

Service Test Mode

The washer control has a service test mode that can be utilized by the service technician in order to test critical components and to access error codes. This test mode will help the service technician to quickly identify failed or improper operation of washer components.

Caution: Testing is accomplished through built-in test procedures. Unplugging components for testing can damage component connections.

Machine must be in idle mode before entering test. Idle mode occurs when the washer has completed a cycle. If the cycle is interrupted, the washer will drain water when the power is re-applied. The water level switch must reset BEFORE the test mode can be entered. If water remains in the washer, manually drain the washer to reset the water level switch. A failed water level switch can cause an inability to enter the test mode.

To enter the test mode:	To exit the test mode:
<ol style="list-style-type: none"> 1. Press power button to clear any current cycles. <p>Note: The display must be blank to proceed.</p> <ol style="list-style-type: none"> 2. Disconnect the power for 30 seconds. 3. Reconnect power and within 30 seconds of reconnecting power: <ol style="list-style-type: none"> a. Press signal button. b. Press delay start button. c. Press signal button. d. Press delay start button. (The door will lock, then will display t01.) <p>Note: A washer left in the test mode will exit the test mode and unlock the door after a period of 2 hours.</p>	<ol style="list-style-type: none"> 1. Press signal button. 2. Press delay start button. 3. Press signal button. 4. Press delay start button. <p>Note: Attempting to exit the service mode by disconnecting the power will result in a locked washer.</p>

Test Mode	Description
t01 Model ID	Verifies (or sets on new board) the proper model id
t02 Error Codes	Lists up to 10 control-detected problems
t03 Software ID	Verifies using latest control-EEPROM-inverter software
t04 LED Illumination and Button Test	Verifies that all displays and buttons work
t05 Pump Test	Operates pump
t06 Pressure Switch Test	Fills to all 3 fill levels, then pumps out water
t07 Thermistor/Heater Test	Verifies that both the thermistor and heater work
t08 Hot Water Test	Verifies hot water valve works
t09 Cold Water Test	Verifies cold water valve works
t10 Tumble Test	Verifies washer tumbles (i.e. wash cycle)
t11 Spin Test	Verifies washer spins
t12 Dispenser Test	Verifies dispenser fill works—for all four fill modes
t13 EOL Test	Performs factory end-of-line test sequence
t14 Spin Test	Verifies washer spin speeds

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T e s t Mode	Press	Displays	Exit
t01	Start/ Pause	Display defines model id (01-03). Always displays"---" when control board replaced. Proper model must be set when control board replaced. Rotate knob until desired selection is displayed (01-03), then press and hold Start/Pause until beep.	Press Power. Returns to t01
t02	Start/ Pause	Displays the most recent error code. (E00=none) Repeat pressing Start/Pause to display up to previous 10 error codes. Press and hold Start/Pause to clear all error codes. (Will then display E00.)	Press Power. Returns to t02
t03	Start/ Pause	Displays software revision numbers. Press Start/Pause to alternate between COD (Control software version), EE (eeprom version), and InV (Inverter software version).	Press Power. Returns to t03
t04	Start/ Pause	Displays and tests loops on lighting of LED'S and cycle lights. Buttons beep when pressed.	Press Power. Returns to t04
t05	Start/ Pause	Displays P and operates pump for 60 seconds, then returns to t05.	Press Power. Returns to t05
t06	Start/ Pause	Water level control test. Pump runs and displays E at start (no water in tub). Press Start/Pause to advance. Water valve begins fill. Displays F when reaches FOAM level. Displays nI when reaches MAIN level, and briefly displays oF when reaches overflow level, then pumps water out. Displays E when empty.	Press Power. Pump runs. Returns to t06
t07	Start/ Pause	Water heater/thermistor test. (Note: Main level switch must be functional.) Fills with water to main level, then operates heater for up to 5 minutes. Displays temperature of water, as heated, in degrees F. After 5 minutes, water pumps out, then returns to t07.	Press Power. Pump runs. Returns to t07
t08	Start/ Pause	Water valve test. Displays hOt and pump runs. Fills with hot water. Maximum level is main level switch setting. Pumps out water and returns to t08.	Press Power. Pump runs. Returns to t08
t09	Start/ Pause	Water valve test. Displays Cld and pump runs. Fills with cold water. Maximum level is main level switch setting. Pumps out water and returns to t09.	Press Power. Pump runs. Returns to t09
t10	Start/ Pause	Tumble test. Displays tt. Wash basket spins in one direction for 5 seconds, pauses, then spins in the opposite direction for 5 seconds. Repeats until exit initiated. (Note: Beginning direction is random.)	Press Power. Pump runs. Returns to t10
t11	Start/ Pause	Spin speed-low spin/high spin test. Display shows rpm. Pump runs, displays 0, then wash basket ramps to 400 rpm. Press Start/Pause a second time to ramp to 1000 rpm. (May display 999 or 0 for 1000 rpm.) Then motor is unpowered, displays 0, pump runs, and returns to t11.	Press Power. Pump runs. Returns to t11
t12	Start/ Pause	Dispenser motor/mechanism test. Press Start/Pause to advance. Displays Pdt and fills via prewash compartment. Displays ddt and fills via wash compartment. Displays bdt and fills via bleach compartment. Displays Fdt and fills via fabric softener compartment. (Note: If main level reached during test, dispenser operation stops, pump runs, and returns to t12.)	Press Power. Pump runs. Returns to t12
t13	Start/ Pause	EOL test sequence. Not used for service.	Press Power. Returns to t13
t14	Start/ Pause	Spin speed ramp up test. Display shows rpm. Pump runs, displays 0, then wash basket ramps to 100 rpm, pauses, ramps to 350 rpm, pauses, then ramps to and holds at 1000 rpm. (May display 999 or 0 for 1000 rpm.)	Press Power. Pump runs. Returns to t14

Error Codes

Error Code	Description	Problem	Possible Cause/Action
E22	Fill timeout - No fill/slow fill	Fill time exceeds 8 minutes.	<ul style="list-style-type: none"> • Ensure manual water supply valves are fully open. • Inspect inlet hoses for kinks/obstructions. • Inspect water valve screens for restriction. • Check water valve functions - t08 for hot water, t09 for cold water. <p>If above steps do not clear the problem replace solenoid water valve.</p>
E23	Flood protect drain	Foam switch closes in idle state.	<ul style="list-style-type: none"> • Check water valve functions - t08 for hot water, t09 for cold water. • Check pressure switch foam contacts - t06 - first display should be E. • Off balance loads with heavy vibration can cause code - retry before replacing any component.
E30	Drain pump not present	Drain problems - no electrical signal from drain pump.	<ul style="list-style-type: none"> • Check drain pump - t05. • Check drain pump motor for open. • Check power to drain pump. • Check drain pump for stalling.
E31	Drain timeout	Slow drain - machine will have water - not full.	<ul style="list-style-type: none"> • Check drain pump - t05. • Check drain pump for restriction. • Check for drain restriction. • Drain height over 96-in. can cause code.
E38	Dispenser error	Correct reservoir is not found and 8 switches are seen when motor is running.	<ul style="list-style-type: none"> • Check dispenser - t12 (Note: Do not unplug connectors from dispenser motor unless replacing.)
E39	Dispenser timeout	No switches found in 45 seconds.	<ul style="list-style-type: none"> • Check dispenser - t12 (Note: Do not unplug connectors from dispenser motor unless replacing.)
E42	Drive motor - instantaneous current	Motor excess current draw.	<ul style="list-style-type: none"> • Check drive motor - t10 tumble, t11 spin, t14 spin. • Power down (unplug) washer, wait 30 seconds and retry. If code reoccurs, check drive motor windings. If motor windings OK, replace inverter. (You may see a burned spot on inverter.) (Note: Cannot occur with open motor winding.)

Error Code	Description	Problem	Possible Cause/Action
E43	DC Fault - Inverter	Inverter failure.	<ul style="list-style-type: none"> Non-recoverable error. Replace inverter control board.
E45	Drive motor - overload current	Load too heavy.	<ul style="list-style-type: none"> Check Motor - t10 tumble, t11 spin, T14 spin. Check mechanical faults - check belt, basket, bearing - rotate basket by hand. Power down (unplug) washer, wait 30 seconds and retry - if reoccurs, replace inverter. (Note: Cannot occur with open winding.)
E46	Drive motor - over temperature	Inverter over temperature.	<ul style="list-style-type: none"> Check Motor - t10 tumble, t11 spin, T14 spin. Power down (unplug) washer, wait 30 seconds and retry - use whites cycle sanitize temperature - if reoccurs, replace drive motor. (Note: Cannot occur with open winding.)
E47	Heat sink - over temperature	Inverter over temperature.	<ul style="list-style-type: none"> Check Motor - t10 tumble, t11 spin, T14 spin. Power down (unplug) washer, wait 30 seconds and retry - use whites cycle sanitize temperature - if reoccurs, replace drive motor. (Note: Cannot occur with open winding.)
E48	Drive motor - open	Open motor phase.	<ul style="list-style-type: none"> Check Motor - t10 tumble, t11 spin, T14 spin. Check motor for open winding - if OK, replace inverter. (Note: Occurs with open winding.)
E49	Drive motor - overload power	Load too heavy.	<ul style="list-style-type: none"> Check Motor - t10 tumble, t11 spin, T14 spin. Check mechanical faults (binding) - belt, basket, bearing - rotate basket by hand. Check motor for shorted winding - if OK, replace inverter. Power down (unplug) washer, wait 30 seconds and retry - if reoccurs, replace inverter. (Note: Cannot occur with open winding.)
E4A	Under volts	Under volts - DC bus voltage (inverter).	<ul style="list-style-type: none"> Check Motor - t10 tumble, t11 spin, T14 spin. Power down (unplug) washer, wait 30 seconds and retry - if reoccurs, replace inverter. (Note: Cannot occur with open winding.)
E4B	Power up problems	Software/hardware problems.	<ul style="list-style-type: none"> Check Motor - t10 tumble, t11 spin, T14 spin. Check motor windings - internal short Power down (unplug) washer, wait 30 seconds and retry - if reoccurs, replace inverter. (Note: Cannot occur with open winding.)
E4C	Over volts	Over volts - DC bus (inverter).	<ul style="list-style-type: none"> Check Motor - t10 tumble, t11 spin, t14 spin. Power down (unplug) washer, wait 30 seconds and retry - if reoccurs, replace inverter. (Note: Cannot occur with open winding.)

Error Code	Description	Problem	Possible Cause/Action
E4E	Under volts after start	Initial minimum voltage not received - motor does not run. DC bus (inverter).	<ul style="list-style-type: none"> • Check Motor - t10 tumble, t11 spin, t14 spin. • Power down (unplug) washer, wait 30 seconds and retry - if reoccurs, replace inverter. (Note: Cannot occur with open winding.)
E4F	EEProm fault	EEProm reading error occurs.	<ul style="list-style-type: none"> • Non-recoverable error. • Replace inverter control board.
E52	Main control wake-up error	Lost communication between control and drive motor after initial success.	<ul style="list-style-type: none"> • Check Motor - t10 tumble, t11 spin, t14 spin. • Check connections/cables between main control and inverter. • Power down (unplug) washer, wait 30 seconds and retry - if reoccurs, replace inverter. (Note: Cannot occur with open winding.) • Main control board can cause code in limited circumstances, as loose plug on board.
E53	Buffer error	Internal software buffer error.	<ul style="list-style-type: none"> • Check Motor - t10 tumble, t11 spin, t14 spin. • Power down (unplug) washer, wait 30 seconds and retry - if reoccurs, replace inverter. (Note: Cannot occur with open winding.)
E54	No motor response	Lost communication between control and drive motor.	<ul style="list-style-type: none"> • Check Motor - t10 tumble, t11 spin, t14 spin. • Check connections/cables between controls. • Power down (unplug) washer, wait 30 seconds and retry - if reoccurs, replace inverter.
E57	Checksum failure	Software error occurs - checksum failure.	<ul style="list-style-type: none"> • Non-recoverable error. • Main control board must be replaced.
E58	Communication failure	Communication error occurs.	<ul style="list-style-type: none"> • Non-recoverable error. • Main control board must be replaced.
E60	Door lock switch failure	Switch failure occurs during lock.	<ul style="list-style-type: none"> • Power down (unplug) machine, wait 30 seconds and retry. • Check wiring and connections between door lock and main control. • Check door lock switches and solenoid. • Replace main control if wiring, switches, and solenoid test functional.

Error Code	Description	Problem	Possible Cause/Action
E61	Door unlock switch failure	Switch failure occurs during unlock.	<ul style="list-style-type: none"> • Power down (unplug) machine, wait 30 seconds and retry. • Check wiring and connections between door lock and main control. • Check door lock switches and solenoid. • Replace main control if wiring, switches, and solenoid test functional.
E62	System contact failure	Load failure occurs. Heater/pump/pressure switch/door lock/water valves/dispenser motor.	<ul style="list-style-type: none"> • Power down (unplug) machine, wait 30 seconds and retry. • This error code found a shorted component. • Check integrity of wiring and connections - replace harness if necessary. • Check integrity and connections of all loads and replace as necessary. • Replace main control if actions do not resolve.
E63	Unexpected open door	Switch failure occurs during wake-up.	<ul style="list-style-type: none"> • Power down (unplug) machine, wait 30 seconds and retry. • Check wiring and connections between door lock and main control. • Check door lock switches and solenoid. • Replace main control if wiring, switches, and solenoid test functional.
E64	Unexpected open door while running	Switch failure occurs during cycle.	<ul style="list-style-type: none"> • Power down (unplug) machine, wait 30 seconds and retry. Check wiring and connections between door lock and main control. • Check door lock switches and solenoid. • Replace main control if wiring, switches, and solenoid test functional.
E65	Water level sensor failure - foam	Main level switch is satisfied before foam level switch.	<ul style="list-style-type: none"> • Check integrity of wiring and connections between main control and water level sensor. • Check integrity of water level sensor t06 - replace if necessary. • Replace main control if actions do not resolve.
E66	Water temperature sensor open	Water temperature sensor open.	<ul style="list-style-type: none"> • Check water temperature sensor - t07 • Check integrity of wiring and connections between main control and water temperature sensor. • Check integrity of water temperature sensor - replace if necessary.

Error Code	Description	Problem	Possible Cause/Action
E67	Water temperature sensor shorted	Water temperature sensor shorted.	<ul style="list-style-type: none"> • Check water temperature sensor - t07. • Check integrity of wiring and connections between main control and water temperature sensor. • Check integrity of water temperature sensor - replace if necessary.
E70	Stuck key	Continuous key read for 60 seconds.	<ul style="list-style-type: none"> • Power down (unplug) machine, wait 30 seconds and retry. • Use t04 test to test keys. • Separate control and control housing from front panel - clean and remove foreign debris. • Ensure all keys can be operated freely without sticking. • Replace control panel if actions do not resolve.
E71	Key fault	Communication error occurs between control and keys.	<ul style="list-style-type: none"> • Power down (unplug) washer, wait 30 seconds and retry - if reoccurs, replace main control.

NOTE: It's important to note error codes should only be used to help identify those components which require testing. Never replace a part based solely on an error code. The control can generate a false error if the right conditions exist. Use the code only as a reference and always check the component before replacing.