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1. Test programs

		Indication
Activate test mode:	- Close the door - Set program selector switch to position 0 ("OFF") - Set program selector switch to position 8 (6:00 o'clock) - Wait until the start LED is flashing. - Actuate and hold the “Spin speed” button - Set program selector switch to position 9 (turn clockwise) - Release the “Spin speed” button. - Error display "Last program" **Note:** All REMANENT errors will be reset.	LED Start/Pause is flashing state LED’s and seven-segment display are illuminated for a period of 3 sec **no error:** **error:** F: XX
Select test program:	- Select the test program with the program selector switch. Program selector position 1 is equal to Pos.1, etc. Pos.1 Safety test Pos.2 Automatic test Pos.3 Motor Pos.4 Valves Pos.5 Pump Pos.6 Heater Pos.7 Water level (Pressure sensor) Pos.8 Aqua sensor (Turbidity sensor) Pos.9 Flow sensor Pos.10 not implemented Pos.11 not implemented Pos.12 not implemented Pos.13 not implemented Pos.14 not implemented Pos.15 3D Sensor	LED Start/Pause is flashing
Start test program:	- Actuate Start/Pause button	LED Start/Pause is illuminated
Abort test program:	- Actuate Start/Pause button or - turn program selector switch	LED Start/Pause is flashing
Leave test mode:	- Set program selector switch to position 0 ("OFF")	

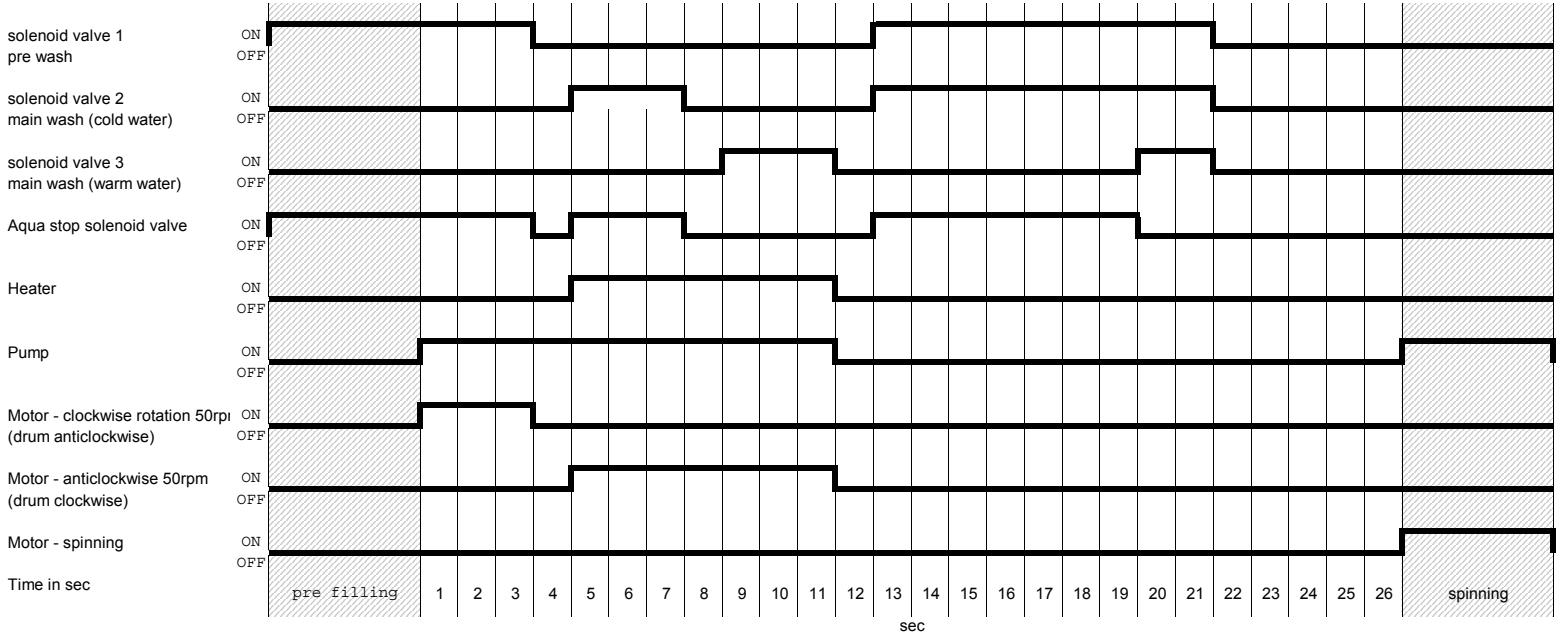
controls: F20-E (ME77, 107, 147, 197)
F20-E UL (ME104, 116)

Pos.1 Safety

Test		Indication:
Ground and leakage current	- Door is locked - Wait about 15 sec. - Pull out mains plug of washing machine - Put mains plug into the safety testing device - Door must be locked and program selector switch must NOT be at position 0 ("OFF") - Run the test program of the safety testing device **Note:** The heater test should be conducted, before the safety test is started. Therefore is secured, that both heater fuses are working. **Note:** There is no need of water intake or to switch ON the heater! The control is designed, that all components are included in the safety test.	LED Start/Pause is illuminated

Pos.2 Automatic test

Test		Indication:
Quick test of all components (Final factory test)	- Door is locked	LED Start/Pause is illuminated



controls: F20-E (ME77, 107, 147, 197)
F20-E UL (ME104, 116)

Pos.3 Motor

Test		Indication:
Reversing	- Door is locked - Code of speed variant is displayed - Pump is actuated - 4 sec: drum is being rotated anticlockwise at 50rpm - 2 sec: break - 2 sec: drum is being rotated clockwise at 50rpm	LED Start/Pause is illuminated seven-segment display: 16 => 1600rpm 14 => 1400rpm 12 => 1200rpm
Spinning and pumping	- Spin speed is increased to the maximum - Display "spin speed is reached" - The appliance is spinning for 3 min with maximum spin speed **Note:** unbalance detection is disabled **Note:** catastrophe limit unbalance detection is enabled	state LED "spinning" is illuminated

Pos.4 Valves

Test		Indication:
Solenoid valve	- Door is locked - Pump is actuated until the appliance is completely drained - Water is being taken in via valve V1 for about 5 sec - Water is being taken in via valve V2 for about 5 sec **Note:** only cold water appliances, otherwise 5 sec break - Water is being taken in via valve V3 for about 5 sec **Note:** only warm water appliances, otherwise 5 sec break - water is taken in via valves V1 and V2 **Note:** When overflow level is reached, the pump is actuated for 90 sec and "F:31" is displayed.	LED Start/Pause is illuminated

Pos.5 Pump

Test		Indication:
Pump	- Door is locked - Pump is actuated - Pump is switched off - Break for about 2 sec - Pump is being actuated for about 2 sec - Door is unlocked	LED Start/Pause is illuminated LED Start/Pause is flashing

Pos.6 Heater

Test		Indication:
Heater	- Door is locked - Water is taken in to heater level - Heater is switched on **Note:** The heater is switched off after 30 minutes or after the temperature of 85°C is reached.	LED Start/Pause is illuminated

Pos.7 Water level (Pressure sensor)

Test		Indication:
Adjustment of pressure sensor	- Door is locked - Pump is actuated - When the appliance is completely drained: -> adjustment of pressure sensor - Pump is switched off - Water is taken in to a level of 2…4 cm above drum bottom	LED Start/Pause is illuminated

controls: F20-E (ME77, 107, 147, 197)
F20-E UL (ME104, 116)

Pos.8 Aqua sensor (Turbidity sensor)

Test		Indication:
Adjustment of aqua sensor	- Door is locked - Pump is actuated - When the appliance is completely drained: -> adjustment of aqua sensor - Pump is switched off - Door is unlocked after 10 sec	LED Start/Pause is illuminated LED Start/Pause is flashing

Pos.9 Flow sensor

Test		Indication:
Flow sensor	- Door is locked - Pump is actuated until the appliance is completely drained - Pump is switched off - Water is taken in until 5 litres are measured (Tolerance is depending of the water supply pressure) -> the drum is visible covered with water - Door is unlocked **Note:** Test program runs only, when the flow sensor is implemented.	LED Start/Pause is illuminated LED Start/Pause is flashing

Pos.15 3D Sensor

Test		Indication:
3D Sensor (communication)	- Test is being run - No error - Error	LED Start/Pause is illuminated seven-segment display: "---" "cor" "Err" LED Start/Pause is flashing

2. Final factory test

		Indication:
Activate test flag (not relevant for customer service)	- Close the door - Set program selector switch to position 0 ("OFF") - Set program selector switch to position 8 (6:00 o'clock) - Wait until the start LED is flashing. - Actuate and hold the “Spin speed” button - Set program selector switch to position 7 (turn anticlockwise) - Release the “Spin speed” button - Pull the mains plug within 10 sec - Set program selector switch to position 13 The automatic test starts, when the appliance is connected with the mains	 LED Start/Pause is flashing state LED’s and seven-segment display are illuminated for a period of 3 sec

3. Error search

		Indication:
Activate error search:	- Close the door - Set program selector switch to position 0 ("OFF") - Set program selector switch to position 4 (3:00 o'clock) - Wait until the start LED is flashing. - Actuate and hold the “Spin speed” button - Set program selector switch to position 5 (turn clockwise) - Release the “Spin speed” button.	 LED Start/Pause is flashing

controls: F20-E (ME77, 107, 147, 197)
F20-E UL (ME104, 116)

		Indication:
Display of first error of the chosen program	- Select the program with the program selector switch. Program selector position 1 is equal to Pos.1, etc. Pos.1 error of "power-on" states after last program Pos.2 error of last program Pos.3 error of last program -1 Pos.4 error of last program -2 Pos.5 error of last program -3 Pos.6 error of last program -4 Pos.7 error of last program -5 Pos.8 error of last program -6 Pos.9 not implemented Pos.10 not implemented Pos.11 not implemented Pos.12 not implemented Pos.13 not implemented Pos.14 not implemented Pos.15 not implemented	LED Start/Pause is illuminated seven-segment display (flashing): "F:aa" "F:aa" "F:aa" "F:aa" "F:aa" "F:aa" "F:aa" "F:aa"
Display of first until fifth error of the chosen program	A maximum of 5 errors are stored for each program. The order of errors is equal to the appearance. - Actuate the “Finish in” button to display the next occurred error. 0 or 1 Error audible signal: “beep beep” 2 Errors “Finish in” button is actuated “Finish in” button is actuated : 3 Errors “Finish in” button is actuated “Finish in” button is actuated “Finish in” button is actuated : 4 Errors “Finish in” button is actuated “Finish in” button is actuated “Finish in” button is actuated “Finish in” button is actuated : 5 Errors “Finish in” button is actuated “Finish in” button is actuated “Finish in” button is actuated “Finish in” button is actuated “Finish in” button is actuated :	seven-segment display (flashing): "F:aa" "F:aa" 1. Error "F:bb" 2. Error "F:aa" 1. Error : : "F:aa" 1. Error "F:bb" 2. Error "F:cc" 3. Error "F:aa" 1. Error : : "F:aa" 1. Error "F:bb" 2. Error "F:cc" 3. Error "F:dd" 4. Error "F:aa" 1. Error : : "F:aa" 1. Error "F:bb" 2. Error "F:cc" 3. Error "F:dd" 4. Error "F:ee" 5. Error "F:aa" 1. Error : :
Leave test mode:	- Set program selector switch to position 0 ("OFF")	

controls: F20-E (ME77, 107, 147, 197)
F20-E UL (ME104, 116)

4. List of error numbers

FATAL ERROR : - A restart of a washing program is possible by switching OFF/ON appliance
REMANENT ERROR : - In case of remanent error, it's impossible to restart any washing program by switching OFF/ON appliance (error will remain).
- Error can be erased by activating the test mode

⊗ Malfunction is displayed during the washing program.

Error No	Error display: normal mode	test mode	Error description:	Possible reason:	Possible effect:	Corrective:	Inspection:
16 ⊗	F: 16	F: 16	door lock open	- door is open - door switch is not actuated	- washing program is halted - a restart is possible - error will not be stored	- close door - check door lock - check wire harness	Normal mode: start any washing program with a open door
17 ⊗	F: 17	F: 17	water filling time exceeded (conventional measurement)	- water tap is closed - water pressure <1bar at supply - filter or supply is blocked - solenoid valve is broken - aqua stop solenoid valve is broken - pressure sensor is broken	- washing program is halted - pump starts after 5 min - a restart is possible	- open water tap - check components - check wire harness	Pos.7 Water level (Pressure sensor) Pos.4 Valves
18 ⊗	F: 18	F: 18	pumping time exceeded	- pump is blocked or broken - pressure sensor is broken - hose to the pressure sensor is blocked - draining hose is blocked	**FATAL ERROR** without 90sec pumping - washing program is aborted - door is locked, if possible - operator control actions are blocked - the current indication is frozen	- Reset error with OFF and ON - check components - check wire harness	Pos.5 Pump
19		F: 19	heating time exceeded	- heating circuit is broken - set temperature can not be achieved - low voltage - fossil heater or heater is broken - heater relay is blocked	- washing program will be finished without heating	- check heater - check wire harness - check control	Pos.6 Heater
20		F:20	unexpected heating	- NTC is broken (out of range) - heater relay is stuck - the heater is actuated in a non heating period	**FATAL ERROR** - washing program is aborted - door is locked, if possible - the pump removes water - operator control actions are blocked - the current indication is frozen	- Reset error with OFF and ON - check NTC - check heater - replace power module	Pos.6 Heater
23 ⊗	F: 23	F: 23	aqua stop actuated	- water in the base tub - leaky water system - aqua stop switch is blocked / broken	- washing program is aborted - the pump is actuated	- check leak tightness of water system - check aqua stop switch - check wire harness	Normal mode
25		F: 25	error of Aqua Sensor (error of Turbidity Sensor) calibration of operating point failed	- calcified Aqua Sensor (Turbidity Sensor)	- washing program will be finished without rinsing cycles	- check Aqua Sensor - check wire harness	Pos.8 Aqua sensor (Turbidity sensor)
26		F: 26	error of analogue pressure sensor (provides error voltage)	- pressure sensor broken - hose to the pressure sensor is blocked	**FATAL ERROR** - washing program is aborted - door is locked, if possible - the pump removes water - operator control actions are blocked - the current indication is frozen	- Reset error with OFF and ON - check pressure sensor - check hose to the pressure sensor - check wire harness	Pos.7 Water level (Pressure sensor)
27		F: 27	error of offset adjustment of analogue pressure sensor	- pressure sensor is broken	The adjustment will be skipped. The old value will be used.	- check pressure sensor - check wire harness	Pos.7 Water level (Pressure sensor)

controls: F20-E (ME77, 107, 147, 197)
F20-E UL (ME104, 116)

Error No	Error display: normal mode	test mode	Error description:	Possible reason:	Possible effect:	Corrective:	Inspection:
28		F: 28	error of flow sensor (provides implausible values)	- flow sensor is broken	The water intake is changed from volume based to time based.	- check flow sensor - check wire harness	Pos.9 Flow sensor
29 ⊗	F: 29	F: 29	no water filling detected by flow sensor (fast measurement)	- water tap is closed - water pressure <1bar at supply - filter is blocked - supply is blocked - solenoid valve is broken - aqua stop solenoid valve is broken - pressure sensor is broken	- washing program is halted - pump starts after 5 min - a restart is possible	- open water tap - check components - check wire harness	Normal mode Pos.7 Water level (Pressure sensor) Pos.4 Valves
31		F: 31	overflow level exceeded	- pump is blocked - draining hose is blocked - solenoid valve is stuck - adjustment of pressure sensor is incorrect └ pressure sensor is blocked └ hose to the pressure sensor is blocked	- water level is pumped down below overflow level - the program is continued	- check solenoid valve - check pump - check pressure sensor - check hose to the pressure sensor - check wire harness - check draining hose	Pos.7 Water level (Pressure sensor) Pos.4 Valves Pos.5 Pump
32		F: 32	spinning interruption	- unbalance detected	- spinning interruption	- no need - no need to take into consideration	Normal mode
34 ⊗	F: 34	F: 34	door lock can not be locked	- door lock is broken - door hook is stuck - door is stuck - stiff gasket	**FATAL ERROR** - washing program is aborted - door is unlocked, if possible - operator control actions are blocked - the current indication is frozen	- Reset error with OFF and ON - check door lock - check mechanic - check wire harness	Normal mode
35		F: 35	Door lock can't unlocked	- door lock is broken - door hook is stuck - door is stuck - stiff gasket	**FATAL ERROR** - Door is locked - door is unlocked, if possible	- Reset error with OFF and ON - check door lock - check mechanism - check wire harness	Normal mode
36 ⊗	F: 36	F: 36	door lock circuit defect	- control is broken └ Triac is broken └ Relays is broken	**FATAL ERROR** - washing program is aborted - door is unlocked, if possible - operator control actions are blocked - the current indication is frozen	- Reset error with OFF and ON - check control - check wire harness	Normal mode
37		F: 37	error of temperature sensor: break	- NTC is broken	- washing program will be finished without heating	- check NTC - check wire harness	Pos.6 Heater
38		F: 38	error of temperature sensor: short-circuit	- NTC is broken	- washing program will be finished without heating	- check NTC - check wire harness	Pos.6 Heater
42 ⊗	F: 42	F: 42	uncontrolled run-up of drum motor	- control is broken └ Triac is broken	**REMANENT ERROR** - washing program is aborted - door is unlocked, if possible - operator control actions are blocked - the current indication is frozen	- Reset error with activating test mode - check control	Normal mode Pos.3 Motor

controls: F20-E (ME77, 107, 147, 197)
F20-E UL (ME104, 116)

Error No	Error display: normal mode	test mode	Error description:	Possible reason:	Possible effect:	Corrective:	Inspection:
43 ⊗	F: 43	F: 43	drum motor does not rotate	- speed sensor is broken - drum is blocked by laundry - motor is blocked - control is broken └ Triac is broken	**REMANENT ERROR** - washing program is aborted - door is unlocked, if possible - operator control actions are blocked - the current indication is frozen	- Reset error with activating test mode - check load - check speed sensor - check control - check wire harness	Normal mode Pos.3 Motor
44 ⊗	F: 44	F: 44	test of relay for changing direction of drum motor failed	- control is broken └ Triac is broken	**REMANENT ERROR** - washing program is aborted - door is unlocked, if possible - operator control actions are blocked - the current indication is frozen	- Reset error with activating test mode - check control	Normal mode Pos.3 Motor
59		F: 59	3D-Sensor: measurement error or plausibility error	- wire harness is broken - EMC failure - control is broken - 3D-Sensor is broken - magnet not in position - software of 3D sensor is incompatible	reduced spinning speed	- check wire harness - check 3D sensor - check position of magnet - check control	Pos.15 3D Sensor
60		F: 60	flow sensor: too low or too high values	- flow sensor is broken - turbulent water in the sensor or hose	The water intake is changed from volume based to time based.	- check flow sensor - check filter in solenoid valve - check wire harness	Pos.9 Flow sensor
61		F: 61	implausible door lock status	- door is locked but open - emergency unlock was actuated by hand	**FATAL ERROR** - washing program is aborted - door is locked, if possible - the pump removes water - operator control actions are blocked - the current indication is frozen	- Reset error with OFF and ON - check door lock - check mechanic - check wire harness	Normal mode
63 ⊗	F: 63	F: 63	System error	- incorrect variant coding - no communiction between Power Unit and Operating Unit.	**FATAL ERROR** - washing program is aborted - door is unlocked possibly - operator control actions are blocked - the current indication is frozen	- Reset error with OFF and ON - check variant coding in test mode - check D-Bus wire harness - replace power module	Normal mode
67 ⊗	F: 67	F: 67	Implausible or inexistent variant coding	- variant code is incompatible between the controls - software of controls is incompatible	**FATAL ERROR** - washing program is aborted - door is locked, if possible - the pump removes water - operator control actions are blocked - the current indication is frozen	- Reset error with OFF and ON - repeat variant coding - replace control(s) - reprogram the control(s) (development only)	Variant coding

controls: F20-E (ME77, 107, 147, 197)
F20-E UL (ME104, 116)

5. Variant coding

The customer service code is at the appliance:
> at a label placed at the inner surface of the door
> at the rating plate at the rear panel of the appliance

		Indication:
Activate variant coding mode:	- Close the door - Set program selector switch to position 0 ("OFF") - Set program selector switch to position 12 (9:00 o'clock) - Wait until the start LED is flashing. - Actuate and hold the “Spin speed” button - Set program selector switch to position 11 (turn anticlockwise) - Release the “Spin speed” button.	 LED Start/Pause is flashing LED Start/Pause is illuminated
Select variant:	- Select the variant with the program select switch. Program selector position 1 is equal to Pos.1, etc. - The current variant code is incremented, when the "Finish in" button is pressed. **Pos. 1** ***Setting Speed variant*** *(range 0…7)* 0 1600 rpm oscillating system 1600 1 1400 rpm oscillating system 1600 2 1200 rpm oscillating system 1600 3 1000 rpm oscillating system 1600 4 1400 rpm oscillating system 1400 5 1200, 1000 rpm oscillating system 1400 6 1200 rpm oscillating system 1200 7 1000 rpm oscillating system 1200 **Note:** All information concerning the oscillating system is printed at the top weight.	The current variant code is displayed in the seven-segment display
	Pos. 2 ***Setting Aqua stop / Warm water*** *(range 0…3)* 0 Cold water with Aqua stop 1 Warm water without Aqua stop 2 Cold water without Aqua stop	The current variant code is displayed in the seven-segment display
	Pos.3 ***Setting Door lock*** *(range 0…1)* 0 PTC door lock 1 Magnetic door lock	The current variant code is displayed in the seven-segment display
	Pos. 4 ***Setting Flow sensor*** *(range 0…1)* 0 without Flow sensor 1 with Flow sensor	The current variant code is displayed in the seven-segment display
	Pos. 5 ***Setting Aqua sensor*** *(Turbidity sensor) (range 0…3)* 0 without Aqua sensor 1 with Aqua sensor 2-3 not used	The current variant code is displayed in the seven-segment display

controls: F20-E (ME77, 107, 147, 197)
F20-E UL (ME104, 116)

		Indication:
Select variant:	**Pos. 6** ***Setting VT-Set*** *(range 0…4)* Customer Service PCB: - Look up control (MExxxx) on rating plate or door label - Look up coding on document "spare part information" (For development: "FK_VersionSurvey_HW+SW" (5500 000 003 4256)) Serial PCB: Coding = 0, not changeable	The current variant code is displayed in the seven-segment display
	Pos.7 ***Setting Language cluster*** *(range 0…7)* Coding = 0, not changeable	The current variant code is displayed in the seven-segment display
	Pos.8 ***Setting Language*** *(range 0…5)* Coding = 0, not changeable	The current variant code is displayed in the seven-segment display
	Pos.9 ***Setting Brand*** *(range 0…7)* 0 regional brand fascia 1 Siemens fascia and regional brand printing 2 Bosch fascia 3-7 not used	The current variant code is displayed in the seven-segment display
	Pos.10 ***Setting Key variant*** *(range 0…7)*	The current variant code is displayed in the seven-segment display
	0 Bosch	Int Pre T- Ets Start Li Xrin Sp-
	0 Siemens and regional brands	T- Sp- Ets Int Pre Li Xrin Start
	1 Bosch	Int Pre T- Ets Start Li AgX Sp-
	1 Siemens and regional brands	T- Sp- Ets Int Pre Li AgX Start

Legend:

Int	Intensive, Stains
Pre	Prewash
Li	Less ironing
Xrin	Extra rinse
Prin	Power rinse
AgX	Water plus
T-	Reduce temperature
Sp-	Reduce spin speed
Ets	End time selection
Start	Start/Pause

controls: F20-E (ME77, 107, 147, 197)
F20-E UL (ME104, 116)

		Indication:
Select variant:	2 Bosch	Int Pre T- Ets Start Li Prin Sp-
	2 Siemens and regional brands	T- Sp- Ets Int Pre Li Prin Start
	3-7 Bosch	Sp- Sp- Sp- Ets Start Ets Sp- Sp-
	3-7 Siemens and regional brands	Sp- Sp- Ets Sp- Sp- Ets Sp- Start
	Pos.11 ***Setting Menu variant*** *(range 0)* Coding = 0, not changeable	The current variant code is displayed in the seven-segment display
	Pos.12 ***Setting Load display*** *(range 0...1)* 0 with load display - not used 1 without load display	The current variant code is displayed in the seven-segment display
	Pos.13 ***Setting Child lock*** *(range 0)* Coding = 0, not changeable	The current variant code is displayed in the seven-segment display
	Pos.14 ***Setting Valve terminal*** *(range 0)* Coding = 0, not changeable	The current variant code is displayed in the seven-segment display
	Pos.15 ***Setting Control*** *(range 0...4)* 0 (P) not used 1 (A) not used 2 (E) EU ME77, ME107, ME147, ME197 UL ME104, ME116 3 (D) not used 4 (S) not used	The current variant code is displayed in the seven-segment display
Set new variant: (Update variant code in power module)	- All changes are valid after the "Start/Pause" button is actuated - Set program selector switch to position 0 ("OFF") **Note:** The variant coding mode is left after the "Start/Pause" button is actuated.	*Display OFF / ON* uPd *Display OFF / ON* *normal mode*

Legend:

Int	Intensive, Stains
Pre	Prewash
Li	Less ironing
Xrin	Extra rinse
Prin	Power rinse
AgX	Water plus
T-	Reduce temperature
Sp-	Reduce spin speed
Ets	End time selection
Start	Start/Pause

controls: F20-E (ME77, 107, 147, 197)
F20-E UL (ME104, 116)

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