GE Consumer & Industrial

Technical Service Guide

June 2008

GE Profile High-Efficiency Washer

WPGT9150



31-9171



GE Appliances General Electric Company Louisville, Kentucky 40225



IMPORTANT SAFETY NOTICE

The information in this service guide is intended for use by individuals possessing adequate backgrounds of electrical, electronic, and mechanical experience. Any attempt to repair a major appliance may result in personal injury and property damage. The manufacturer or seller cannot be responsible for the interpretation of this information, nor can it assume any liability in connection with its use.

WARNING

To avoid personal injury, disconnect power before servicing this product. If electrical power is required for diagnosis or test purposes, disconnect the power immediately after performing the necessary checks.

RECONNECT ALL GROUNDING DEVICES

If grounding wires, screws, straps, clips, nuts, or washers used to complete a path to ground are removed for service, they must be returned to their original position and properly fastened.

GE Consumer Products

Technical Service Guide Copyright © 2008

All rights reserved. This service guide may not be reproduced in whole or in part in any form without written permission from the General Electric Company.

Backsplash	
Basic Wash Cycle	
Bearing Housing Assembly	
Brake Resistor	17
Clutch Shifter Assembly	
Component Locator Views	12
Component Logic Flow Chart	
Control Features	6
Control System	
Drain Pump	
Error Codes	
Introduction	
Inverter	
Inverter and Main Board Pin Connectors	14
Main Control Board and LCD	
Motor Assembly	
Nomenclature	4
Operation Overview	
Outer Tub and Suspension Assembly	25
Pressure Sensor (Water Level Switch)	
Schematic	
Test Mode	
Thermistor/ATC Control (Auto Temp)	
Top Cover	
Troubleshooting	
Warranty	
Wash Basket	21
Wash Cycle Chart Example	
Washer Components	
Washer Features	
Water Valve Assembly	

Nomenclature

Model Number



Combinations

Serial Number



Model number and serial number are located on the rear of backsplash.

Note: The technical sheet is located inside the control panel.

The first two characters of the serial number identify the month and year of manufacture. *Example:* AR123456S = January, 2008

a - Jan	2008 - R	
D - FEB	2007 - M	The letter decignet
- MAR	2006 - L	ing the year repeats
G - APR	2005 - H	every 12 years.
H - MAY	2004 - G	
JUN	2003 - F	Example:
M - JUL	2002 - D	T - 1974
r - AUG	2001 - A	I - 1986
S - SEP	2000 - Z	1 - 1998
T - OCT	1999 - V	
V - NOV	1998 - T	
z - Dec	1997 - S	

Introduction

General

The GE Profile High-Efficiency Washer is part of the GE Profile Clothes Care system utilizing the latest developments in washing technology.

The Profile High-Efficiency Washer does not use the typical agitator found on conventional washers. Instead, the direct drive motor, capable of spinning at 1,000 rpm, and the 304 stainless steel wash basket create a centrifugal force that pulls wash water through fabrics for a thorough cleaning action. (See *Operation Overview*.)

Profile High-Efficiency Washers also utilize an automatic load sensing system to determine load size and water levels. The washer automatically fills the wash basket with the appropriate amount of water needed for optimal wash performance.

Other features include:

Auto-Balance Suspension - The washer is programmed to correct out of balance situations. (See *Operation Overview*.)

Flow-Thru[™] Dispensers - Each of the four

dispensers is timed to release at the right time during the wash cycle. Each reservoir is flushed with water to pre-dilute the product before adding it to the washer. This flushing action removes all product to help keep the compartment clean and free flowing.

Note: The bleach dispenser fills during the main wash to dispense the bleach and refills during the rinse cycle to flush any remaining bleach from the reservoir.

Direct Drive Motor - The washer does not use a transmission or mechanical brake. Direct drive technology results in fewer moving parts for smooth, quiet operation. (See *Motor Assembly*.)

Infusor[™]Wash - The washer has specific cycles that aid in mixing the detergent/water solution.



Control Features

Throughout this manual, features and appearances may vary from your model.



Power

1

Press to "wake up" the display. If the display is active, press to put the washer into idle mode.

Note: Pressing POWER does not disconnect the appliance from the power supply.

Wash Cycles

The wash cycles are optimized for specific types of wash loads. The chart below will help you match the wash setting with the loads. The GentleClean[™] lifters lightly tumble the clothes into the water and detergent solution to clean the load.

WHITES/HEAVY DUTY For heavily to lightly soiled white cottons, household linens, work and play clothes.

COLORS/NORMAL For heavily to lightly soiled colorfast cottons, household linens, work and play clothes.

COMFORTER For comforters and bedspreads.

COTTONS/TOWELS For cottons and towels.

ACTIVE WEAR For active sports, exercise and some casual wear clothes. Fabrics include modern technology finishes and fibers such as spandex, stretch and micro-fibers.

DELICATES For lingerie and special-care fabrics with light to normal soil. Provides gentle tumbling and soak during wash and rinse.

HANDWASH For items labeled hand-washable with light soils. Provides gentle rocking to mimic the handwashing action.

WASHABLE WOOL For the washing of machine washable wool products, provided that they are washed according to the instructions on the garment label. When selecting this cycle, you must use a detergent suitable for washing wool.

MY CYCLE Press to use, create or modify custom wash cycles.

SPEED WASH For lightly soiled items that are needed in a hurry. Cycle time is approximately 30 minutes, depending on selected options.

RINSE & SPIN To quickly rinse out any items at any time.



Soil Level

Changing the SOIL LEVEL increases or decreases the wash time to remove different amounts of soil.

To change the SOIL LEVEL, press the SOIL LEVEL button until you have reached the desired setting. You can choose between Light, Normal or Heavy soil.



Wash/Rinse

Adjust to select the proper water temperature for the wash cycle. The prewash and rinse water are always cold to help reduce energy usage and reduce setting of stains and wrinkles.

Follow the fabric manufacturer's care label when selecting the wash temperature.

To change the wash temperature, press the WASH/RINSE button until you have reached the desired setting.

Note: The first 10 seconds of the wash fill are always cold. This feature assists in conditioning the fabric and preventing stains from setting on garments.

5 Spin Speed

Changing the SPIN SPEED changes the final spin speed of the cycles. Always follow the fabric manufacturer's care label when changing the SPIN SPEED.

To change the SPIN SPEED, press the SPIN SPEED button until you have reached the desired setting. Higher spin speeds are not available on certain cycles, such as Delicates.

Higher spin speeds remove more water from the clothes and will help reduce dry time, but may also increase the possibility of setting wrinkles on some fabrics.



6 START/PAUSE

Press to start a wash cycle. If the washer is running, pressing it once will pause the washer. Press again to restart the wash cycle.

Note: If the washer is paused and the cycle is not restarted within 15 minutes, the current wash cycle will be cancelled.

Note: The washer performs automatic system checks after pressing the START button. Water will flow in 45 seconds or less.

Washer Features





Cycle Signal

Use the SIGNAL button to change the volume of the end of cycle signal. Press the button until you reach the desired volume.

Soak

SOAK is an extra wash before the main wash. Use it for heavily soiled clothes or for clothes with a care label that recommends soaking before washing. Be sure to add high-efficiency detergent, or the proper wash additive to the soak dispenser.

Notes:

- When selecting SOAK, it is recommended to use powder detergent in the main wash (detergent) compartment.
- The maximum soak time is 3 hours.



Extra Rinse

Use EXTRA RINSE when additional rinsing is desired to remove excess dirt and detergent from soiled loads.



Delay Start

You can delay the start of a wash cycle for up to 24 hours. Press the DELAY START button to choose the number of hours you want to delay the start of the cycle, then press the START button. The machine will count down and start automatically at the correct time.

Note: If you open the lid when the delay is counting down, the machine will enter the pause state. You must close the lid and press START again in order to restart the countdown.



MY CYCLE

To save a favorite cycle, set the desired settings for wash cycle, soil level, spin speed and wash temp settings and hold down the MY CYCLE button for 3 seconds. A beep will sound to indicate the cycle has been saved. To use your custom cycle, press the MY CYCLE button before washing a load. To change the saved cycle, set the desired settings and hold down the MY CYCLE button for 3 seconds.

Notes:

- When using MY CYCLE, wash options cannot be modified after the cycle has been started.
- If you change wash options with MY CYCLE before starting the cycle, the MY CYCLE light will turn off and you will be returned to the base cycle.

Basic Wash Cycle

Note: See *Component Locator Views* for identification and location of washer components.

After a load is placed in the basket, the user selects the appropriate wash cycle and presses start.

Cycle time and wash patterns will vary depending on user time adjustments, soil level adjustments, fabric type, and wash-load weight.

Dry Load Sensing

Before an initial fill, the infusor rotates the dry clothes load. This rotation is controlled by the inverter which measures the amount of time it takes for the motor to coast to a stop. The larger the clothes load, the less momentum the motor is capable of generating, so the faster it will stop. The infusor will rotate back and forth up to four times. This information is used to determine the initial water fill level.

Water Fill

The washer automatically fills to the proper level based on the load sensing measurements. Depending on the cycle chosen and the quantity of clothes, there are 27 possible water levels. This information is stored in memory for the final rinse at the end of the wash cycle. Water levels are matched to load size using approximately one-third less water than typical top load washers.

Note: The washer can use as little as 17.5 gallons of water for small loads and has an average water use of 27 gallons per load.

Wet Load Sensing

After the first fill, the infusor and basket lock together and rotate to measure the clothes load. During this time, the motor momentum is measured again. The washer compares this information to the previous dry load sensing measurements and determines if additional water is required. **Note:** Dry load and wet load sensing are used on all cycles except COMFORTERS.

COMFORTERS cycle defaults to the maximum water level.

Wash Water Temperature

During the fill, the washer monitors and regulates wash water temperatures within 5°F (-15°C) of the target temperature. This accuracy is achieved using a thermistor, located in the outer tub, which monitors the tub water temperature during the fill cycle.

Based on information received from the thermistor, the inverter controls the hot and cold inlet valves to achieve the desired wash temperature. (See *Thermistor/ATC Control Auto Temp*.)

Target Water Temperatures:

Hot - 120°F (49°C)

Warm - 90°F (32°C)

Cold - 66°F (19°C)

Tap Cold - 60°F (16°C)

During the fill, the basket slowly rotates in a clockwise direction. This action mixes the detergent and water to assure proper distribution and assure the thermistor is reading an accurate basket water temperature.

Basket Wash

The infusor and wash basket lock together and rotate clockwise and then counterclockwise. This action mixes the detergent and water while distributing the clothes evenly in the wash water. The basket wash speed is based on fabric type and load size. Delicate fabrics are gently rotated while heavier fabrics are rotated more vigorously.

Centrifusion Wash

The locked infusor and wash basket begin a clockwise spin (figure 1). The speed of the spin is customized to the load type and fabric type. As the basket spins faster, it creates a strong flow of water under the centrifugal force (figure 2).



As water passes through the fabric, its natural cleansing action washes away dirt without damaging or tangling the fabric.



After several seconds of clockwise spinning, the basket slows down and stops. The wash water pools back into the wash basket. The wash basket starts spinning in the counterclockwise direction creating the same cleaning action. The washer will change direction (up to four times) before going to the next cycle.



Infusor Wash

Following the centrifusion wash cycle, the basket and infusor unlock. The infusor rotates to evenly distribute the wash load while continuing to clean. The redistribution of fabrics helps ensure that the lint and dirt do not become trapped.

Conditioning Spin

The infusor and wash basket lock together. The basket spins very slowly at first. This allows dirty wash water and lint to drain through the holes in the bottom of the basket before a higher spin begins. When the washer senses that the excess water has drained, the wash basket accelerates to a higher speed.

Cyclone Spin

Spin speeds are adaptive to the fabric type that is selected by the user. Speeds can be as slow as 500 rpm for delicates and up to 1000 rpm for heavy items. The spin is designed to extract as much water and detergent as possible without harming fabrics.

Anti-Suds Lock

During the spin cycle, excessive suds can cause excessive torque on the motor. If the washer detects this condition, it will run through the rinse, drain, and spin cycle (up to three times) in an attempt to eliminate the excess suds.

Out of Balance

The washer is programmed to correct out of balance situations during spins. If the washer senses an out of balance load, the spin is stopped and the washer drains. The washer then refills and agitates to allow the infusor wash cycle to redistribute the load before starting the spin again. The washer will attempt to rebalance the load three times before optimizing the spin to a lower speed where balance is sustainable.

Spray Rinse

The infusor and wash basket turn at a slow speed while fresh, clean water is added to the wash load. The spin cycle then drains this rinse water and prepares the wash load for a final rinse.

Final Rinse

The washer retrieves the information it gathered for adaptive fill cycle and uses that information to refill the washer for the final rinse. Cold water enters the basket through the fabric softener dispenser to dilute the softener into the basket and rinse the dispenser clean. The wash basket fills to the optimal level and goes into a basket wash cycle where the clothes and fabric softener are mixed thoroughly. A final spin finishes the cycle.

Note: All rinse cycles use cold water and the (ATC) automatic temperature control is not used. The cold rinse is the same temperature as the incoming cold water supply.

Wash Cycle Chart Example



Component Locator Views







Underside of Top Cover



As Seen from Back of Washer

Inverter and Main Board Pin Connectors

Inverter Board



Main Board



Backsplash

The backsplash must be removed to access the control system components.

To remove the backsplash:

1. Remove the 4 Phillips-head screws that hold the backsplash in place.



2. Place a towel over the lid of the washer to prevent scratches to the surface. Lift each corner of the backsplash vertically while pulling back to disengage the 2 tabs. Roll the backsplash forward so it rests on top of the washer.



3. Lift the backsplash rear panel vertically and remove.



Control System

The washer control system consists of two main components:

- Main PCB
- Inverter PCB

Caution: To prevent electrostatic discharge from damaging any electronic components, use an ESD wristband or touch a grounded metal surface before servicing.

Main Control Board and LCD

The main control board and LCD are attached to the backsplash as one unit. The main control board and LCD are only available as a complete assembly.

To remove the main control board and LCD assembly:

- 1. Remove the backsplash. (See Backsplash.)
- 2. Remove the 4 Phillips-head screws that hold the main control board and touch screen LCD assembly in place. Remove the assembly.



Inverter

The inverter board is enclosed in a protective box mounted on the top cover under the backsplash.

To access and remove the inverter:

- 1. Remove backsplash. (See Backsplash.)
- 2. Remove the 2 Phillips-head screws that hold the inverter box in place.



3. Lift the inverter box up. Press the 3 tabs on the front of the inverter box and gently pry it open.



4. Mark and remove the wiring from the inverter board. Remove the inverter.



Testing the Inverter



- The inverter receives 120 VAC through the connector (RF choke). If 120 VAC is not present, check the wall outlet, power cord, and RF choke.
- The RF choke filters the line voltage and contains an in-line fuse. It is replaced as an assembly.

RF Choke

•



• When the washer is plugged in, there is 5 VDC at pins 1 and 2 on the dark blue 7-pin CON2. (See *Testing the Inverter* photo.)

- When the washer is turned on by pressing a membrane pad, the Power LED on the inverter comes on.
- When the Power LED is on, the 12-VDC power supply on the inverter board is energized and the below listed voltages are on CON2:

_	CON2							
	1	2	3	4	5	6	7	
Pins			Ņ	Volta	ges			
1 and 2			Į	5 VDC				
1 and 3				12 VD	С			
1 and 4				20 VD	С			

- After 5 minutes, if there is no additional input, the washer shuts off and the power LED shuts off. There is no voltage on pins 1 and 3 and 1 and 4 at this time.
- If the washer operates through a cycle, the inverter voltages at CON2 will be present until the lid is opened.
- If the Power LED is lit and if one of the three voltages (5 VDC, 12 VDC, or 20 VDC) at CON2 is not present, the inverter is bad.

Brake Resistor

- The brake resistor absorbs energy from the *reversing* of the motor during the brake cycle.
- The brake resistor only operates when the washer loses power or the lid is lifted during a cycle.
- Under normal operation, the tub coasts to a stop at the end of a cycle.
- The approximate resistance value of the brake resistor is 70 Ω .
- If the resistor is shorted, the motor will not start.
- If the resistor opens while the motor is spinning, the inverter board can be damaged.
- Look for a burnt IC labeled IC300 on the inverter board. Both the resistor and inverter board should be replaced if the IC300 is damaged. (See *Testing the Inverter* photo.)

To remove the brake resistor:

- 1. Remove the 2 Phillips-head screws that hold the brake resistor in place.
- 2. Disconnect the 2 wiring harnesses from the brake resistor. Remove the brake resistor from the mounting pin.



Pressure Sensor (Water Level Switch)

The pressure sensor is connected by a clear hose to an air reservoir near the bottom of the outer tub and operates by a frequency (kHz) signal to the inverter board.

The pressure sensor wires (purple, orange, and blue) are connected at pins 1, 3, and 4 at the 4-pin red connector on the inverter board. (See *Inverter and Main Board Pin Connectors*.)

The approximate resistance value of the transducer, measured between the purple and orange wires, is 20 $\Omega_{\rm -}$



- When the water level rises in the washer tub, air is trapped in the reservoir. As the water level rises, the air pressure in the reservoir increases.
- The pressure is translated into an electrical signal (frequency) by the pressure sensor.
- The frequency will vary from approximately 27 kHz (empty tub) to 22 kHz (full tub).
- This frequency can be measured at the pressure sensor between the purple and orange wires.

The frequency is monitored by the inverter, which turns off the water valves when the desired water level is achieved.

Note: The water level will vary depending on the load size, which is measured by the dry load and wet load sensing cycles. This information is sent to the inverter, which then determines the appropriate water level. Minimum fill is 17.5 gallons, and maximum fill is 27 gallons.

Pressure Sensor Test

If the pressure sensor is not operating correctly, perform the following test:

- 1. Set the wash cycle to SNEAKERS. This cycle bypasses the load sensing feature and defaults to the *minimum* water level.
- 2. Measure the water level from the center hub of the infusor (it should be approximately 2 inches deep in the tub).
- 3. Set the washer to COMFORTER. This cycle bypasses the load sensing feature and defaults to the *maximum* water level.
- 4. Measure the water level from the center hub of the infusor (it should be approximately 11 inches deep in the tub).

Note: Before disconnecting the hose from the pressure sensor, be sure the water level is below the bottom of the spin basket.

To remove the pressure sensor:

- 1. Remove the backsplash. (See Backsplash.)
- 2. Disconnect the wiring harness from the pressure sensor.



- The pressure sensor is held in place by 3 tabs. With a flat-blade screwdriver, press the tabs back and lift the water level switch up and out.
- 4. Disconnect the clear hose from the pressure sensor.



Water Valve Assembly

The water valve consists of a valve body and five solenoid coils. It is only available as a complete assembly. Each solenoid controls a specific water function.





- Each coil on the water valve assembly has an approximate resistance value of 30 Ω.
- Each coil receives power from the inverter. They are connected to the 6-pin blue connector on the inverter board. (See *Inverter and Main Board Pin Connectors*.)
- When energized, there should be approximately 13 VDC at the appropriate coil.



To remove the water valve assembly:

1. Remove the backsplash. (See Backsplash.)

2. Note the placement of the wires, then disconnect the wiring from the solenoid coils.



3. Squeeze the clamps on the 2 water inlet hoses and slide back.



4. Carefully remove the 2 water inlet hoses. It may be necessary to use a small flat-blade screwdriver to pry the hoses off.



5. Remove the 3 Phillips-head screws that hold the water valve assembly in place and the 2 Phillips-head screws that hold the water distribution pipe in place.



6. Remove the water valve assembly and distribution pipe.

Note: The distribution pipe separates from the water valve assembly as shown below.



Top Cover

The top cover is held in place by 2 Phillips-head screws located on the top/back of the washer and two front tabs.

To remove the top cover:

1. Remove the 2 Phillips-head screws that hold the top cover in place.



2. Remove the 4 Phillips-head screws (2 on each side) that hold the back cover in place. Remove the back cover.



3. Disconnect the pressure sensor hose from the outer tub.



- 4. The main wiring harness is held in place by plastic clips on the inside corner of the washer cavity. Remove the wiring harness from the holding clips.
- 5. Remove the screw that holds the ground wire to the upper back cover.



6. Disconnect the four wiring harness connectors.



7. Lift the back of the top cover and slide it forward to clear the front tabs.

Wash Basket

Caution: If the basket is not free to rotate, damage to the clutch coupler can occur. Ensure that the washer is in the spin mode before removing the wash basket. The wash basket will rotate freely when it is in spin mode. Do not attempt to remove the hub nut if the basket is not free to rotate.

To remove the wash basket:

- 1. Remove the top cover. (See Top Cover.)
- 2. Remove the 8 Phillips-head screws that hold the outer tub cover in place.



3. Place a flat blade screwdriver in the slot under the infusor cap and gently pry off.



4. Remove the 10-mm hex-head screw that holds the infusor in place with a socket or Phillipshead screwdriver (turn screw counterclockwise to remove).

Note: The 10-mm screw has a rubber O-ring.



WARNING: The inner edge of the infusor can be sharp. Wear Kevlar gloves or equivalent protection.

- 5. Pull the infusor up and out.
- Remove the 37.5-mm (1-1/2" SAE equivalent) hub-nut with a socket or Crescent wrench (turn hub-nut counterclockwise to remove).

Note: Ensure the basket is free-wheeling before attempting to loosen the hub nut.



7. Lift the wash basket up and out.

Drain Pump

- The drain pump consists of a 120 VAC, 60-Hz, motor, impeller, and impeller housing.
- The pump is capable of pumping to a stand-pipe height of 8 ft. The maximum length of the drain hose is 10 ft. (An accessory drain hose extension is not available at this time.)
- The drain pump will operate independently of other mechanical components and will evacuate water at various times during the cycle.
- The drain pump motor has an approximate resistance value of 11 Ω.
- Pins 1 and 2 on the light blue 2-pin connector on inverter board should measure 120 VAC when drain pump is activated. (See *Inverter and Main Board Pin Connectors*.)



To clean the impeller and impeller housing:

WARNING: The drain pump bracket is not grounded. Unplug the unit before servicing to avoid electric shock.

Note: The impeller can be accessed for cleaning without removing the drain hoses. Water will remain in hoses even when the tub appears empty. Use care to avoid water spills.

1. Disconnect power to the machine.

2. Remove the 4 Phillips-head screws (2 on each side) that hold the back cover in place. Remove the back cover.



3. Remove the thin plastic cover over the drain pump by pulling down on the ends to clear the tabs.



4. Lift up the tab on the impeller housing with a flat blade screwdriver. When viewed from the impeller housing end, rotate the motor in a counterclockwise direction to remove.



5. Remove any foreign objects from the impeller and impeller housing. Inspect the impeller for any damage, and replace the pump assembly if necessary.

To remove the drain pump:

Note: Water will remain in the hoses even when the tub appears empty. Use care to avoid water spills.

- 1. Disconnect power to the machine.
- 2. Remove the 4 Phillips-head screws (2 on each side) that hold the back cover in place. Remove the back cover,



3. Remove the thin plastic cover over the drain pump by pulling down on the ends to clear the tabs.



4. Remove the drain hoses from the pump:

Note: The drain hoses are difficult to remove due to a sealing compound used at the factory.

a. Squeeze each clamp and slide it back.

b. Carefully break the hoses loose by inserting a small flat-blade screwdriver under the hoses to break the seal.

c. Remove the hoses.



5. Remove the 2 Phillips-head screws that hold the drain pump mounting plate to the washer floor.



6. Disconnect the 2 drain pump wires.



7. Remove the 2 Phillips-head screws that hold the drain pump to the mounting plate. Remove the drain pump.



Caution: Care must to taken when reinstalling and sealing the drain hoses to the outer tub to ensure there is no water leakage.

Note: When installing the drain pump, apply a thin coat of sealing compound (part no. WH60X15) to the inner surface of the drain hoses.

Thermistor/ATC Control (Auto Temp)

- The ATC control uses a water temperature sensor (thermistor) to regulate the wash water temperature.
- The thermistor has a negative temperature coefficient (as temperature increases, resistance decreases).
- The thermistor is located in the bottom of the outer tub, under the wash basket.



To determine the temperature of the incoming water, the washer control measures the difference between the voltage sent and the voltage returned from the water temperature sensor. The washer control then makes temperature adjustments accordingly.

The washer control should maintain the water temperature in the tub within +/- $5^{\circ}F$ (+/- $3^{\circ}C$) by opening or closing the hot and cold water valves.

The thermistor has an approximate resistance value of 121K Ω at 70°F (21°C).

Approximate resistance values at:

- 60F° (16C°) 141K Ω
- 80F° (27C°) 86K Ω
- 105F° (40C°) 48K Ω
- 120F° (49C°) 35K Ω



Resistance can be measured at the purple 2-pin connector on the inverter board. Make sure to unplug the connector to isolate the thermistor before taking resistance readings. (See *Inverter and Main Board Pin Connectors*.)

To remove the thermistor:

1. Remove the 4 Phillips-head screws (2 on each side) that hold the back cover in place. Remove the back cover.



- 2. Disconnect the wiring connector at the thermistor.
- 3. Remove the 2 Phillips-head screws that hold the thermistor to the bottom of the outer tub. Remove the thermistor.

Outer Tub and Suspension Assembly

The wash basket, outer tub, and motor are suspended by four rod and spring assemblies. The rod and spring assemblies are attached to each corner of the washer cabinet. They extend down and connect to the bottom of the outer tub.

To remove the outer tub:

WARNING: The outer tub assembly is heavy and requires two people to remove it from the washer housing. Care should be taken when removing and installing the outer tub assembly.

- 1. Remove the top cover. (See Top Cover.)
- 2. Remove the drain hose from the outer tub:

Note: Water will remain in hoses even when the tub appears empty. Use care to avoid water spills.

Note: The drain hose is difficult to remove due to a sealing compound used at the factory.

- a. Squeeze the clamp and slide it back.
- b. Carefully break the hose loose by inserting a small flat blade screwdriver under the hose to break the seal.
- c. Remove the hose.

 Lift the outer tub up and disengage the suspension rod assemblies from each corner of the outer tub.

4. Pull the outer tub assembly out of the washer cabinet.

Caution: Care must to taken when reinstalling and sealing the drain hose to the outer tub to ensure there is no water leakage.

When installing, apply a thin coat of sealing compound (part no. WH60X15) to the inner surface of the drain hose.

Motor Assembly

- The washer has a direct drive pulse width modulation motor that does not utilize a belt, transmission, or mechanical brake.
- The motor assembly is composed of a coil wound stator, Hall sensor, and permanent magnet rotor.
- The motor varies speed and torque when the pulse width modulated voltage from the inverter changes frequency.
- The motor reverses rotational direction when the inverter reverses electrical polarity to the motor.

The washer motor has an approximate resistance value of 8 Ω between any two of the three wires:

- Blue to red 8 Ω
- Red to yellow 8 Ω
- Blue to yellow 8 Ω

Resistance can be measured at the yellow, 3-pin connector on the inverter board or at the motor. (See *Inverter and Main Board Pin Connectors*.)

Yellow

Hall Sensor

- The Hall effect sensor measures the motor rpm.
- Four wires connect the Hall sensor to the inverter board at the 4-pin dark blue connector. (See *Inverter and Main Board Pin Connectors*.)
- The Hall sensor measures approximately 9K
 Ω between the brown and blue wires and the brown and red wires.
- If the sensor has failed, the motor will not operate.
- The Hall sensor is part of the stator assembly. It is not available as a separate part.

To check the Hall sensor voltage at the inverter:

 Disconnect the Hall sensor plug from the inverter board. Check voltage on pins 3 (brown) and 4 (yellow) on the inverter board. There should be approximately 12 VDC. If not, the inverter board is bad.

To check voltage at the Hall sensor:

 Measure between pins 1 (blue) and 4 (yellow) and pins 2 (red) and 4 (yellow) with the Hall sensor plugged into the inverter board. Rotate the spin basket by hand. There should be 12-VDC pulses as the basket is rotated. If the pulses are present, the Hall sensor is good.

To remove the rotor and stator:

WARNING: The rotor is not grounded. Unplug the washer before servicing to avoid electrical shock.

- To access the motor, the washer must be placed on its side. Place a towel or blanket on the floor to prevent scratches to the surface of the washer.
- 2. Remove the 24-mm (¹⁵/₁₆ in. SAE equivalent) rotor nut with a socket or adjustable Crescent wrench (rotate rotor nut counterclockwise to remove).

Note: Use a rubber mallet if needed to tap the wrench to break the nut free.

- 3. Pull the rotor away from the drive shaft.
- 4. Remove the six 10-mm hex-head screws that hold the stator in place.

Note: Removal of the wiring guard (held in place by one 10-mm hex-head screw) will give better access to the motor connector.

5. Disconnect the wiring harnesses from the stator and the Hall sensor.

IMPORTANT: The motor connector and Hall sensor connector are very fragile, handle with care.

Note: When reassembling, be sure to put the motor and Hall sensor wires back in the wiring guard away from the motor.

Clutch Shifter Assembly

The clutch assembly locks or unlocks the basket and infusor together, depending on the wash cycle pattern. (See *Basic Wash Cycle* for a brief description of wash cycles.)

- The infusor is connected directly to the motor shaft. Whenever the motor is rotating, the infusor is rotating.
- The clutch only locks or unlocks the wash basket.

When the washer first starts a cycle, the infusor moves back and forth several times to make sure the basket and infusor are in the unlocked position before starting. This action is called "clutching" and confirms that the clutch motor is in the unlocked position.

Note: Wash cycle patterns will vary depending on user time adjustments, soil level adjustments, fabric types, and wash-load weights.

The infusor and basket are in the **locked** position during the following cycles:

- Water Fill
- Wet Load Sensing
- Basket Wash
- Centrifusion Wash
- Spin
- Spray Rinse

The infusor and the basket are in the **unlocked** position during the following cycles:

- Dry Load Sensing
- Infusor Wash

Clutch Operation

- The clutch locks and unlocks the basket by engaging teeth on the inside of the rotor with teeth on the clutch coupler.
- When the basket and infusor are in the locked position, the clutch moves downward and engages the rotor and clutch coupler teeth allowing the basket to rotate with the infusor.

• When the basket and infusor are in the unlocked position, the clutch moves upward, disengaging the clutch coupler and rotor teeth, allowing the infusor to rotate independently of the basket.

To diagnose the clutch motor:

• The inverter supplies 120 VAC to the clutch motor through the brown and white wires when the clutch motor changes position.

Note: Disconnect power and unplug the clutch motor connector at the inverter board.

- The clutch motor has an approximate resistance value of 2000 Ω. This can be measured between the white and brown wires on the inverter board. (See *Inverter and Main Board Pin Connectors*.)
- The rotation of the clutch motor causes an internal switch to open or close. This can be measured between the brown and blue wires on the inverter board.
- When the clutch is in the unlocked position, the switch should be closed (0 Ω).
- When the clutch is in the locked position, the switch should be open (infinity).

To remove the clutch shifter assembly:

- 1. Remove the rotor. (See *Motor Assembly*.)
- 2. Remove the three Phillips-head screws from the clutch coupler plate.

- 3. Remove the clutch coupler assembly.
- 4. Disconnect the wiring connector from the clutch motor.
- 5. Remove the two 10-mm hex-head screws that hold the clutch motor in place.

Bearing Housing Assembly

To remove the bearing housing assembly:

- 1. Remove the motor assembly and clutch shifter assembly. (See *Motor Assembly* and *Clutch Shifter Assembly.*)
- 2. Remove the screw that holds the ground wire to the bearing housing. Remove the sixteen 10-mm hex-head screws from the bearing housing assembly.

3. Remove the bearing housing assembly.

Note: When reassembling, be sure to put the motor and Hall sensor wires back in the wiring guard away from the motor.

OUTPUTS

Test Mode

The dryer 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 improperly operating dryer components.

	To enter the test mode:	To exit the test mode:
With th display	ne power connected but in the idle state (no 7 on the SSD):	Press the <i>POWER</i> button during the test selection mode.
1.	Press and hold the <i>WASH/RINSE</i> and the <i>SPIN SPEED</i> buttons, then press the <i>POWER</i> button.	Note: If no key is pressed for 15 minutes, the control will automatically exit the Service Mode and enter the Idle State.
2.	If the control does not display "t1", the press and hold sequence was not executed correctly.	
3.	Press the <i>POWER</i> button to clear the display, then re-enter the Service Mode.	
4.	Press the <i>CYCLE</i> button to navigate from test to test (this also exits an existing test).	
5.	Press the <i>START</i> button to enter/enable a test and to navigate from subtest to subtest.	

Test Mode	Description
T1	LED Component Check
T2	Software Revision
Т3	Water Valve and Dispenser Check
Τ4	Drain Pump Check
T5	Agitate Test
T6	Spin Test
Τ7	Controlled Spin Test Approximately 230 RPM
T8	Error Code Test

Test Mode	Displays
T1	The display will initially show "t1".
	 Press the START button. Once the START button is pushed, the display will initially toggle between "t1" and H3". All LEDs turn on. This cycle will continue until the START button or CYCLE button is pressed.
	 When the START button is pressed, display returns to "t1". When the CYCLE button is pressed, the control advances to "t2".
T2	The display will initially show "t2".
	 Press the START button. Once the START button is pushed, the display will initially toggle between "t2" and the current revision of the software on the unit. The display will show this until the START button or the CYCLE button is pressed.
	The button operation can be checked while in this test.
T3	 The display will initially show "t3". When the water level increases, the display will also increase.
	 START button pressed one time – The display will toggle between "A" and the water level. The cold valve will be energized and dispense water through the detergent dispenser and remain this way until the START or CYCLE button is pressed.
	 START button pressed a second time - The display will toggle between "b" and the water level. The hot valve will be energized and remain this way until the START or CYCLE button is pressed.
	• START button is pressed a third time - The display will toggle between "c" and the water level. The control will turn on the hot valve and dispense water through the pretreat dispenser and will remain this way until the START or CYCLE button is pressed.
	 START button is pressed a fourth time - The display will toggle between "d" and the water level. The control will turn on the cold valve and dispense water through the bleach dispenser. This will remain this way until the START or CYCLE button is pressed.
	• START button is pressed a fifth time - The display will toggle between "E" and the water level. The control will turn on the cold valve and dispense water through the softener dispenser. This will remain this way until the START or CYCLE button is pressed. When the START button is pressed, display returns to "t3" test. When the CYCLE button is pressed, exit the test and advance to next test "t4".
	 In every step, the washer control should monitor the water level. When the water level reaches level 7, the washer control will turn off the water valve, then exit the test to "t3". (Control should ignore the <i>START</i> button at this time in Test 3.)
Τ4	The display will initially show "t4".
	 Press the START button. Once the START button is pushed, the display will initially toggle between "t4" and the water level.
	 The drain pump will be enabled for a maximum of 60 seconds (or until the <i>POWER</i> or <i>START</i> button is pressed). Once the 60 seconds has elapsed, the control will go back to the "t4" state. At this time, the display will toggle between "t4" and the water level with the drain pump off. When the <i>START</i> button is pressed, display returns to "t4" test. When the <i>CYCLE</i> button is pressed, the system exits the test and move to next test "t5".

Test Mode	Displays
T5	The display will initially show "t5".
	 Press the <i>START</i> button. Once the <i>START</i> button is pushed, the display will initially toggle between "t5" and the estimated agitate RPM. The control will enable agitation and remain there for a maximum of 3 minutes (or until the <i>CYCLE</i> or <i>START</i> button is pressed). When the <i>START</i> button is pressed, the system returns to "t5". When the <i>CYCLE</i> button is pressed, exit the test and advance to next test "t6".
T6	The display will initially show "t6".
	 Press the START button. Once the START button is pushed, the display will initially toggle between "t6" and the spin RPMs (about 1000RPM +/- 30RPM).
	• The drain pump will automatically turn ON until there is no water in the tub, and then the drain pump will cycle off. The washer will spin at the HIGH setting. The control will remain in this state for a maximum of 3 minutes (or until the <i>CYCLE</i> or <i>START</i> button is pressed). When the <i>START</i> button is pressed, the system returns to "t6". When the <i>CYCLE</i> button is pressed, the system exits the test and advance to next test "t7".
Τ7	The display will initially show "t7".
	 Press the <i>START</i> button. Once the <i>START</i> button is pushed, the display will initially toggle between "t7" and the estimated RPM (about 230RPM +/- 20RPM). The control will enable Alpha spin mode and remain there for a maximum of 3 minutes (or until the <i>CYCLE</i> or <i>START</i> button is pressed). When the <i>START</i> button is pressed, the system returns to "t7". When the <i>CYCLE</i> button is pressed, the system exits the test and advance to next test "t8".
T8	The display will initially show "t8".
	 Press the START button. If there are errors, the display will show "t8", and then the display will show the last error code.
	 The control will sort a maximum of 5 errors on a "first in, first out" basis. This will be displayed continually until the <i>START</i> button is pressed.
	• Press the <i>START</i> button and the control will exit and power off. This exercise will clear all faults and allow the control to be operational again.
	• If there are no errors, the display will toggle between "t8" and "nE" until the <i>START</i> button is pressed. Press the <i>START</i> button and the control will exit and power off.

Error Codes

Error Code	Description	
E1	Overflow Error	Critical
E2	Inverter Not Operating Correctly	Critical
E4	Inlet Valve Failure	Critical
E5	Pump Failure	Critical
E6	Clutch Error	Critical
E7	Pressure Sensor Failure	Critical
E8	Lid Switch Failure	Critical
E9	EEPROM Error	Control Inoperable
D1	Motor Not Rotating Properly	Critical
D2	No Brake Resistance	Critical
D3	Coupling Error	Critical
D4	IPM Thermistor Error	Non-Critical
D5	Lid Switch Error (three continuous wash cycles without a lid switch operation)	Critical

Notes:

- All error codes will be displayed to consumer (except for E9 EEPROM Error).
- All critical errors will disable washer until error is cleared.
- Power off unit to clear errors (if error returns, machine will require service).
- D5 error may not be critical on early production units.

Problem	Possible Cause	What To Do
Washer won't	Control panel is asleep	• This is normal. Press POWER .
operate	Washer is unplugged	 Make sure cord is plugged securely into a working outlet.
	Water supply is turned off	 Turn both hot and cold faucets fully on.
	Controls are not set properly	 Make sure the cycle was set correctly, close the lid and press START.
	Lid is open—safety feature. Prevents the washer from filling and operating when lid is up	 Close lid and reset cycle, to the beginning if necessary.
	Circuit breaker/fuse is tripped/blown	 Check house circuit breakers/fuses. Replace fuses or reset breaker. Washer should have separate outlet.
	Electronics need to be reset	 Unplug washer, wait 2 minutes, plug back in and press POWER.
	START was not pressed after a cycle was set	• Press START .
	Extremely low water pressure	• Press START again.
	Washer is too cold	 If the washer has been exposed to temperatures below freezing for an extended period of time, allow it to warm up before pressing POWER. Otherwise, the display will not come on.
Water not filling properly	Filter clogged or fill hoses may be kinked	 Make sure that the water valve filters (blue and orange screen must be free of solids) on the unit are not clogged. Turn off water and check filter by disconnecting hose at machine. Check that fill hoses are not kinked or clogged.
	Energy efficiency	 This is an energy-efficient washer. As a result, the temperature settings for this washer may be different than non-energy-efficient washers.
	Insufficient water supply	 Make sure that the water supply is turned on. Make sure that the water faucets are turned to their completely open positions.
	The washer lid is open	 The washer lid must be closed for all washer cycle operations. If the lid is opened during washer operation, all functions will stop, including water filling.
	Incorrect fill hose connection	• Make sure that the fill hoses connect the hot water supply to the hot inlet on the washer, and the cold water supply to the cold inlet on the washer (hot to hot, cold to cold).
	Water fill optimization	• Water may not cover the top level of the clothes. This is normal for this high-efficiency washer. The water fill is optimized by the system for best wash performance.

Problem	Possible Cause	What To Do
Washer will not drain— water standing in the tub	Kinked drain hose or drain located higher than 8' above floor	 Ensure that the drain hose is not kinked. Per the recommended installation instructions, the drain outlet cannot be over 8' above the floor.
Water leaks every load	Hoses not installed correctly	 Check all fill and drain hose connections to ensure that they are tight and secure.
Water leaks	Oversudsing of detergent	 Oversudsing may create leaks, and may be caused by the type and amount of detergent used. High-efficiency detergent is recommended. Make sure that detergent and any additives are put into the correct dispenser bins. Follow the detergent manufacturer's recommendations for the amount of detergent, but try using less detergent, especially if home water conditioning or water softening units are used.
Incomplete or no dispensing of detergent	Detergent bins clogged from incorrect filling	 Make sure that detergent and additives are put into the correct dispenser bins. If liquid detergent is used, make sure that the liquid detergent insert box is in the dispenser bin. If powdered detergent is used, make sure that the liquid detergent insert box is not used. Liquids must be put in the fabric softener and pretreat bins. For all detergent types, always make sure that the dispenser box is fully closed before the start of the cycle.
	Too much detergent used	 Make sure that the suggested amount of detergent is used per the manufacturer's recommendations. You may also dilute the detergent with water to the maximum fill line on the bin to avoid clogging. High-efficiency detergent is recommended for this washer.
	Insufficient water supply	 Make sure that the water supply is turned on. Make sure that the water faucets are turned to their completely open positions.
	Normal residue	 Normal operation. Residue may remain in the bins of the dispenser box. The dispenser box may be removed for occasional cleaning with warm water and a scrub brush. The liquid detergent insert box and siphon caps may also be removed from the detergent bin for occasional cleaning. Remember that only liquid may be used in the fabric softener and pretreat bins. Powder will not dispense from the fabric softener or pretreat bins.
Premature dispensing of bleach	Bleach bin filled for future load	 You cannot store bleach in the dispenser for future use. The bleach bin will be dispensed every load for optimal safety of the washer.
	Overfilling the bleach bin	 Overfilling the bin with bleach may lead to premature dispensing. There is a maximum fill line indicated on the bleach bin to help avoid overfilling.
Clogging of bleach	Bleach bin is not seated	 Make sure that the bleach cover is properly seated and snapped into place before the start of the cycle.
	Insufficient cleaning	 You may remove and clean the bleach cover with warm water and a scrub brush to clear clogging.
Poor stain removal	Presoak not selected	 When stain inspector is used, presoak temperature and time are automatically selected. If you choose not to use the stain inspector, we recommend that you select presoak when defining your wash cycle. Always make sure that any additives, such as your high-efficiency liquid detergent, are added to the pretreat dispenser bin before starting the cycle. Always reference your clothes care label before treating stains.

Schematic

Warranty

GE Washer Warranty. (For customers in the United States)

All warranty service provided by our Factory Service Centers, or an authorized Customer Care[®] technician. To schedule service, on-line, visit us at ge.com, or call 800.GE.CARES (800.432.2737). Please have serial number and model number available when calling for service.

Staple your receipt here. Proof of the original purchase date is needed to obtain service under the warranty.

For The Period Of:	We Will Replace:
One Year From the date of the original purchase	Any part of the washer which fails due to a defect in materials or workmanship. During this <i>limited one-year warranty,</i> GE will also provide, <i>free of charge,</i> all labor and related service costs to replace the defective part.
Second through Fifth Year From the date of the original purchase	<i>The suspension rod and spring assembly, and main electronic control board</i> if any of these parts should fail due to a defect in materials or workmanship. GE will also replace the <i>washer lid or cover</i> if they should rust under operating conditions. During this <i>additional three-year limited warranty</i> , you will be responsible for any labor or related service costs.
Second through Tenth Year From the date of the original purchase	The direct drive motor and outer washer tub if any of these parts should fail due to a defect in materials or workmanship. During this additional eight-year limited warranty , you will be responsible for any labor or related service costs.
Lifetime of Product From the date of the original purchase	<i>The washer basket</i> if it should fail due to a defect in materials or workmanship. During this <i>product lifetime limited warranty</i> , you will be responsible for any labor or related service costs.

What Is Not Covered (in the United States):

Service trips to your home to teach you how to use the product.	Replacement of house fuses or resetting of circuit breakers.
 Improper installation, delivery or maintenance. Failure of the product if it is abused, misused, or used for 	Damage to the product caused by accident, fire, floods or acts of God.
other than the intended purpose or used commercially. Damage after deliveru.	Incidental or consequential damage caused by possible defects with this appliance.

Product not accessible to provide required service.

EXCLUSION OF IMPLIED WARRANTIES—Your sole and exclusive remedy is product repair as provided in this Limited Warranty. Any implied warranties, including the implied warranties of merchantability or fitness for a particular purpose, are limited to one year or the shortest period allowed by law.

This warranty is extended to the original purchaser and any succeeding owner for products purchased for home use within the USA. If the product is located in an area where service by a GE Authorized Servicer is not available, you may be responsible for a trip charge or you may be required to bring the product to an Authorized GE Service location for service. In Alaska, the warranty excludes the cost of shipping or service calls to your home.

Some states do not allow the exclusion or limitation of incidental or consequential damages. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. To know what your legal rights are, consult your local or state consumer affairs office or your state's Attorney General.

Warrantor: General Electric Company. Louisville, KY 40225