronic timer detects that the water is not drained after 3 minutes in a Cooldown Sequence. The failure message is displayed at the end of the cycle.

DIAGNOSE:

1. Check the drain tube of the washing machine.	If the drain tube is blocked: repair the drain tube.
2. Check the drain valve.	If the drain valve is defective: replace the drain valve.
3.Check the wiring: When the drain valve is switched Off, the drain valve should be open. (normal open)	If the wiring is damaged: repair the wiring.

FAILURE 2: DRAIN FAILURE

Failure 2 occurs when the electronic timer detects that the water is not drained after 3 minutes in a Drain or Spin Sequence. The failure message is displayed at the end of the cycle.

DIAGNOSE:

1. Check the drain tube of the washing machine	If the drain tube is blocked: repair the drain tube
2. Check the drain valve	If the drain valve is defective: replace the drain valve
3.Check the wiring: When the drain valve is switched Off, the drain valve should be open. (normal open)	If the wiring is damaged: repair the wiring

FAILURE 3 : OUT OF BALANCE BEFORE SPIN

Failure 3 occurs when the out of balance sensor is activated before the spin sequence has started.
Result: the machine will not spin.

DIAGNOSE:

1. Check if the out of balance switch is broken. (Make sure shipping braces are removed)	If the out of balance switch is broken: replace the out of balance switch.
2. Check the position of the out of balance switch.	If the out of balance switch is not correctly mounted: install the out of balance switch properly.
3. Check the wiring, the contact of the out of balance switch is normally closed. Check connector pins for loose connections.	If there is no continuity: repair the wiring.

FAILURE 4 : OUT OF BALANCE NORMAL SPIN

Out of balance at normal Spin will occur when a washing machine is badly loaded.
The machine will try up to 10 times to redistribute the laundry in the drum before the spin step is skipped.
This function will protect the machine against overload and assures the normal lifetime of the washing machine.

DIAGNOSE:

1. Check the position of the out of balance switch.	If the out of balance switch is not correctly mounted, install the out of balance switch properly.
2. If this failure occurs often.	Use a fully loaded drum. A completely filled drum produces less unbalance than a drum that is only filled for 1/3.
3. Check the wiring if there is no bad connection. The out of balance sensor is a NC contact.	If there is a bad connection: repair the wiring.

FAILURE 5 : OUT OF BALANCE HIGH SPIN

Failure 5 occurs when the out of balance sensor is activated during high spin. This failure indicates that there will probably is a mechanical defect.

DIAGNOSE:

1. Check the position of the out of balance switch.	If the out of balance switch is not correctly mounted, install the out of balance switch properly
2.Check the springs and the other mechanical parts that fix the drum.	If you see a broken mechanical part: replace the broken part
3. Check the wiring if there is a bad connection.	If there is a bad connection: repair the wiring
4. Check that the washing machine is installed correctly and stable.	Adjust the supports at the bottom of the washing machine.

FAILURE 6 : DOOR SWITCH FAILURE

While a wash cycle is running the internal door lock systems are scanned all the time.

If during the wash cycle the wash computer detects that the „DOOR SWITCH“ is not closed then the machine will immediately stop all its functions. The door will stay locked.

DIAGNOSE:

1. Check the well functioning of the „DOOR SWITCH“. The „DOOR SWITCH“ is a NO normal open contact.	If the „DOOR SWITCH“ is broken or malfunctions replace the door switch.
2. Check the continuity of the wiring.	If the wiring is not continuous: repair the wiring
3. Check the good functioning of the „DOOR SWITCH“ at the inputs menu.	If the input is not functional replace the wash computer.

FAILURE 7: DOOR LOCK SOLENOID SWITCH FAILURE

While a wash cycle is running: the internal door lock systems are scanned all the time.
If during the wash cycle the electronic wash computer detects that the „DOOR LOCK SOLENOID SWITCH“ is not closed, then the machine will immediately stop all its functions. The door will stay locked.

DIAGNOSE:

1. Check the well functioning of the „DOOR SOLENOID SWITCH“. The „DOOR SOLENOID SWITCH“ is a NO open contact.	If the „DOOR LOCK SOLENOID SWITCH“ is broken or doesn't function correct: replace the door solenoid switch.
2. Check the door lock coil	If the door lock coil doesn’t function: replace the door lock coil
3. Check the mechanical functionality of the door lock	If the door lock is not functioning mechanically: replace the door lock system
4. Check the continuity of the wiring	If the wiring is not continuous: repair the wiring
5. Check the good functioning of the „DOOR SOLENOID SWITCH“ at the inputs menu.	If the input is not functional replace the wash computer.

FAILURE 8: DOOR LOCK CHECK AT START FAILURE

The washing machine will not start a new process when the door is not locked after pressing the **START** button. After 5 attempts to lock the door, the wash computer shows the Message **DOOR NOT LOCKING** (blinking). By opening the door : you are invited to close the door and press the **START** button once more.

Failure message 8 will be generated each time the door lock sequence could not be finished once started.

Failure message 8 is not shown on the display but only stored in the Error log.

DIAGNOSE:

1. Check door handle for damage traces and centering against door lock.	If handle is damaged, replace hanle. If not good centered, center door against door lock.
2. Check if the input connector DL (door lock) is connected.	If the input connector DL (door lock) is not connected : connect connector DL.
3. Check the well functioning of the „DOOR LOCK SOLENOID SWITCH“.	If the door lock solenoid switch is broken or doesn't function correct : replace the door lock solenoid switch.
4. Check the door lock coil.	If the door lock coil doesn’t function : replace the door lock coil.
5. Check the mechanical functionality of the door lock.	If the door lock is not functioning mechanically and can not be corrected : replace the door lock system.
6. Check the continuity of the wiring.	If the wiring is not continuous : repair the wiring.
7. Check the output relay that powers the door lock coil.	If the relay is broken, replace the wash computer.
8. Check the good functioning of the „DOOR LOCK SOLENOID SWITCH“ at the inputs menu.	If the input is not functional replace the wash computer.
9. Check the well functioning of the „DOOR SWITCH“.	If the door switch is broken or doesn't function correct : replace the door switch.

FAILURE 9: DOOR LOCK SOLENOID SWITCH FAILURE AT CYCLE END

At the end of the cycle the Door Lock coil is switched off and the „DOOR LOCK SOLENOID SWITCH“ must open its contact. If within 30 sec the „DOOR LOCK SOLENOID SWITCH“ doesn’t change state failure message 9 will be displayed. As long the contact stay closed, failure message 9 stays on the display. If the contact should change state, the error message will be removed from the display and machine will be ready for use again.

DIAGNOSE:

1. Check the functioning of the „DOOR LOCK SOLENOID SWITCH“.	If the door switch is broken or doesn't function correct: replace the door lock switch.
2. Check the door lock coil.	If the door lock coil doesn’t function: replace the door lock coil.
3. Check the mechanical functionality of the door lock.	If the door lock is not functioning mechanically and can not be corrected: replace the door lock system.
4. Check the continuity of the wiring.	If the wiring is not continuous: repair the wiring.
5. Check the output relay that powers the door lock coil.	If the relay stays closed and the relay is broken, replace the wash computer.

FAILURE 10: BIMETAL/SPRING

The bimetal/Spring is an extra security that the door can not be opened immediately when the power is switched off. To verify that the bimetal/Spring is not defective, the bimetal/Spring is checked each cycle. If the bimetal/Spring is defective : at the end of the program, failure message 10 is displayed.

DIAGNOSE:

1. Check the bimetal/Spring.	If the bimetal/Spring system is defective: replace the bimetal/Spring.
2. Check the mechanical functionality of the door lock.	If the door lock is not functioning mechanically or can not be corrected: replace the door lock system.
3. Check the continuity of the wiring.	If the wiring is not continuous: repair the wiring.
4. Check door unlock coil.	In normal operation the door unlock coil should not be switched on all the time. At the bimetal test the unlock coil must not be activated
5. Check the output relay that powers the door lock coil.	If the relay stays closed and the relay is broken, replace the wash computer.

FAILURE 11: FILL FAILURE

Failure 11 occurs when the water level has not reached its target level in x minutes.

x = Max fill time, a value that can be programmed at the Initialization Menu.

⚠ **ATTENTION!:** The rubber hose must be fixed with a fastener on the electronic water level Sensor.

DIAGNOSE:

1. Check if the programmed Max fill time in the Initialization menu is acceptable.	If the water flow is very slow, increase the value for the Max fill time. The default value is 10 minutes.
2. Check if the external water valves are open.	If the water valves are closed: open the water inlet valves.
3. Check if the water inlet valves are not blocked by dirt.	If the water inlet valves are blocked by dirt: clean the water inlet valves or replace the water inlet valves.
4. Check the coil of the water inlet valves.	If the coil of the water inlet valve is electric open: replace the coil or the complete water inlet valve.
5. Check the drain valve.	If the drain valve is defective: replace the drain valve.
6. Check if the rubber hose (for measuring the water level) is well mounted on the electronic level sensor and on the drain valve.	If the hose is not well mounted: install the rubber hose properly.
7. Check if the hose on the electronic sensor is air tight.	If the air hose is not air tight: replace the air tube. With a fastener, you can make the hose air tight at the level sensor.
8. Check if the hose doesn't contain water. (siphon)	If the air tube contains water: remove the water and fix the hose so that it doesn't work as a siphon.
9. Check the continuity of the wiring.	If the wiring is not continuous: repair the wiring.
10. Check the output relay that powers inlet valves and the drain valve.	If the relay receives a command signal but is not closed, replace the wash computer.

FAILURE 12: OVERFILL FAILURE

If the target water level is X units above the target level then failure message 12 will be displayed.
The fault message will not be generated when the user is advancing from a sequence with a high water level to a sequence with a low water level.

X= „Max. level Overfill", a value that can be programmed at the Initialization menu.

DIAGNOSE:

1. Check if the water inlet valves are broken.	If the water inlet valves are broken: clean or replace the water inlet valve diaphragms.
2. Check if the water pressure is too high.	Lower the water pressure.
3. Check the output relay that powers the inlet valve.	If the relay stays closed and the relay is broken, replace the wash computer.

In Case of Steam Heating :

If the steam has not enough heating power (too low temperature), the machine will be filled with too much water at the heating part. This will result in an increased water, energy and supply consumption.

It's strongly recommended that the heating installation works with enough heating power.

A simple solution can also be to reduce the programmed target water level. As less steam will be required, the normal water level should be reached. In the initialization menu it is also possible to adjust the alarm level to avoid the error message. (= not recommended)

FAILURE 13: HEATING FAILURE

If the heater elements are not functioning : message 13 will be displayed.
The message is generated when the temperature is not raising with 3°C in 10 minutes time.

DIAGNOSE:

1. Check if the heating contactor is activated.	If the heating contactor is not activated: repair the wiring or replace the contactor.
2. Check if the heating elements are heating.	If the heating elements are not heating: Repair the wiring or replace the defective heater elements.
3. Check if the temperature sensor is functioning.	If the temperature sensor is defective: replace the temperature sensor.
4. Check the output relay that powers the heating contactor.	If the relay is broken, replace the wash computer.

FAILURE 14: HEATING TIME FAILURE

When after x minutes the target temperature is not reached (for a machine set as wait for heat):
Message 14 will be displayed.

x = the programmed Max heating time in the Initialization Menu.

DIAGNOSE:

1. Check if the programmed Max Heating time in the Initialization menu is acceptable.	If the machine has a small heating capacity, increase the value of the Max heating time. The default is 60'. (for machines with big heating capacity)
2. Check if the heating resistors are heating.	If the heating resistors are not heating: Repair the wiring or replace the defective heater elements.
3. Check the water temperature.	If the hot water supply temperature is too low: increase the temperature of the hot water.
4. Check if the temperature sensor is functioning.	If the temperature sensor is defective: replace the temperature sensor.

FAILURE 15: TOO HOT

When the water temperature is 15°C above the target temperature : message 15 will be displayed.

For evaluation of the problem, you can follow the water temperature of the bath on the display of the washing machine by pressing the Service Button on the keypad.

DIAGNOSE:

1. Check if correct water inlet valves have been programmed. If only hot water inlet valves have been programmed, and if the hot water supply has a temperature value above the programmed wash sequence value then the temperature of the wash bath will be too high.	Choose the correct water inlet valves for the wash sequence when you create or adjust the parameters of the wash program. Don't program only hot water inlet valves but also cold ones!

2. Check if the correct water inlet valves are Functional. If the cold water inlet valves are not functional or if the main cold water supply is not available and only hot water inlet valves are open, and if the hot water supply has a temperature value above the programmed wash sequence value then the temperature of the wash bath will be too high.	See diagnostics Failure 11 : Fill Failure
3. Check the water temperature.	If the temperature of the supplied hot water is too high: decrease the temperature of the hot water.
4. Check if the temperature sensor is functioning.	If the temperature sensor is defective: replace the temperature sensor.
5. Check if the heating contactor stays closed. (check voltage to contactor coil.)	If the heating contactor stays closed : Replace the heating contactor.
6. Check the output relay that powers the heating contactor.	If the relay stays closed and the relay is broken, replace the power board.
7. Check the output relay that powers the heating contactor.	If the relay is not broken, but receives a not allowed signal from the wash computer, replace the wash computer.

FAILURE 21: OVERFLOW FAILURE

When the water level is raising above the hole of the overflow tube: message 21 will be displayed.

DIAGNOSE:

1. Check if the overflow hole and tube isn't blocked.	If the overflow tube is blocked: repair the tube.
2. Check if the drain tube isn't blocked.	If the drain tube is blocked: repair the drain tube.
3. Check the water inlet valves.	If the water inlet valves are broken: replace the water inlet valves.
4. Check the output relay that powers the water inlet valve.	If the relay stays closed and the relay is broken, replace the wash computer.

FAILURE 22: FLUSH FAILURE

When the flush function is active and the machine is loosing 7 cm water then the drain will be opened. Message 22 will be displayed.

DIAGNOSE:

1. Check if the drain valve is not losing water.	If the drain valve is defective: replace the drain valve.
2. Check if the machine is not losing water.	If the machine is losing water: replace the defective parts.

FAILURE 24: DEFECTIVE LEVEL SENSOR

If the level sensor is broken then fault 24 will be displayed. The level sensor is checked during wash cycle only.

DIAGNOSE:

1. Check the level sensor visually.	If you see some damage: replace the wash computer.
2. If the fault is persistent.	Replace the wash computer. (be sure there is no drain problem)

FAILURE 25: DEFECTIVE TEMPERATURE SENSOR

When the temperature sensor is broken then fault 25 will be displayed. The temperature sensor is checked during wash cycle only.

DIAGNOSE:

1. Check if the temperature sensor is connected on the PCB Board.	The Female connector must be connected with the Male connector T of the PCB board.
2. Check the temperature sensor.	If the temperature sensor is broken: replace the temperature sensor.
3. Measure the resistance of the sensor.	If the resistance is not OK: replace the temperature sensor.
4. Check if the earth wire is at the middle position of the connector.	If the earth wire is not at the middle position: put the earth wire in the middle position of connector T.
5. Check the PCB board visually.	If you see some damage : replace the wash computer.
6. If the fault is persistent.	Replace the wash computer. Be sure that the problem is related to the PCB board and not to a defective temperature sensor.

FAILURE 26: UNDEFINED MITSUBISHI FREQUENCY INVERTER ERROR CODE

Occurs if the inverter gives an error message which is not recognised by the wash computer. Updating the wash computer software might help discover what inverter error code really occurred. Inform the manufacturer.

FAILURE 27: COMMUNICATION FAULT INVERTER

This fault will only occur when there is no communication between the wash computer and the inverter. The wash computer is sending requests to the inverter, and the inverter is sending answers to the wash computer. If the wash computer is not receiving the answers within 5 seconds then fault 27 will be displayed.

The baud rate for the E/A500 series Mitsubishi inverters is 19200. (= RS485 communication)

The baud rate for the F5 series KEB inverters is 9600. (=RS485 communication)

Error 27 will occur if at the Configuration menu the wrong inverter type and by this way also the wrong baud rate has been selected.

Cause : the Wash Computer and the Inverter have to communicate with the same baud rate.

On the wash computer there are 2 LED next to connector F, which allow to inspect communication with inverter. Washing machine in standby (no wash program running) : Green LED is On and Orange LED is Off. Washing machine is running : both LED or flashing.

Flashing Green LED : data send by wash computer. Flashing Orange LED : data received from inverter.

DIAGNOSE:

1.For a new inverter or wash computer : Check if the right machine type and Washing machine power supply have been selected.	When the Inverter parameters are loaded at the Configuration menu, make sure that you have selected the right machine type and washing machine power supply.
2. Check if the door is closed and locked.	If the door is not closed then the inverter can not be powered. Close the door. If the door lock is broken, repair the door lock system.
3. Check if the inverter is energized. If the inverter power LED is not illuminated, measure if there is supply voltage at the inverter input terminals.	Repair the power supply. If the supply voltage is OK and the power LED is not illuminated, replace the inverter.

4. Check if the fuses are still operational.	If the fuses are blown up : replace the fuses.
5. Check if the safety inverter contactor is activated.	If the safety contactor is broken: replace the contactor.
6. Check if the connectors on both sides of the communication cable are still connected.	Connect the connectors on the wash computer and the inverter.
7. Check the wiring for continuity.	Repair the wiring.
8. Check if the output relays that activates the safety inverter contactor is functional.	If the relay is broken, replace the wash computer.

FAILURE 28: THT (Mitsubishi) / E.OL (KEB) TIME OUT

Fault 28 occurs when the wash computer can not handle the THT (Mitsubishi) / E.OL (KEB) fault of the frequency inverter.
This fault is a specific fault of the frequency inverter caused by an over current.

DIAGNOSE:

1. Check if the correct machine type is selected at the Configuration Menu.	If the wrong machine type is selected, enter the right machine type.
2. Check if the dedicated inverter parameters have been loaded by the wash computer.	Load the correct Inverter parameters.
3. Check if the power supply is sufficient high and stable during extraction with load.	Repair the power supply.
4. Check if the drum rotates normally by hand.	Repair / clean what is necessary.
5. Check if the fault is persistent.	If the fault is persistent, contact the manufacturer.

FAILURE 29: OV3 (Mitsubishi) / E.OP (KEB) TIME OUT

Fault 29 occurs when the wash computer can not handle the OV3 (Mitsubishi) / E.OP (KEB) fault of the frequency inverter. This fault is a specific fault of the frequency inverter caused by an overvoltage.

DIAGNOSE:

1. Check if the correct machine type is selected at the Configuration menu.	If the wrong machine type is selected, enter the right machine type.
2. Check if the dedicated inverter parameters have been loaded by the wash computer.	Load the correct Inverter parameters.
3. Check if there was a high unbalance during extraction, which can be caused by putting only half loads in the machine.	Put always a full load in the machine drum. Do not put other material than textile linen (fabrics) in the machine.
4. Check if the fault is persistent.	If the fault is persistent, contact the manufacturer.

FAILURE 31: INITIALIZATION FAULT INVERTER

Fault 31 occurs when something goes wrong while the wash computer writes the dedicated inverter parameters into the inverter EEPROM memory. This fault message means that not all dedicated inverter parameters have been loaded. As a result the inverter will not work in a correct way.

IT IS NOT RECOMMENDED TO USE THE WASHING MACHINE AS THE INVERTER WILL FUNCTION WITH THE WRONG PARAMETERS SETTINGS.

DIAGNOSE:

1. Check if the door is closed and locked.	If the door is not closed, close the door. If the door is not locked, repair the door lock system.
2. Check if the inverter is energized.	If the inverter is not energized, check the power to the inverter (see fault 27).
3. Write the parameters once more into the inverter.	If the fault is persistent, contact the manufacturer.

4FAILURE 32: VERIFICATION FAULT INVERTER

Fault 32 occurs if a wrong parameter is detected at the verification of the inverter parameters. After writing the inverter parameters in the inverter, the parameters are verified one by one to ensure that they have been correctly loaded. This fault message means that at least one of the dedicated inverter parameters is wrong. As a result the inverter will not work in a correct way.

DIAGNOSE:

1. Check if the correct machine type is selected in the Configuration Menu.	If the wrong machine type is selected, enter the right machine type.
2. Check if the door is closed and locked.	If the door is not closed, close the door. If the door is not locked, repair the door lock system.
3. Check if the inverter is energized.	If the inverter is not energized, check the power to the inverter (see fault 27).
4. Write the parameters once more into the inverter.	If the fault is persistent, contact the manufacturer.

FAILURE 33: STALL PREVENTION FUNCTION

This fault number indicates that the stall prevention of the Mitsubishi frequency inverter is sometimes functioning. The fault number is not displayed at the end of the program cycle. The number is only written to the error log register. The stall prevention function will only be activated to protect the motor for overcurrent.
This fault number is an indication that there is too much laundry loaded. It is also possible that due to the laundry the drum is not balanced what will produce an extra load for the motor.

DIAGNOSE:

1. Check if the drum is not overloaded.	Enter the correct amount of laundry in the drum.
2. Check if the correct machine type has been selected in the Config menu.	The installed parameters are related to the motor and machine type size. If a wrong machine type was selected then the stall prevention will function for the wrong motor type. Select the right machine type.
3. Check if the dedicated inverter parameters have been loaded by the wash computer.	Load the correct Inverter parameters.
4. Check if there are mechanical parts broken.	Broken parts can cause an unbalance of the drum. Replace the broken parts.

FAILURE 35: WRONG SOFTWARE VERSION

When a totally new software that isn't backward compatible with previous software versions is loaded, then the software will detect that the old and new software's are not compatible.
You have to reconfigure the GRAPHITRONIC Wash Computer. See Chapter 4.

⚠ **ATTENTION!**
ALL THE CUSTOM SETTINGS WILL BE ERASED IN THE GRAPHITRONIC WASH COMPUTER BY LOADING THE FACTORY SETTINGS.

After reconfiguration of the GRAPHITRONIC Wash Computer, fault 35 can only be erased by switching the power Off/On.

FAILURE 37: DRAIN FAILURE AT THE SPRAY SEQUENCE

Failure 37 occurs when the electronic timer detects that the water is not drained after 3 minutes at the Spray Sequence.

DIAGNOSE:

1. Check the drain tube of the washing machine.	If the drain tube is blocked: repair the drain tube.
2. Check the drain valve.	If the drain valve is defective: replace the drain valve.
3. Check the wiring: When the drain valve is switched Off, the drain valve should be open. (normal open)	If the wiring is damaged: repair the wiring.

FAILURE 38: NO RECYCLE WATER

Failure 38 occurs when the electronic timer detects that the Water Recycle tank is empty.

An Error message is generated to alert the operator, that the washing machine has switched over to Soft Cold Water as there is no water from the Water Recycle tank available.

Front Soap Dispenser machines only.

DIAGNOSE:

1. Check the water level from the water recycle tank.	Add water to the water Recycle tank

FAILURE 39: EMPTY SOAP SUPPLY BOX

Failure 39 occurs when the electronic timer detects that the Soap Reservoir is empty.

To avoid that No Liquid Soap is added at the wash process, the operator gets a warning when a Liquid Soap Supply Reservoir is almost empty.

DIAGNOSE:

1. Check if the Liquid Soap Supply is empty.	Add Soap to the Liquid Soap Supply System.

FAILURE 40: FILL FAILURE EMPTY WATER RECYCLING TANK

Failure 40 occurs when the electronic timer gets a signal that the water recycling tank is empty.

At the same time the water level will not raise anymore and an Error message will be generated if the Programmed water level is not reached in x minutes.

x = Max fill time, a value that can be programmed at the Initialization Menu.

Top Soap Dispenser machines only.

⚠ **ATTENTION!**: The rubber hose must be fixed with a fastener on the electronic water level Sensor.

DIAGNOSE:

1. Check the water level from the water recycle tank.	Add water to the water Recycle tank.
2. Check if the programmed Max fill time in the Initialization menu is acceptable.	If the water flow is very small increase the value for the Max fill time. The default value is 10‘.
3. Check if the external water valves are open.	If the water valves are closed: open the water inlet valves.
4. Check if the water inlet valves are not blocked by dirt.	If the water inlet valves are blocked by dirt: clean the water inlet valves or replace the water inlet valves.
5. Check the coil of the water inlet valves.	If the coil of the water inlet valve is open: replace the coil or the complete inlet valve.
6. Check the drain valve.	If the drain valve doesn't work properly: replace the drain valve.
7. Check if the rubber hose (for measuring the water level) is well mounted on the electronic water level sensor and on the drain valve.	If the hose is not well mounted: install the rubber hose properly.
8. Check if the hose on the electronic sensor is air tight.	If the air tube is not air tight: replace the air tube. With a fastener, you can make the hose air tight at the water level sensor.
9. Check if the hose doesn’t contain water. (siphon)	If the air hose contains water: remove the water and fix the hose so that it doesn’t work as a siphon.
10. Check the continuity of the wiring.	If the wiring is not continuous: repair the wiring.
11. Check the output relay that powers the inlet valves and the drain valve.	If the relay receives a command signal but is not closed, replace the wash computer.

FAILURE 41: SERVICE DUE WARNING

Failure 41 occurs when the cycle counter of the Electronic timer has reached the Programmed Value for Service due. The fault message will be erased by opening the door. If the cycle counter has not been reset the message will appear again at the end of the next wash cycle.

DIAGNOSE:

1. Check the cycle counter. The value can be found by pressing the SERVICE-STATE button. The third menu item shows the cycle counter.	You can reset the cycle counter in the Service Menu.

FAILURE 42: NO NETWORK CONNECTION

Failure 42 occurs when there is No Network Connection available.

For more information about the Networking see „Manual PC-Networking“.

DIAGNOSE:

1. Check the network cable.	If the network cable is broken, replace the network cable.
2. Check the RS232-RS485 converter	If the converter is out of order, replace it.

FAILURE 43: WRONG VOLTAGE RANGE SELECTION

Failure 43 occurs when the wrong Voltage Range has been selected in the Configuration menu.

Depending on the machine type and the inverter type, certain Voltage ranges are not allowed.

DIAGNOSE:

1. Check the Machine Identification plate at the back of the machine.	Select the same Voltage range in the Configuration menu as on the Identification plate of your washing machine. Menu Item C:Supply Voltage

FAILURE 44: WRONG INVERTER MODEL TYPE

Failure 44 occurs when the wrong Inverter Model Type has been detected by the wash computer software.

Before loading the parameters from the Wash Computer to the Mitsubishi inverter, the inverter type is checked first.

DIAGNOSE:

1. Check if you have selected the correct machine type.	Select the correct machine type in the Configuration menu. Menu Item C:Machine Type
2. Check the Machine Identification plate at the back of the machine.	Select the same Voltage range in the Configuration menu as on the Identification plate of your washing machine. Menu Item C:Supply Voltage

FAILURE 45: NO SPEED SENSOR SIGNAL

MB70-90-110-140-180 machine only. Failure 45 occurs when the speed sensor is not sending pulses to the Wash Computer while the drum turns.

The machine is still operational when the speed sensor is out of order. But as the machine operation is deteriorated an intervention of a technician is required.

DIAGNOSE:

1. Check if the head of the speed sensor is mounted at a correct distance from the reference points on the drum pulley.	Check the installation and maintenance manual how to mount the speed sensor at a correct distance.
2. Check the wiring.	If the wiring is damaged: repair the wiring.

3. Check the well functioning of the speed sensor. (The actual speed value is available at the Service – State menu)	If the speed sensor is broken or not well functioning, replace the speed sensor.
4. Check the wash computer. (Inputs can be checked one by one in the Service menu)	If the input of the wash computer is not functional, replace the wash computer board.

FAILURE 46: BRAKE STAYS CLOSED

MB70-90-110-140-180 machine only. Failure 46 occurs when the mechanical brake stays closed. When the brake stays closed, at acceleration at spin between 250 and 350 RPM, a too high motor current is detected and the machine is stopped at once. The machine should not be operated when the brake is out of order. As the machine operation is deteriorated an intervention of a technician is required.

DIAGNOSE:

1. Check if the main air pressure is available.	Apply the correct air pressure.
2. Check if the air pressure that controls the brake is available.	If the air pressure valves are out of order, repair or replace the corresponding air pressure valves.
3. Check the brake control signal wiring that commands the brake air pressure valve.	If the wiring is damaged: repair the wiring.
4. Check the output relay that powers the control signal for the brake air pressure valve.	If the relay receives a command signal but is not closed, replace the wash computer.
5. Check the output relay that powers the control signal for the brake air pressure valve.	If the relay does not receive a command signal, replace the wash computer.

FAILURE 47: BRAKE WEAR OUT SIGNAL

MB70-90-110-140-180 machine only. Failure 47 occurs when the friction blocks of the brake are worn out. At the moment that the friction blocks are almost worn out , two wires will be short circuited when they touch the metal friction plate. The friction blocks must be replaced at once to avoid heating up of the mechanical brake as this can damage the machine and lead to an unsafe state.

DIAGNOSE:

1. Check if the friction blocks needs to be replaced.	If the friction blocks have almost worn through, they must be replaced.
2. Check if the wiring of the input signal Brake Wear Out is not damaged.	If the wiring is damaged: repair the wiring.
3. Check the wash computer. (Inputs can be checked one by one in the Service menu)	If the input of the wash computer board is not functional, replace the wash computer.

FAILURE 48: BRAKE STAYS OPEN

MB70-90-110-140-180 machine only. Failure 48 occurs when the mechanical brake stays open. When the brake stays open, the deceleration free run time, of the machine, after the final spin, will be much longer than normal. The machine is still operational when the brake is out of order, but as the machine operation is deteriorated, an intervention of a technician is required.

DIAGNOSE:

1. Check if the main air pressure is available.	Apply the correct air pressure.
2. Check if the air pressure that controls the brake is available.	If the air pressure valves are out of order, repair or replace the corresponding air pressure valves.
3. Check the brake control signal wiring that commands the brake air pressure valve.	If the wiring is damaged: repair the wiring.

4. Check the output relay that powers the control signal for the brake air pressure valve.	If the relay receives a command signal but is not closed, replace the wash computer.
5. Check the output relay that powers the control signal for the brake air pressure valve.	If the relay does not receive a command signal, replace the wash computer.

FAILURE 49: UNBALANCE SWITCH AT WASH

MB70-90-110-140-180 machine only. Failure 49 occurs at the wash action when the air suspension, due to some problem, is without compressed air. This must prevent mechanical damage when the mechanical movements at wash

action get too big. When the tub is moving a lot, the unbalance switch will be activated and the wash process will be stopped by the wash computer.

DIAGNOSE:

1. Check if the washing machine is supplied with compressed air.	Supply the washing machine with compressed air.
2. Check if the air pressure valves are functional.	If the air pressure valves are not functional, repair or replace the valves. See installation/ Maintenance manual.
3. Check if the air suspension is not damaged.	If the air suspension is damaged, replace the air suspension. See installation/Maintenance manual.
4. Check the position of the out of balance switch.	If the out of balance switch is not correctly mounted, install the out of balance switch properly
5. Check the wiring, the contact of the out of balance switch is normally closed Check connector pins for loose connections	If there is no continuity: repair the wiring
6. Check the wash computer. (Inputs can be checked one by one in the Service menu)	If the input of the wash computer is not functional, replace the wash computer.

FAILURE 50-51: ERROR NO SECOND-THIRD ACCELERATION RAMP

MB70-90-110-140-180 machine only. Failures 50-51 occur when the washing machine is not accelerating to the programmed extraction speed with the standard spin ramp but with the wash speed ramp. In normal operation, the machine accelerates slowly to it's maximal speed. (The software is only monitoring Error 50 and 51 when the maximal spin speed has been programmed.)

DIAGNOSE:

1. Check if the wire bridges at the terminals of the Mitsubishi inverter are present.	When a new inverter is installed, the wire bridges at the terminals of the Mitsubishi inverter must be installed. (See electrical drawing)
2. Check if the wire bridges at the terminals make electrical contact.	If there is no continuity between the terminals at the wire bridges, make a good connection by tightening the screws at the terminals.
3. Check if the right Mitsubishi inverter parameters have been loaded.	Load the correct Mitsubishi inverter parameters.
4. If the problem is persistent check first all other diagnose options.	Replace the Mitsubishi inverter.

FAILURE 52: PCB-EEPROM CRC FAILURE

At Power-up the wash computer checks if the factory settings in the EEPROM are still ok.

Failure 52 occurs by wrong CRC reading data from EEPROM.

Wash computer to be reset at manufacturer by Factory Test validation procedure.

FAILURE 53: PCB-EEPROM DATA OUT OF RANGE FAILURE

At Power-up the wash computer checks if the factory settings in the EEPROM are still ok.

Failure 53 occurs by reading out of range data from EEPROM.

Wash computer to be reset at manufacturer by Factory Test validation procedure.

FAILURE 57: LOCK SYSTEM

MB70-90-110-140-180 machines only. Failure 57 occurs when the „Door Lock Switch“ stays locked when the outer door has been unlocked pneumatically and opened by hand. Purpose is to find out at the unload sequence if „Door Lock Switch“ is broken. (Normal Open Contact that stays closed)

DIAGNOSE:

1. Check the functioning of the „DOOR LOCK SWITCH“.	If the door switch is broken or functions not 100%: replace „DOOR LOCK SWITCH“.
2. Check the mechanical functionality of the door lock.	If the door lock is not functioning mechanically: replace the door lock system.
3. Check the continuity of the wiring.	If the wiring is not continuous: repair the wiring.
4. Check the functionality of the pneumatic lock system.	If the door lock is not functioning pneumatically: repair or replace the defective system.
5. Check the input signal from the „DOOR LOCK SWITCH“.	If the wash computer input doesn’t correspond with the state of the signal of the switch, replace the wash computer.

⚠ **ATTENTION!**

YOU CAN STILL UNLOAD THE FABRICS FROM ALL COMPARTMENTS BY OVERRULING THE ERROR MESSAGE BY PRESSING THE START BUTTON WHEN THE MESSAGE „CONTINUE >> START“ OCCURS

ASK FOR TECHNICAL ASSISTANCE FROM YOUR LOCAL DEALER TO SOLVE THE TECHNICAL PROBLEM BEFORE STARTING A NEW WASH CYCLE

FAILURE 58: NO FREE RUN

MB70-90-110-140-180 machines only. Failure 58 occurs when the washing machine is decelerating at the end of the wash cycle with closed brake. The failure is just for diagnostic purposes. Check if the problem is repetitive and inform the manufacturer.

FAILURE 59: RUN FREE RUN

MB70-90-110-140-180 machines only. Failure 59 occurs when the brake is closed while Run Status inverter is still „1“. The failure is just for diagnostic purposes. Check if the problem is repetitive and inform the manufacturer.

FAILURE 60: NO RESET DRIVE

RS6 - RS7 - RS10 only. Failure 60 occurs when there is no feedback speed signal from the Motor Drive at the wash sequence. Probably this also means that the drum is not turning.

The wash computer will 3x hardware reset the motor drive. When the problem is still persistent after 3x hardware reset motor drive, Failure 60 becomes active. The wash Cycle will continue for the remaining cycle time. Just for diagnostic purposes there is written in the Err log : Failure 63 at reset 1, Failure 64 at reset 2, Failure 65 at reset 3.

DIAGNOSE:

1. Check the communication cable.	If the communication cable is broken, repair the communication cable.
2. Check the motor drive.	If the motor drive is broken, replace the motor drive.
3. Check the motor.	If the motor is broken, replace the motor.
4. Check the power cable to the motor drive and also to the motor.	If the power cable is broken, repair the power cable.
5. Check the output relay that powers the motor drive.	If the relay is broken, replace the wash computer.
6. Check the contactor power supply motor drive. (contactor is not available on all machine types)	If the contactor is broken, replace the contactor.

FAILURE 61: CONTINUE SPIN

RS6 - RS7 - RS10 only. Failure 61 occurs when there is a feedback speed signal from the Motor Drive when the motor is not turning and the Motor Drive is not expected to return a speed signal.

There will occur 1 reset, just for diagnostic purposes there is written Failure 66 in the Error log.

DIAGNOSE:

1. Check the wire bridge on the mobile connector motor drive.	When the wire bridge is open the motor will spin continuously in the same direction. Close the wire bridge. (open wire bridge is a test function for the motor drive)
2. Check the communication cable.	If the communication cable is broken, repair the communication cable.
3. Check the motor drive.	If the motor drive is broken, replace the motor drive.

FAILURE 62: EXTENDED SPEED

RS6 - RS7 - RS10 only. Fault 62 will occur when the speed exceeds more then 50 RPM above the target speed.

There will occur 1 reset, just for diagnostic purposes there is written Failure 67 in the Error log.

DIAGNOSE:

1. Check the communication cable.	If the communication cable is broken, repair the communication cable.
2. Check the motor drive.	If the motor drive is broken, replace the motor drive.
3. Check the motor.	If the motor is broken, replace the motor.
4. Check the Belt	If the belt is broken, replace the belt. If the belt is slipping, check the fixation of the motor and pulley and the mechanical tension of the belt (assure that no water gets on the belt).

FAILURE 68: NO SIGN SPIN

RS6 - RS7 - RS10 only. Failure 68 occurs when there is no feedback speed signal from the Motor Drive at the spin sequence. Probably this also means that the drum is not turning.

DIAGNOSE:

1. Check the communication cable.	If the communication cable is broken, repair the communication cable.
2. Check the motor drive.	If the motor drive is broken, replace the motor drive.
3. Check the motor.	If the motor is broken, replace the motor.
4. Check the power cable to the motor drive and also to the motor.	If the power cable is broken, repair the power cable.
5. Check the output relay that powers the motor drive.	If the relay is broken, replace the wash computer.
6. Check the contactor power supply motor drive. (contactor is not available on all machine types)	If the contactor is broken, replace the contactor.

FAILURE 69: RS UNBALANCE

R machines only. Failure 69 occurs when the input for unbalance detection for F machines is high.

Or the wrong machine type has been selected, or there is a mistake with the wiring.

DIAGNOSE:

1. Check if right machine type has been selected.	Select the right machine type. (See machine name plate at the rear side of the washing machine)
2. Check the F-machine input unbalance detection.	There must not be a wire bridge at the F-machine input unbalance detection.
3. Check the F-machine input unbalance detection.	If the input is broken replace the wash computer.

FAILURE 70: RS7 SELECT

Failure 70 occurs when the wrong machine type has been selected. RS7 has been selected instead of RS10. Select the right machine type.

DIAGNOSE:

1. Check if right machine type has been selected.	Select the right machine type. (See machine name plate at the rear side of the washing machine)

FAILURE 71: RS10 SELECT

Failure 71 occurs when the wrong machine type has been selected. RS10 has been selected instead of RS7. Select the right machine type. There must be the wire bridge on mobile connector F on pins 1 and 3.

DIAGNOSE:

1. Check if right machine type has been selected.	Select the right machine type. (See machine name plate at the rear side of the washing machine)
2. Check if wire bridge on mobile connector F pins 1 and 3 is available.	Connect wire bridge at connector F pins 1 and 3.

FAILURE 72: KEB ST LOW

Machines with KEB drive only. Failure 72 occurs when the wire bridge at KEB terminals 16-20 is missing.

DIAGNOSE:

1. Check if KEB terminals 16-20 have a wire bridge.	Put wire bridge at terminals 16-20.
2. Check if the fault is persistent.	If the fault is persistent, contact the manufacturer.

FAILURE 73: KEB ST HIGH

Machines with KEB drive only. Failure 73 occurs when the dedicated parameters have not been loaded in the KEB inverter. (KEB parameters are still factory defaults)

DIAGNOSE:

1. Check if the dedicated inverter parameters have been loaded by the wash computer. (installed new inverter without loading the parameters ?)	Load the correct inverter parameters.
2. Check if the fault is persistent.	If the fault is persistent, contact the manufacturer.

FAILURE 74: CFISTUCK

Machines with KEB drive only. Failure 74 occurs when the inverter contactor doesn't go open at the end of the wash cycle. At the end of each wash cycle the inverter contactor must be switched off.

(CFIStuck : Contactor Frequency Inverter Stuck)

DIAGNOSE:

1. Check if the contacts of the contactor stay closed after the cycle has finished.	Replace the contactor.
2. Check the output relay that powers the inverter contactor.	If the relay is broken, replace the wash computer.

FAILURE 75: UNDEFINED KEB FREQUENCY INVERTER ERROR CODE

Failure 75 occurs if the inverter gives an error message which is not recognised by the wash computer. Updating the wash computer software might help discover what inverter error code really occurred. Inform the manufacturer.

FAILURE 78: LOCK ACTIVE

Failure 78 occurs when at standby mode (machine is on, but no wash cycle is running) the door lock switch is in locked state nevertheless the door (door switch) is open. Before the machine can be used further, the door lock must be set in unlocked state first.

DIAGNOSE:

1. Close door slowly with limited force.	If error message disappear, machine goes into standby mode and can be further used.
1. Close door slowly with limited force.	If error doesn't disappear, door lock has to be repaired by skilled technician.

FAILURE 79: LOCK START

Failure 79 occurs when during door locking sequence the door lock switch is in locked state and the door (door switch) is open. Before the machine can be used further, the door lock must be verified and corrected or repaired by skilled technician.

Before further usage of washing machine, door lock must be unlocked first by technical intervention.

DIAGNOSE:

1. Check correct functioning of door lock system.	If door lock system is defect repair door lock system.

FAILURE 80: TIME OUT INPUT 16

Failure 80 occurs when the On Hold Signal of the Liquid Supply Central Dispensing System stays high for more then 1 hour. At Input 16 of the wash computer, the Liquid Supply Central Dispensing System sends a „High“ signal that makes that the washing machine waits at the Wash Sequence to add Liquid Supply until the Liquid Supply Central Dispensing System has pumped its liquid supplies inside the washing machine. When the On Hold signal is „LOW“ the wash program is NOT put On Hold.

When the On Hold signal is „HIGH“ the wash program is put On Hold.

In normal operation the On Hold Signal of the Liquid Supply Central Dispensing System must not stay high for more then 1 hour, as otherwise the machine will not finish the running wash cycle anymore.

DIAGNOSE:

1. Check if the Central Soap Dispensing System operates correctly.	Repair Liquid Supply Central Dispensing System in case of failure.
2. Check if the wiring of the input signal „On Hold“ is not damaged.	If the wiring is damaged: repair the wiring.
3. Check the wash computer. (Inputs can be checked one by one in the Service menu)	If the input of the wash computer is not functional, replace the wash computer.

FAILURE 81: NO REHEAT

MB machine only. Failure 81 occurs when the heating is not restarted (at the wash sequence) when the water temperature of the bath is below its normal programmed value. When the temperature drops below the predefined temperature limit of a hygienic wash cycle, the wash cycle can not be validated for hygienic reasons as the wash process has not followed the standards of the wash program in execution. This means that the linen can not be unloaded at the hygienic side of the MB-machine and must be washed again after repairing the problem with the heating system.

DIAGNOSE:

Check Diagnostics Failure 13 : Heating Failure, and Failure 14 : Heating Time Failure

FAILURE 82: NO REFILL

MB machine only. Failure 82 occurs when the water filling is not restarted (at the wash sequence) when the water level of the bath is below its normal programmed value. When the water level drops below the predefined water level limit of a hygienic wash cycle, the wash cycle can not be validated for hygienic reasons as the wash process has not followed the standards of the wash program in execution. This means that the linen can not be unloaded at the hygienic side of the MB-machine and must be washed again after repairing the problem with the water fill system.

DIAGNOSE:

Check Diagnostics Failure 11 : Fill Failure

FAILURE 83: CYCLE FAIL

MB machine only. Failure 83 occurs when the wash cycle can not be validated for hygienic reasons as the wash process has not followed the standards of the wash program in execution. This means that the linen can not be unloaded at the hygienic side of the MB-machine and must be washed again after repairing the problem. The Error message is only for information purposes and at the end of the wash cycle the operator will get a warning the wash cycle must be repeated.

DIAGNOSE:

See Extra Error message that shows the cause of the failure.

FAILURE 84: NO STORE PC

MB machine only. Failure 84 occurs when the function to store all wash process data for a hygienic wash cycle on a PC has failed. Some governments require traceability of wash cycle data in case of hygienic wash cycles. This data can be sent to a PC and stored for a long period.

If this wash process data is not transferred to the PC at the end of the hygienic wash cycle, the operator will see the Error message so that he can solve the communication problem before starting a new wash cycle.

DIAGNOSE:

For more information about set-up and diagnostics see Manual Traceability Software for PC.

FAILURE 85: RTC LOW BATTERY

MB machine only. Failure 85 occurs when there is no battery available at the real time clock, or if the power of the battery is too small to make the real time clock run correctly. On MB machines which are prepared for traceability of hygienic wash cycles, the machines must be executed with a real time clock for date and time registration.

DIAGNOSE:

1. Check if there is a battery.	If not, put a battery at the real time clock.
2. Check if the battery is still ok.	Replace the battery in case of low power.

This failure can only occur if „Traceability“ is switched on at the Advanced Main Menu.

(if Traceability is switched off, Err 85 will not occur anymore)

FAILURE 86: NO RTC COMMUNICATION

MB machine only. Failure 86 occurs when the real time clock is not connected to the wash computer. As a result there is no communication between the real time clock and the wash computer, so the wash computer fails to register date and time. On MB machines which are prepared for traceability of hygienic wash cycles, the machines must be executed with a real time clock for wash cycle date and time registration.

DIAGNOSE:

1. Check if the real time clock is available.	Connect the real time clock at its place.
2. Check if the real time clock is functional.	If the real time clock is broken replace it.
3. Check the wash computer.	If the wash computer is out of order, replace the wash computer.

This failure can only occur if „Traceability“ is switched on at the Advanced Main Menu.

(if Traceability is switched off, Err 86 will not occur anymore)

FAILURE 95: WATCH DOG

If the watch dog has been activated, message 95 is logged in the Error log register. If this occurs often, ask the help of a technician.

FAILURE 100: WEIGH NOCOMM

MB & FS23-FS55 machines with Weighing system only. Failure 100 occurs when the communication between wash computer and signal conditioner weighing system (amplifier module) is interrupted.

At the status Screen, you can see if the communication with the weighing system is operational : Yes.

(Weigh NoComm : No communication with weighing system)

DIAGNOSE:

1. Check if the power supply of the signal conditioner weighing system is available.	Repair 24 Vdc power supply.
2. Check if the connectors on both sides of the communication cable are still connected.	Connect the connectors on the wash computer and Signal conditioner.
3. Check the connection at the RS232 - TTL converter.	Connect the connectors at the RS232-TTL converter.
4. Check the wiring for continuity.	Repair the wiring.

FAILURE 101: WEIGH LOW

MB & FS23-FS55 machines with Weighing system only. Failure 101 occurs when the measured weight is much smaller then in normal operation. Check the load cell Weighing Calibration screen (Advanced Menu) to obtain more info about the functionality of each individual load cell.

Verify if the value „Expected Free Weight XXX“ in the Weighing Menu has still the correct value.

This value must correspond with the real total weight of the washing machine. If the actual measured weight value gets out of range then the Diagnostic Error 101 will appear.

(Weigh Low: Weight of weighing system is too low)

DIAGNOSE:

1. Check the load cell wiring.	Repair the wiring.
2. Check the values for each individual load cell.	Adjust the mounting of the load cell.
3. Check if the signal conditioner (amplifier) module is still operational.	Replace the signal conditioner (amplifier) module.

FAILURE 102: WEIGH HIGH

MB & FS23-FS55 machines with Weighing system only. Failure 102 occurs when the measured weight is much higher then in normal operation. Check the load cell Weighing Calibration screen (Advanced Menu) to obtain more info about the functionality of each individual load cell.

Verify if the value „Expected Free Weight XXX“ in the Weighing Menu has still the correct value.

This value must correspond with the real total weight of the washing machine. If the actual measured weight value gets out of range then the Diagnostic Error 102 will appear.

(Weigh High: Weight of weighing system is too high)

DIAGNOSE:

1. Check the load cell wiring.	Repair the wiring.
2. Check the values for each individual load cell.	Adjust the mounting of the load cell.
3. Check if the signal conditioner (amplifier) module is still operational.	Replace the signal conditioner (amplifier) module.

FAILURE 103: WEIGH BALANCE

MB & FS23-FS55 machines with Weighing system only. Failure 103 occurs when the measured weight is not equal divided over the 4 load cell's. Check the load cell Weighing Calibration screen (Advanced Menu) to obtain more info about the functionality of each individual load cell.

FS23-FS55 : load on each load cell must be in range 20-30%.

MB16-MB66 : load on each load cell must be in range 20-30%.

MB70-MB180 : load on each load cell must be in range 6-49%.

(Weigh Balance: Balance weighing system is out of order)

DIAGNOSE:

1. Check the load cell wiring.	Repair the wiring.
2. Check the weight values for each individual load Cell.	Adjust the mounting of the load cell so that there is again optimal balance.
3. Check if the signal conditioner (amplifier) module is still operational.	Replace the signal conditioner (amplifier) module.

FAILURE 104: WEIGH OVERLOAD

MB16- MB66 & FS23-FS55 machines with Weighing system only. Failure 104 occurs when during wash cycle, load on one load cell is over 1000 kg. Check the load cell Weighing Calibration screen (Advanced Menu) to obtain more info about the functionality of each individual load cell.

This function is protecting the load cell against mechanical overload. The load cell's are over dimensioned and can handle big dynamic forces. Nevertheless the wash computer will protect the weighing system and stop the wash cycle in case big mechanical forces occur due to mechanical failure in the washing machine.

(Weigh Overload: Dynamic Overload Weighing System)

DIAGNOSE:

1. Check for mechanical problems.	Repair mechanical problems on the washing machine.
2. Check the load cell wiring.	Repair the wiring.
3. Check the weight values for each individual load cell.	Adjust the mounting of the load cell.
4. Check if the signal conditioner (amplifier) module is still operational.	Replace the signal conditioner (amplifier) module.

FAILURE 105: WEIGH AIRBAGS

MB70- MB180 machines with Weighing system only. Failure 105 occurs when the air stays in the air bags at the door unlock sequence while in normal operation they should be empty. As a result it is not possible to use the weighing system.

(Weigh Airbags: Weighing system is not functional because air doesn't escape from airbags)

DIAGNOSE:

1. Check for mechanical problems.	Repair mechanical problems on the washing machine.
3. Check the air pressure system.	Repair the air pressure system.
2. Check the wiring air absorber pressure switch.	Repair the wiring.

FAILURE 300-353: MITSUBISHI INVERTER ALARM MESSAGE

Always make sure you have the correct inverter parameter settings in the inverter, especially when you have replaced an inverter. If you are not sure go to the Configuration menu and select „Inverter Menu…“, set the correct machine type and supply voltage and load the parameters from the wash computer to the inverter once more. If the correct parameters are not in the inverter all kind of inverter alarms may occur. See also inverter manual (available on request) for more info.

Err N°	Failure	Failure Name	Explanation
300	Err OC1	Overcurrent	See detailed explanation below
301	Err OC2	Overcurrent	See detailed explanation below
302	Err OC3	Overcurrent	See detailed explanation below
303	Err OV1	Overvoltage	See detailed explanation below
304	Err OV2	Overvoltage	See detailed explanation below
305	Err OV3	Overvoltage	See detailed explanation below
306	Err THT	Inverter overload	See detailed explanation below
307	Err THM	Motor overload	See detailed explanation below
308	Err FAN	Fan stopped	Repair the cooling fan (clean or replace if necessary)
309	Err OLT	Stall prevention	See detailed explanation below
310	Err BE	Brake transistor	Short circuit in brake transistor circuit. Power off immediately! Replace the inverter.
311	Err GF	Ground fault	Output overcurrent to ground. 1) Check the motorcable and motor for ground faults. 2) Disconnect the motorcable and try again. If you still have the error, replace the inverter.
312	Err OHT*	Ext thermal relay	External thermal relay (TRM module, see electrical scheme) for motor protection tripped. TRM module was only used on certain machines with MCB controller and A500 inverter.
313	Err OPT	Option	See detailed explanation below
314	Err PE	Corrupt memory	Memory was overwritten too many times. Replace inverter.
315	Err PUE	PU leave out	See detailed explanation below
316	Err Ret*	Retry no over	The max number of retries after fault reached. The actual inverter error code that causes the problem and which should be solved, is stored just before Err 316 in the error log.
317	Err CPU	CPU Fault	Communication error of built in CPU. Replace inverter
318	Err E.6	CPU Fault 6	Internal fault, If the fault is persistent, replace the inverter
319	Err E.7	CPU Fault 7	Internal fault, If the fault is persistent, replace the inverter
320	Err IPF	Instantaneous power failure	Power failure between 15 and 100ms. Check for bad contacts in the power circuit. Repair the power supply.

321	Err UVT	Under voltage	Supply voltage too low. Check jumper P/+-P1.
322	Err LF	Output phase failure	Phase open detected on inverter output. Check for bad contacts or defect (open) motor windings.
323	Err OP1*	Option slot 1	Problem with the option in slot 1 or option contact fault
324	Err OP2*	Option slot 2	Problem with the option in slot 2 or option contact fault
325	Err OP3*	Option slot 3	Problem with the option in slot 3 or option contact fault
326	Err CTE	PU short circuit	Short circuit on the RS485 communication connector. Check for short circuit in the communication cable.
327	Err P24	24VDC short circuit	Short circuit on the 24VDC power output (PC terminal). Check for short circuit on the inverter control terminals.
328	Err MB1*	Brake sequence error 1	Sequence errors during use of the brake function.
329	Err MB2*	Brake sequence error 2	
330	Err MB3*	Brake sequence error 3	
331	Err MB4*	Brake sequence error 4	
332	Err MB5*	Brake sequence error 5	
333	Err MB6*	Brake sequence error 6	
334	Err MB7*	Brake sequence error 7	
335	Err FIN	Heatsink overheat	See detailed explanation below
336	Err OSD*	Speed deviation excess	Too big speed deviation during vector control
337	Err ECT*	Encoder signal loss	Problem with the encoder signal
338	Err E.1*	Option alarm(connector1)	Occurs if there is a contact fault of the connector between the inverter and the communication option or if the communication option is fitted to connector 1 or 2 or if the switch of the plug-in option is not on the default setting.
339	Err E.2*	Option alarm(connector2)	
340	Err E.3*	Option alarm(connector3)	
341	Err ILF*	Input phase failure	1 phase of the 3-ph input was lost for more than 1 second. Repair the 3-phase power supply.
342	Err PTC	PTC thermistor operation	Overtemperature of motor PTC(switch AU/PTC must be on PTC) 1) Check if motor cooling fan (if present) functions normally 2) check for contact faults in the wiring (see electrical scheme)
343	Err PE2	Parameter storage error	Problem with parameter storage (EEPROM failure). If the fault is persistent, replace the inverter.
344	Err CDO*	Output Current detection	Current exceeded the output current detection level
345	Err IOH	Inrush overheat	Resistor inrush current limit circuit overheated. 1) do not switch on/off the inverter frequently 2) Wait some time (15min) and try again 3) if the fault is persistent, replace the inverter
346	Err SER*	Communication error	Communication problem on the RS485 terminals connector
347	Err AIE*	Analog input error	Overcurrent or overvoltage on input terminal 2/4

348	Err USB*	USB communication error	USB communication check time interval has elapsed
349	Err OS*	Overspeed	Speed exceeded the limit during encoder feedback control
350	Err OD*	Position error	Too big difference between the position command and the position feedback during position control
351	Err EP*	Encoder phase error	Rotation command different than the motor rotation direction
352	Err E.11*	Opposite rotation deceleration	Rotation direction of the speed command different than the estimated speed causing overload
353	Err E.13	Internal circuit error	Problem with an internal circuit, replace the inverter

* : This option or function is not used. If you have this error anyway do the following :

1) Reload the inverter parameters.
2) If the fault is persistent, replace the inverter.

DIAGNOSE FAILURE 300-301-302: OC-ERRORS (OVERCURRENT)

1. Check if there is no short circuit on the output of the inverter. (loose wire of motor cable, motor windings, screws or other loose parts inside the motor terminal box,…)	Repair the short circuit.
2. Disconnect the motor cable from the inverter and try again.	If you still have the error with motor cable disconnected, replace the inverter.

DIAGNOSE FAILURE 303-304-305 : OV-ERRORS (OVERVOLTAGE)

If the DC-voltage on the capacitors is too high, the inverter will generate OV error.

1. Check if there was a high unbalance during extraction, which can be caused by putting only half loads in the machine.	Put always a full load in the machine drum.
2. Check if the supply voltage is not too high.	Reduce the supply voltage.
3. Check if the fault is persistent	If the fault is persistent, contact the manufacturer

DIAGNOSE FAILURE 306: THT-ERROR (INVERTER OVERLOAD)

If the output current of the inverter is abnormal high for some time, the inverter will go into THT-alarm state.

1. Check if the power supply is sufficient high and stable during extraction with load.	Repair the power supply.
2. Check if the drum rotates normally by hand. (no abnormal high friction)	Repair / clean what is necessary.
3. Check if the motor windings are OK.	Replace the motor.

DIAGNOSE FAILURE 307: THM-ERROR (MOTOR OVERLOAD)

If the motor current is higher than allowed for a longer time, the inverter will activate the electronic overcurrent protection to prevent the motor from overheating and the inverter will go into THM-alarm state.

1. Check if the drum rotates normally by hand.	Repair / clean what is necessary.
2. Check if the motor windings are OK.	Replace the motor.
3. Check if the fault is persistent.	If the fault is persistent, contact the manufacturer.

DIAGNOSE FAILURE 309: OLT-ERROR (STALL PREVENTION)

The output frequency has dropped to minimum because of current limitation.

1. Check if the power supply is sufficient high and stable during extraction with load.	Repair the power supply.
2. Check if the drum rotates normally by hand. (no abnormal high friction)	Repair / clean what is necessary.
3. Check if the motor windings are OK.	Replace the motor.

DIAGNOSE FAILURE 313/315: OPT/PUE-ERROR (OPTION FAULT/PARAMETER UNIT LEAVE OUT)

If the inverter doesn't receive requests from the wash computer (= no serial communication), after some time (about 10-30 seconds), the inverter will go into OPT/PUE-alarm state.

1. Check at the end of the wash cycle, if the power supply contactor of the frequency inverter switches is switched off on all phases.	Replace the contactor if the problem is persistent.

The OPT/PUE-ERROR can happen occasionally by a very short general mains power supply interruption.

(Due to the power interruption, the inverter was not able to reset itself correctly.)

=> In such case the contactor must not be replaced. The Inverter must be reset by a longer power interruption.

DIAGNOSE FAILURE 335: FIN-ERROR (COOLING FIN INVERTER OVERHEAT)

If the heatsink temperature of the inverter crosses it's max allowed operation temperature, the inverter will go into FIN-alarm state.

1. Check if the cooling fan of the inverter (if present) rotates normally.	Replace the cooling fan on the inverter (on the heatsink of the inverter).
2. Check if the cooling fan in the washer that takes fresh air to the inverter's environment (if present) rotates normally.	Replace the cooling fan of the washer.
3. Check if the heatsink or the cooling fans are not clogged with dust/dirt so that fresh air can circulate freely.	Clean what is necessary.
4. Check if the ambient temperature of the washer is within the specified limits (see installation manual).	Take care that the ambient temperature is within the specified limits.

FAILURE 400-441 : KEB INVERTER ALARM MESSAGE

Always make sure you have the correct inverter parameter settings in the inverter, especially when you have replaced an inverter. If you are not sure go to the Configuration menu and select „Inverter Menu…“, set the correct machine type and supply voltage and load the parameters from the wash computer to the inverter once more. If the correct parameters are not in the inverter all kind of inverter alarms may occur. See also inverter manual (available on request) for more info.

Err N°	Failure	Failure Name	Explanation
400	Errbr*	brake	Load is too low or too high
401	Errbus	bus	See detailed explanation below
402	ErrCdd*	calc. drive data	Automatic motor stator resistance measurement fault
403	Errco1*	counter overrun 1	Counter overflow encoder channel 1
404	Errco2*	counter overrun 2	Counter overflow encoder channel 2
405	ErrdOH	drive overheat	Overtemperature of motor PTC 1) Check if motor cooling fan (if present) functions normally 2) check for contact faults in the wiring (see electrical scheme)

406	Errdri	driver relay	Internal relay output gate drivers defect. If the fault is persistent, replace the inverter.
407	ErrEEP	eeprom defective	Data storage fault. After reset, operation again possible. If the fault is persistent, replace the inverter.
408	Err_EF	external fault	See detailed explanation below
409	ErrEnC*	encoder 1 or 2	Wiring fault or encoder not functional or speed too high
410	ErrHyb*	hybrid	Invalid encoder interface identifier
411	ErrHybC*	hybrid changed	Encoder interface identifier has changed
412	ErriED	input error detect	Error at PNP/NPN switching or input failure. If the fault is persistent, replace the inverter.
413	ErrInI	initialisation MFC	MFC not booted. If the fault is persistent, replace the inverter.
414	ErrLSF	load shunt fault	Load shunt relay defect, supply voltage too low or wrong connection brake resistor. If the fault is persistent, replace the inverter.
415	ErrndOH*	No drive overheat	405 ErrdOH occurred, but solved. Reset is now possible.
416	ErrnOH*	No invert. overheat	421 Err_OH occurred, but solved. Reset is now possible.
417	ErrnOHI*	No overheat int.	423 ErrOHI occurred, but solved. Reset is now possible.
418	ErrnOL*	No overload	424 Err_OL occurred, but solved. Reset is now possible.
419	ErrnOL2*	No overload 2	425 ErrOL2 occurred, but solved. Reset is now possible.
420	Err_OC	overcurrent	See detailed explanation below
421	Err_OH	inverter overheat	See detailed explanation below
422	ErrOH2	motor protection	See detailed explanation below
423	ErrOHI	overheat internal	See detailed explanation below
424	Err_OL	overload	See detailed explanation below
425	ErrOL2	overload 2	Occurs if the standstill constant current is exceeded. See detailed explanation below.
426	Err_OP	overvoltage	See detailed explanation below
427	ErrOS*	overspeed	Real speed is bigger than the maximum output
428	ErrPFC*	powerfactor control	Power factor control problem
429	ErrPrF*	prot.rot.for.	The drive has driven onto the right limit switch
430	ErrPrr*	prot.rot.rev.	The drive has driven onto the left limit switch
431	Err_Pu	power unit	General power circuit fault (eg fans not turning,…). If the fault is persistent, replace the inverter.
432	ErrPuci	pow.unit code inv.	Power circuit not recognised or invalid identified power circuit. If the fault is persistent, replace the inverter.
433	ErrPuch	pow.unit changed	Power circuit identification was changed. If the fault is persistent, replace the inverter.
434	ErrPuco	pow.unit commun.	Parameter value could not be written to the power circuit. If the fault is persistent, replace the inverter.
435	ErrPUIN	pow.unit invalid	Software version power circuit and control card are different. If the fault is persistent, replace the inverter.
436	ErrSbuS*	bus synchron	Synchronisation over sercos-bus not possible
437	ErrSEt*	set	It has been attempted to select a locked parameter set
438	ErrSLF*	software limit switch forward	The target position lies outside of the limit defined with the right software limit switch.
439	ErrSLr*	software limit switch reverse	The target position lies outside of the limit defined with the left software limit switch.
440	ErrUP	underpotential	DC-voltage on the capacitors too low. Check supply voltage.
441	ErrUph	phase failure	One phase of the input voltage is missing (ripple detection)

* : This option or function is not used. If you have this error anyway do the following :

1) Reload the inverter parameters.
2) If the fault is persistent, replace the inverter.

DIAGNOSE FAILURE 401: BUS-ERROR (COMMUNICATION BUS ERROR)

If the inverter doesn't receive requests from the wash computer (= no serial communication), the inverter will generate BUS error after some time (about 10-30 seconds).

1. Check at the end of the wash cycle, if the power supply contactor of the frequency inverter switches off the power on all phases.	Replace the contactor if the problem is persistent.

DIAGNOSE FAILURE 408: E. EF (EXTERNAL FAULT)

E. EF (External Fault) occurs if the speed search function is activated more than 10s during extraction.

After E. UP (Under Potential) the inverter makes an auto retry and activates the speed search function to pick up the motor during extraction. If this takes more than 10s there will be E. EF.

1. Check if the power supply is sufficient high and stable during extraction with load.	Repair the power supply.
2. Check if the drum rotates normally by hand.	Repair / clean what is necessary.
3. Check if the fault is persistent	If the fault is persistent, contact the manufacturer

DIAGNOSE FAILURE 420: OC-ERROR (OVERCURRENT)

1. Check if there is no short circuit on the output of the inverter. (loose wire of motor cable, motor windings, screws or other loose parts inside the motor terminal box,…)	Repair the short circuit.
2. Disconnect the motor cable from the inverter and try again.	If you still have the error with motor cable disconnected, replace the inverter.

DIAGNOSE FAILURE 421, 423: E.OH, E.OHI ERROR (INVERTER OVERHEAT)

If the Power-module (on the heatsink) of the inverter reaches a certain limit temperature, the inverter will generate OH error.

If the interior of the inverter reaches a certain limit temperature, the inverter will generate OHI error.

1. Check if the cooling fan of the inverter (if present) rotates normally.	Replace the cooling fan on the inverter (on the heatsink of the inverter).
2. Check if the cooling fan in the washer that takes fresh air to the inverter's environment (if present) rotates normally.	Replace the cooling fan of the washer.
3. Check if the heatsink or the cooling fans are not clogged with dust/dirt so that fresh air can circulate freely.	Clean what is necessary.
4. Check if the ambient temperature of the washer is within the specified limits (see installation manual).	Take care that the ambient temperature is within the specified limits.

DIAGNOSE FAILURE 422: E.OH2 ERROR (MOTOR PROTECTION)

If the motor current is higher than allowed for a longer time, the inverter will activate the electronic overcurrent protection to prevent the motor from overheating.

1. Check if the drum rotates normally by hand.	Repair / clean what is necessary.
2. Check if the motor windings are OK.	Replace the motor.
3. Check if the fault is persistent	If the fault is persistent, contact the manufacturer

DIAGNOSE FAILURE 424 / 425: E.OL / E.OL2 ERROR (INVERTER OVERLOAD)

If the motor current of the inverter is abnormal high for some time, the inverter will generate E.OL error.

1. Check if the power supply is sufficient high and stable during extraction with load.	Repair the power supply.
2. Check if the drum rotates normally by hand.	Repair / clean what is necessary.
3. Check if the motor windings are OK.	Replace the motor.

DIAGNOSE FAILURE 426: E. OP (OVERVOLTAGE)

1. Check if there was a high unbalance during extraction, which can be caused by putting only half loads in the machine.	Put always a full load in the machine drum. Do not put other material than textile linen (fabrics) in the machine.
2. Check if the supply voltage is not too high	Reduce the supply voltage
3. Check if the correct brake resistor (if needed) is connected to the correct terminals.	Connect the correct brake resistor correctly

FAILURE 500-520: MEMORY ERRORS

If a memory error occurs then something is going wrong with the EEPROM.

Try to reload the washing Programs. Check for source of electrical „noise“.

FAILURE 550: DAQ VERSION ERROR

Failure 550 occurs when after installing a new wash computer software, the DAQ memory structure is not compatible anymore. As a result you will see at the Advanced Setup Menu that the DAQ memory segments are switched off. There are two ways to reset the DAQ memory. Automatically by loading the wash computer default settings at the Configuration menu. Or by the Trace-Tech PC software for which the DAQ memory is of importance.

FAILURE 551: DAQ WRITE ERROR

Failure 551 occurs when the wash computer fails to write data in the DAQ Traceability memory Segment.

Reset the DAQ Traceability Memory Segment.

If the problem is persistent, replace wash computer. Check for last wash computer softw version first.

(Traceability function can be switched off in the Advanced Menu.)

FAILURE 552: DAQ FULL ERROR

Failure 552 occurs when the wash computer DAQ memory is completely filled with traceability data.

The data should be removed by the Traceability PC software.

At the Advanced Menu : it is shown that the memory is „Full“.

As a result no more wash cycle data can be stored anymore.

(Traceability function can be switched off in the Advanced Menu.)

FAILURE 553: STORE DAQ>PC DATA

Failure 553 occurs when 85% of the DAQ Traceability memory Segment contains wash cycle data.

It’s a warning that the data should be unloaded by the Traceability PC software before the DAQ Traceability memory Segment is completely filled up.

This is only an informative message shown at the end of the wash cycle.

By opening the door, the message is removed automatically and the next wash cycle can be started.

(Traceability function can be switched off in the Advanced Menu.)

FAILURE 600-628: SOFTWARE ERRORS

Software errors must never occur. If a software error message occurs inform the manufacturer.

9. SERVICE INFORMATION

⚠ **ATTENTION!**
PROFESSIONAL REPAIRS IN ELECTRO INSTALLATION CAN BE CARRIED OUT ONLY BY SERVICE ORGANIZATION WITH PERMISSION GIVEN BY PRODUCER / SUPPLIER.

IN CASE OF ANY MAINTENANCE OR REPAIR, DISCONNECT THE MACHINE FROM SOURCE OF ENERGY AND WAIT UNTIL THE MACHINE COOLS DOWN OR DRAINS WATER.

PLEASE FOLLOW ALL INSTRUCTIONS IN THE MANUALS AND THE LABELS AND AS WELL AS VALID BASIC SECURITY LAWS IN ORDER TO PREVENT BURNS AND SCALDS AND INJURIES CAUSED BY ELECTRICITY.

9.1. MAINTENANCE

Remove dirt from the keyboard by a damp cloth after disconnection from the power supply.

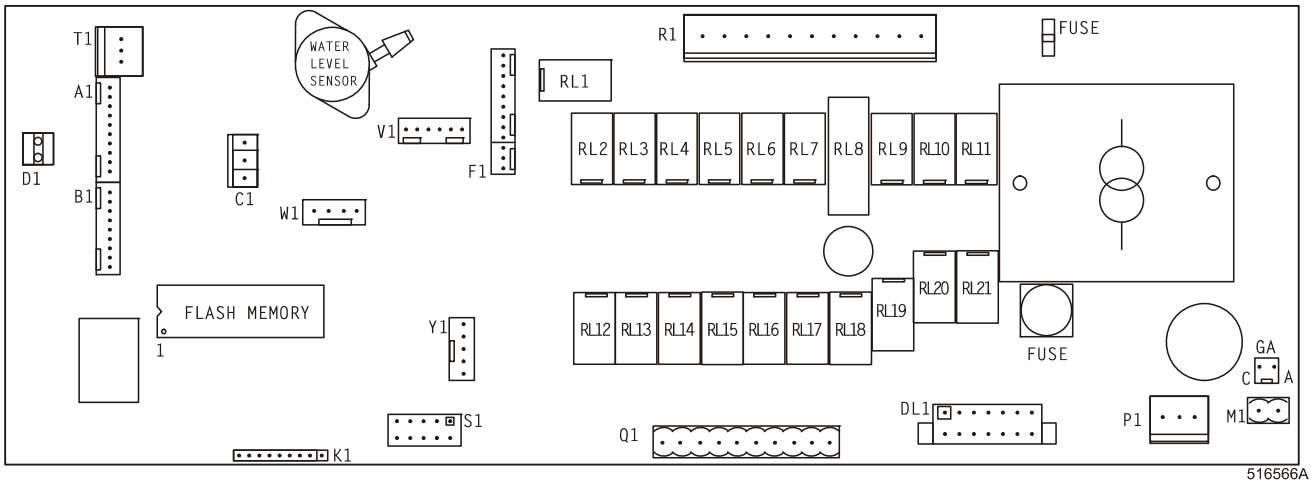
⚠ **ATTENTION!**
DO NOT USE AGGRESSIVE SOAPS, CAUSTIC CHEMICALS, GASOLINE OR OTHER PETROCHEMICAL SUBSTANCES WHICH CAN DAMAGE THE KEYBOARD.

9.2. INFORMATION FOR SERVICE

⚠ **ATTENTION!**
EVERY CIRCUIT BOARD HAS A STICKER PLACED ON THE EPROM, WHICH SPECIFIES THE VERSION AND THE DATE OF THE SOFTWARE. THIS DATA ALONG WITH THE MACHINE SERIAL NO., ORDER CODE MUST BE GIVEN IN ALL CORRESPONDENCE OR INQUIRIES TO THE MANUFACTURER.

XXX-VVV
XXX = Hardware version 4 : **663**, Hardware version 5 : **764**
(Software for the GRAPHITRONIC washing machine computer)
VVV = Version

9.3. PROGRAMMER CIRCUIT BOARD



⚠ WARNING!
CONNECTION TO THE WRONG VOLTAGE SUPPLY MAY CAUSE SERIOUS BODILY INJURY AS WELL AS DAMAGE TO THE ELECTRONIC PARTS AND TO THE WASHING MACHINE ITSELF.

- Voltage : 200-240 Vac, 50/60 Hz
- Power : max 16 VA
- Memory : EPROM (contains the software)
  EEPROM (contains the customized programs)
- Outputs : 21 relays
- Serial interface : RS485 (2 wire) networking between wash computer and external device (PC Computer)
- Display : LCD display

9.4. INSTRUCTIONS FOR REPLACING THE ELECTRONIC BOARD AND KEYPAD

- ❑ Switch off the main power supply.
- ❑ Open the cover plate of the washing machine.
- ❑ Remove the connectors from the circuit board and remove the little hose from the level sensor.
- ❑ Remove the combination keyboard - electronic timer by the front side of the fascia panel. Remove the two screws and pull the keypad carefully by the front side.
- ❑ Put the new combination keyboard – electronic timer into the machine and tighten the two screws.
- ❑ Reconnect all the connectors and put the little hose back on the level sensor.
- ❑ Close the cover plate of the washing machine.
- ❑ Now you can Switch On the power supply.
- ❑ The display should illuminate.

⚠ **ATTENTION!**
MAKE SURE THAT THE LITTLE HOSE OF THE LEVEL SENSOR IS WELL TIGHTEND WITH A FASTENER. IF THE HOSE IS NOT AIR TIGHT THEN THE LEVEL SENSOR WILL NOT MAKE A CORRECT MEASUREMENT

MAKE SURE THAT YOU DON'T DAMAGE THE FLEX CABLE OF THE KEYPAD WHEN YOU PUT THE GRAPHITRONIC WASH COMPUTER BACK INTO THE MACHINE.

9.5. INSTRUCTIONS FOR INSTALLING NEW SOFTWARE

- ❑ Switch off the main power.
- ❑ Open the cover plate of the washing machine.
- ❑ Take the combination keyboard-electronic timer out of the machine. See also paragraph 9.4.
- ❑ The EPROM with the implemented software is the only IC on the logic board that can be removed.
- ❑ Take the EPROM out of the IC-holder and replace it by a new one.
- ❑ Make sure that you put the new chip at the right position. See picture.
- ❑ Put the combination keyboard-electronic timer back at its original position.
- ❑ Reconnect all the connectors and put the little hose back on the level sensor. **(fastener!)**
- ❑ Close the cover plate of the washing machine.
- ❑ Switch on the main power.
- ❑ The display should illuminate.
- ❑ If the software is compatible with the previous software: the new software can be used without re-initialization.
- ❑ You have to clear all the error messages in the Service-menu, if you want to make a correct inspection of the functioning of the new installed software.
- ❑ If the software is not 100% compatible with the previous software version:
  - The new software will generate a diagnostic message 35. When fault message 35 occurs you have to reset the settings of the configuration and initialization menu.
  - This can be easily done by Selecting **Reset Factory Settings** in the Configuration Menu.
    ➔ **This is explained in Chapter 3 : Basic Description of Controls.**
  - Go through the Menu items of the Configuration and Initialization Menu one by one to ensure that all the settings do correspond with the ones you prefer.
  - All the Custom Settings will be lost.
- ❑ Switch the power Off/On.
- ❑ Now the GRAPHITRONIC Washing machine computer is ready to start a new cycle.

⚠ **ATTENTION!**
FOR A PRACTICAL WAY OF WORKING FOR CHANGING THE EPROM : TAKE THE ELECTRONIC BOARD OUT OF THE WASHING MACHINE BY THE FRONT SIDE OF THE FACIA PANEL.
See Paragraph 9.4.

10. SPECIFICATION OF YOUR MACHINE

❑ MACHINE DATA

- type :……
- serial number :……
- voltage :……
- water supply : ❑ cold soft ❑ cold hard ❑ hot soft
- heating : ❑ electrical…… kW ❑ hot water ❑ steam
- phases : ……
- frequency : ……
- output : ……

❑ ELECTRONIC DATA

Programmer type :

- serial number : ……
- software version : ……
- software date : ……
- keyboard : ……

❑ MACHINE CONFIGURATION DATA

FUNCTION		DATA ENTERED		
◆ MACHINE TYPE	:	……		
◆ BRIGHTNESS DISPLAY	:	……		
◆ SUPPLY VOLTAGE	:	……		
◆ TOTAL N° OF INLETS	:	❑ 2	❑ 3	
◆ DRAIN VALVE 2	:	❑ Yes	❑ No	
◆ WATER RECYCLE INLETS	:	❑ Yes	❑ No	
◆ SUPPLY SIGNAL A	:	❑ Soap Box	❑ Liquid	
B	:	❑ Soap Box	❑ Liquid	
C	:	❑ Soap Box	❑ Liquid	
D	:	❑ Soap Box	❑ Liquid	
E	:	❑ Soap Box	❑ Liquid	
◆ LIQUID SOAP SUPPLY	:	❑ Yes	❑ No	
◆ MINIMUM LEVEL START SUPPLY	:	……	Units	
◆ TEMPERATURE	:	❑ Celsius	❑ Fahrenheit	
◆ FULL HEATING	:	……	%	
◆ WET CLEANING	:	❑ Yes	❑ No	
◆ DRUM COMPARTMENTS	:	❑ 2	❑ 3	
◆ WALL MODEL	:	❑ Yes	❑ No	
◆ AUTO POSITION DRUM	:	❑ Yes	❑ No	
◆ ADVANCED MENU	:	❑ Yes	❑ No	

❑ MACHINE INITIALIZATION DATA

FUNCTION		DATA ENTERED				
◆ LANGUAGE	:	……				
◆ SERVICE INTERVALL	:	……				
◆ BUZZER TIME	:	……	Seconds			
◆ ALLOW ADVANCE	:	❑ Yes	❑ No			
◆ AUTOMATIC COOLDOWN	:	❑ Yes	❑ No			
◆ WAIT FOR TEMP	:	❑ Yes	❑ No			
◆ MANUAL OVERRIDE	:	❑ Yes	❑ No			
◆ TEMPERATURE BALANCE	:	❑ Yes	❑ No			
◆ WASH MOTOR ON TIME	:	……	Seconds			
◆ WASH MOTOR OFF TIME	:	……	Seconds			
◆ ALLOW DISPLAY ECONOMIC	:	❑ Yes	❑ No			
◆ HOT WATER HEATER TEMPERATURE	:	❑ 50	❑ 60	❑ 70	❑ 80	°C
◆ TEMP OVERSHOOT PROTECTION	:	- ……	%			
◆ MAX. HEATING TIME	:	……	Minutes			
◆ MAX. WATERFILL TIME	:	……	Minutes			
◆ OVERFILL DETECTION	:	……	Units			
◆ WAIT SOAP	:	❑ Yes	❑ No			
◆ MAIN WATER PRESSURE	:	❑ HIGH	❑ LOW			
◆ DOOR POSITION DIRTY TUNE	:	……				
◆ DOOR POSITION HYG. TUNE	:	……				

IMPORTANT!

MACHINE TYPE:	
PROGRAMMER: **GRAPHITRONIC**	
INSTALLATION DATE:	
INSTALLATION CARRIED OUT BY:	
SERIAL NUMBER:	
ELECTRICAL DETAILS: **.....VOLT.....PHASE.....HZ**	

NOTE:

ANY CONTACTS WITH YOUR DEALER REGARDING MACHINE SAFETY, OR SPARE PARTS, MUST INCLUDE THE ABOVE IDENTIFICATION.

MAKE CERTAIN TO KEEP THIS MANUAL IN A SECURE PLACE FOR FUTURE REFERENCE.

DEALER: