HAIER GE GFW510SCN0 TECHNICAL SERVICE MANUAL

GE APPLIANCES
a Haier company

Technical Service Guide

April 2020

UltraFresh Front Load Washer

GFW510SCN0
GFW550SSN0
GFW550SPN0
GFW650SSN0
GFW650SPN0
GFW850SSN0
GFW850SPN0

31-9327

Rev. 1 ~ *4/27/20*

Safety Information

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.

Warranty

For Warranty Information:

1. Go to http://products.geappliances.com
2. Search the model number.
3. Click on the Literature tab.
4. Click on Use and Care Manual.
5. Locate the Warranty page.

Table of Contents

(*Continued next page*)

(*Continued next page*)

Safety Requirements

GEA Factory Service Employees are required to use safety glasses with side shields, safety gloves and steel toe shoes for all repairs.

Brazing Glasses

Plano Type Safety Glasses

Prescription Safety Glasses

Safety Glasses must be ANSI Z87.1-2003 compliant

Dyneema®Cut Resistant Glove

Cut Resistant Sleeve(s)

Electrically Rated Glove and Dyneema® Cut Resistant Glove Keeper

Steel Toed Work Boot

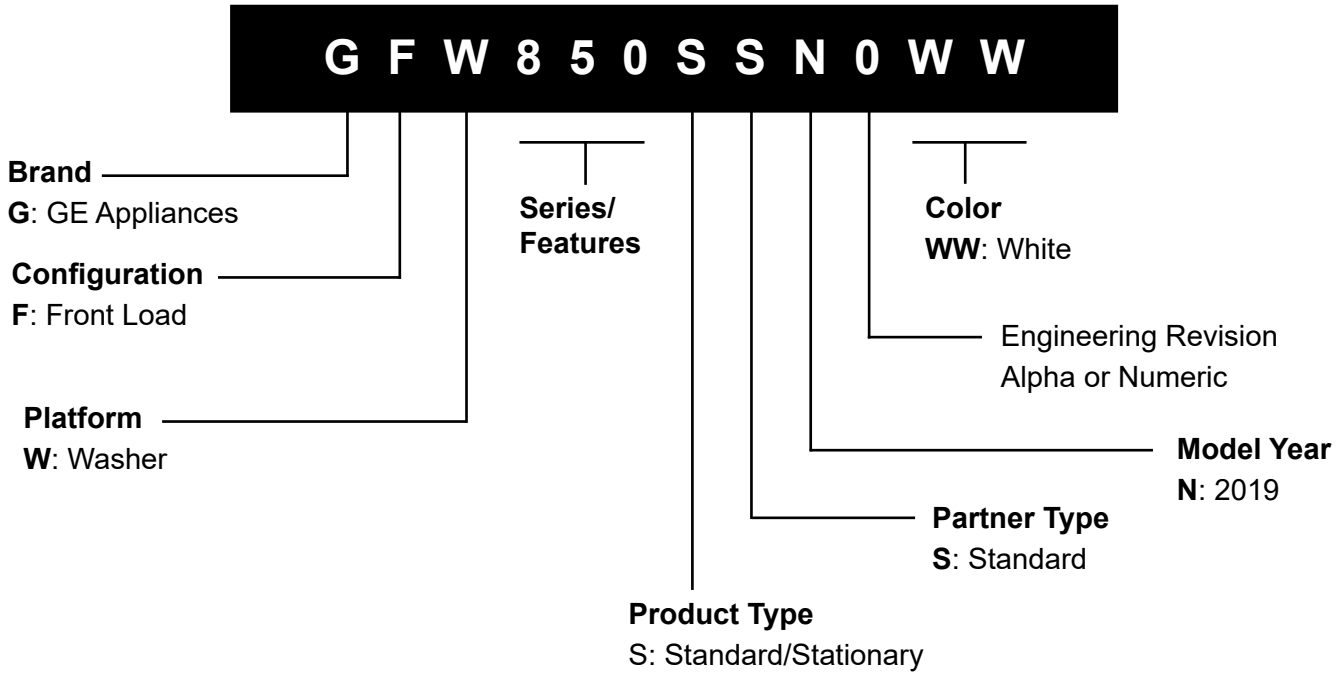
⚠ WARNING

Prior to disassembly of the washer to access components, GE Factory Service technicians are REQUIRED to follow the Lockout / Tagout (LOTO) 6 Step Process:

Step 1 Plan and Prepare	**Step 4** Apply LOTO device and lock
Step 2 Shut down the appliance	**Step 5** Control (discharge) stored energy
Step 3 Isolate the appliance	**Step 6** “Try It” verify that the appliance is locked out

Nomenclature

Model Number



The nomenclature breaks down and explains what the letters and numbers mean in the model number.

Serial Number

The first two characters of the serial number identify the month and year of manufacture. The letter designating the year repeats every 12 years.

Example: TM123456S = October, 2019

A: JAN	2030: L
D: FEB	2029: H
F: MAR	2028: G
G: APR	2027: F
H: MAY	2026: D
L: JUN	2025: A
M: JUL	2024: Z
R: AUG	2023: V
S: SEP	2022: T
T: OCT	2021: S
V: NOV	2020: R
Z: DEC	2019: M

The nomenclature tag is located behind the door on the upper left side and also on the back of the washer to the left of the water valves.

The Mini Manual is located under the top cover, inside a plastic envelope that is taped to the top of the dispenser assembly.

Specifications

Windings and Coils Resistance Values	
Drain Pump	19.5±10%
Door Lock (Pin2, Pin 3)	70 at 77 °F/25 °C
Water Valves Hot and Cold	1000±10%
Motor	14.2 (Single Phase)
Water Heater	14.85±À5%
Damper Motor CW or CCW	4.2k
Relay Coil	2.8K
ONR Fan (Overnight Dry)	26.5

Pressure Sensor Frequency		
Course	**Water Height (Inches)**	**Voltage (DC)**
Empty	0"	0.5
Normal Wash	1.86"	0.81
Normal Rinse	2.4"	0.9
Quick Wash	1.86"	0.81
Quick Wash Rinse	2.4"	0.9
Bulky Bedding Wash	2.75"	0.96
Bulky Bedding Rinse	3"	1
Rinse Spin Rinse	2.4	0.9
Self-Clean Wash	4"	1.16
Self-Clean Rinse	4"	1.16
Door Open	7.25"	1.7
Overflow	11"	2.32
Basket Lowest Corner	0.8"	0.63

Thermistor Resistance

Temp		Approx. Ω (ohms)
°C	**°F**	
-10°	14°	548722
-5°	23°	45778
0°	32°	35975
5°	41°	28516
10°	50°	22763
15°	59°	18279
20°	68°	14772
25°	77°	11981
30°	86°	9786
35°	95°	8047
40°	104°	6653
45°	113°	5523
50°	122°	4608
55°	131°	3856
60°	140°	3243
65°	149°	2744
70°	158°	2332
75°	167°	1990
80°	176°	1704
85°	185°	1464
90°	194°	1262
95°	203°	1093
100°	212°	949.9

Speed Selected (Displayed)	Basket RPM
No Spin	0
Low	1000 +/- 7 RPM
Medium	1100 +/- 7 RPM
High	1200 +/- 7 RPM
Max	1300 +/- 7 RPM

Control Features

Quick Start

1. Load clothes into the washer and close the door.

2. If the screen is dark, press the Power pad or turn the knob to “wake up” the display.

3. Turn the knob to select the desired cycle.

4. Open the dispenser and add detergent, bleach and fabric softener, as desired. Models with SmartDispense™ only require that the SmartDispense pad is selected once the tank has been filled.

5. Press Start to begin the wash cycle. The machine will weigh the clothes and add the proper amount of water. When the wash cycle is finished, the door will unlock.

6. After the wash cycle is completed and the clothes are unloaded, Close the door and select ULTRAFRESH VENT to help eliminate excess moisture in your washer.

Display and Status Indicators

(Features and appearances will vary)

The display shows the approximate time remaining until the end of the cycle and the washer cycle status (Fill, Wash, Rinse and Spin).

NOTE: The cycle time is affected by how long it takes the washer to fill. This depends on the water pressure in the home. The “smart” timer “learns” the amount of time it takes to fill the washer and adjusts the total time accordingly.

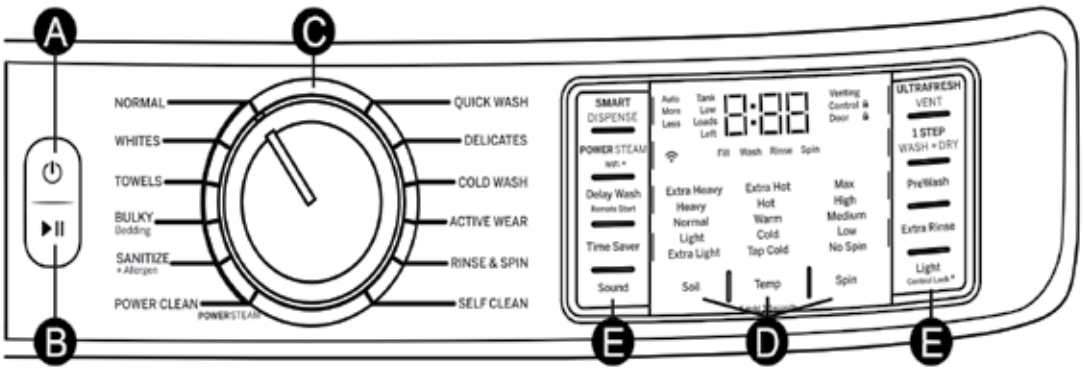
If an out-of-balance condition is detected by the washer, an Out-of-Balance indicator will appear and blink during the remaining portion of the cycle. It will stay illuminated for a short time after cycle completion. When this occurs, the washer is taking actions to correct the out-of-balance condition and complete the cycle normally. In some cases, the washer may not be able to balance the load and spin up to full speed. If the load is more wet than usual at the end of the cycle, redistribute the load evenly in the wash tub and run a Drain+Spin cycle.

In addition, the display will show:

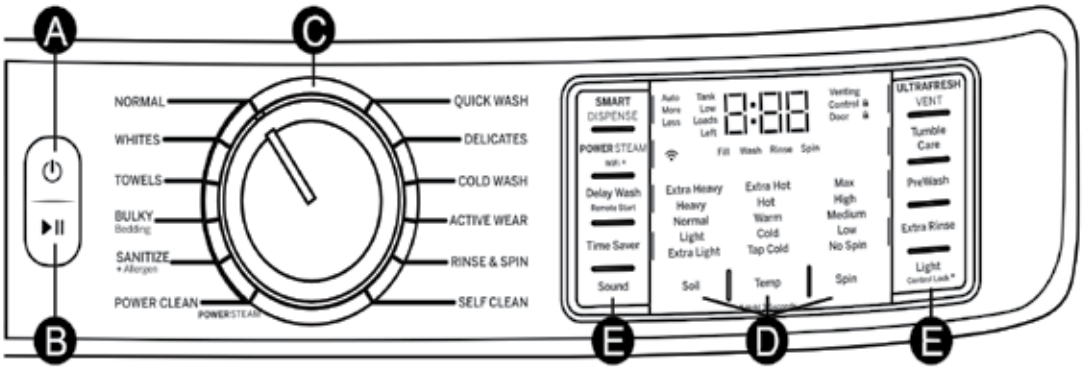
Wi-Fi	Will allow the appliance to communicate with a smartphone for remote appliance monitoring, control and notifications. It stays lit whenever the washer is on and is connected. It will blink during the commissioning process or if it loses connection to the network.
Venting	Venting will blink to indicate to select the ULTRAFRESH VENT feature at the end of the cycle. It then stays illuminated once selected until venting is complete.
Control	The controls on the washer are locked when this icon is illuminated. The user must press and hold the Control Lock pad to unlock the controls.
Door	This icon will illuminate while the door is locked and will blink while the washer is in the process of pausing and then unlocking.
Auto, More, Less (on some models)	The SmartDispense will automatically dose detergent according to the weight and soil level of the clothes. The user can adjust this feature to dose 40% MORE or 40% LESS detergent or turn it OFF to manually dose detergent.
Tank Low (on some models)	Will display when the SmartDispense tank needs to be refilled. Typically, this first lights up when there are approximately 8 to 10 loads of detergent remaining.
Loads Left (on some models)	Displays the estimated number of wash loads left for the amount of detergent in the SmartDispense tank.

Washer Features

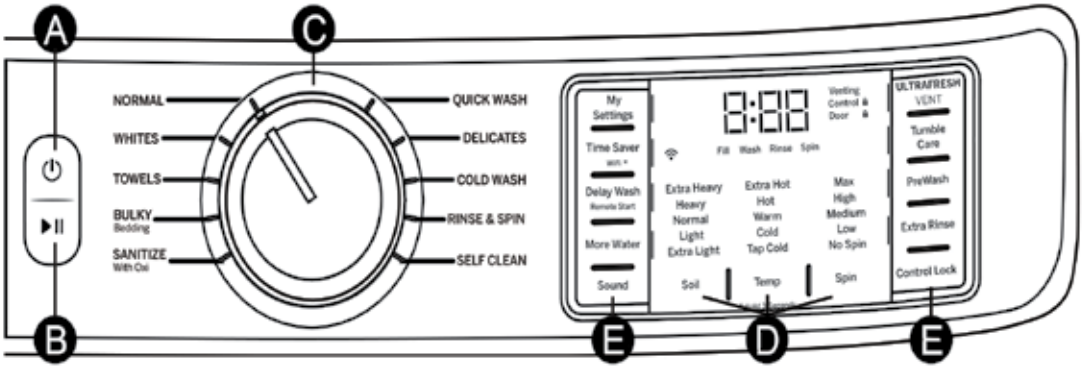
Models:
GFW850



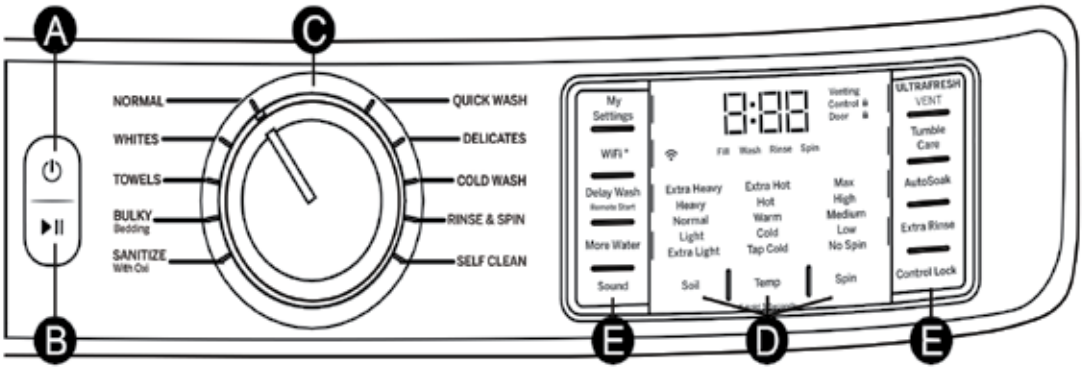
Models:
GFW650



Models:
GFW550



Models:
GFW510



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Ⓐ **Power**

Press Power to "wake up" the display. If the display is active, press Power to put the washer in standby mode. **NOTE**: Pressing Power does not disconnect the appliance from the power supply.

Ⓑ **Start and Pause**

Press to start a wash cycle. If the washer is running, pressing it once will pause the washer and unlock the door. It will take a few seconds for the door to unlock after pressing Pause. Press again to restart the wash cycle.

NOTE: If washer is paused and 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 pad. Water will flow in 45 seconds or less. The user may hear the door lock and unlock and the pump activate before water flows.

Ⓒ **Wash Cycles**

The wash cycles are optimized for specific types of wash loads. The chart below will help match the items to be washed with the best wash cycle settings. For optimal performance, select the cycle that most closely matches the items being washed. **Delay Wash/Remote Start** is available on all cycles.

Wash Cycle	Items to Wash
Normal	Cycle for normal, regular, or typical use for washing up to a full load of normally soiled cotton clothing.
Whites	Whites and household linens.
Heavy Duty	For sturdy colorfast fabrics and heavily soiled garments, towels, and jeans.
Towels and Sheets	For items such as towels, sheets, pillowcases and dish rags.
Bulky Bedding	Large coats, bed spreads, mattress covers, sleeping bags, and similar large bulky items.
Active Wear	Medium to lightly soiled athletic wear items of technical or synthetic fabrics.
Sanitize+ Allergen*	Heavily soiled colorfast items with the need for sanitization.
Sanitize With Oxi*	Heavily soiled colorfast items with the need for sanitization.
Power Clean*	For heavily soiled items which require extra cleaning power.
Delicates	For lingerie and special-care fabrics with light to normal soil. Provides gentle tumbling and soak during wash and rinse.

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Cold Wash	Cycle for normal, regular, or typical use for washing up to a full load of normally soiled cotton clothing using only cold water.
Active Wear*	Medium to lightly soiled athletic wear items of technical or synthetic fabrics.
Rinse and Spin	To quickly rinse out any items at any time. Utilizes a high speed spin to extract water from wet items.
Self-Clean	To clean drum and reduce odor.

***Some cycles and options may not be available on some models.**

NOTE: Tub Clean is a special cycle used to clean the washer drum and reduce odor. DO NOT add garments to this cycle. Remove detergent cup and add one cup of bleach or other commercially available product manufactured for this purpose, such as Tide® Washing Machine Cleaner.

NOTE:
The SANITIZE + Allergen cycle's water temperatures CANNOT be changed. This cycle utilizes elevated water temperature and a longer wash cycle to kill dust mites and reduce 99% of common bacteria from fabrics. A pump purge and extended rinse is incorporated for the purpose of removing contaminants and allergens, such as pet dander.

The SANITIZE With Oxi cycle's water temperatures CANNOT be changed. This cycle, when using an Oxi additive along with detergent, is designed to remove 99% of bacteria found in home laundry. Measure the detergent and the Oxi products carefully. Using the amounts appropriate for a large heavily soiled load in a front load washer, follow the detergent and the Oxi product label instructions. The washer hot water supply connection must provide a minimum of 120°F to ensure the effectiveness of this cycle.

Only the SANITIZE + Allergen and SANITIZE With Oxi cycles have been designed to meet the requirements of sanitizing effectiveness.

NSF Protocol P172
Sanitization Performance of Residential and Commercial, Family-Sized Clothes Washers

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Settings

Individual settings for soil level (Level), water temperature (Temp) and spin speed (Spin) can be set from the minimum to maximum. In general, the higher up the column, the more energy will be used.

Soil

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 pad until the desired setting has been reached. Choose between Extra Light, Light, Normal, Heavy or Extra Heavy soil levels on most cycles.

Temp

Adjust to select the proper water temperature for the wash cycle. The AutoSoak and PreWash rinse water is 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 Temp pad until the desired setting has been reached. Choose between Tap Cold, Cold, Warm, Hot or Extra Hot on most cycles. By design, to protect fabrics, not all wash temperatures are available for certain wash cycles. Extra Hot temperatures are enabled by the internal heater on models equipped with Steam capabilities.

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

Spin

Adjusting the Spin speed changes the final spin speed of the cycles. Always follow the garment manufacturer's care label when changing the Spin speed. To change the Spin speed, press the Spin speed pad until the desired setting has been reached. Choose between No Spin, Low, Medium, High or Max. Higher spin speeds are not available on certain cycles, such as DELICATES and ACTIVE WEAR. 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.

NOTE: This washer features a dBT™ (Dynamic Balancing Technology) system. This patented onboard sensing technology enables real-time balancing of the spin cycle for each load, saving time and providing a quiet wash. This should lead to more consistent wash times and an overall reduction in noise and vibration. If the washer should experience any excessive noise, vibration or shaking, simply Pause the washer, open the door, and manually redistribute the load before restarting the cycle.

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Options

SMARTDISPENSE™ (on some models): When selected, this feature will automatically add detergent to the wash, eliminating the need to add detergent for each load. See **SmartDispense™ (on some models)** under **Using The Washer** in this section for details.

MY SETTINGS (on some models): To save favorite settings, set the desired settings for wash cycle, soil level, spin speed and wash temperature settings and hold down the My Settings pad for 3 seconds. A beep will sound to indicate the cycle has been saved. To use custom settings, press the My Settings pad before washing a load. To change the saved settings, set the desired settings and hold down the My Settings pad for 3 seconds.

POWER STEAM (on some models): Power Steam adds steam into the washer before the wash cycle begins to assist with loosening stains on the NORMAL, WHITES, TOWELS, BULKY Bedding, SANITIZE+Allergen and POWER CLEAN cycles.

To use:
1. Press the Power pad to “wake up” the washer and select a wash cycle.

2. Press the POWER STEAM pad to activate steam.

3. Press the Start/Pause pad.

Delay Wash/Remote Start: The user can delay the start of a wash cycle for up to 24 hours or remote start the washer by using the Delay Wash/ Remote Start feature. Press to step by hours or hold to scroll the Delay Wash pad to set the amount of time to delay the start of the wash cycle. If washer has been connected to Wi-Fi, the first selection, “APP”, can be selected to enable remote starting of the washer from the GE Appliance Smartphone app. Or, if selecting a delay time in hours, the machine will count down and start automatically following this period. Press the Start pad once the user has configured the Delay Wash to the proper setting to enable this feature. To cancel this option, simply power off and power on the controls.

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Wi-Fi (may be a shared pad with other options): Press and hold the Wi-Fi pad for 3 seconds to activate. See the **Wi-Fi Connect** section for details on how to get started with Wi-Fi connection.

NOTE: If the door is not fully closed, a reminder signal will beep, reminding to do so.

NOTE: If the door is opened when the delay is counting down, the machine will enter the pause state. Close the door and press **Start** again in order to restart the countdown.

Time Saver (on some models): This option reduces the overall washer cycle time by optimizing the wash, rinse and spin actions and/or gently raising the wash temperature to get clothes cleaned faster. Option is available on **NORMAL, WHITES, TOWELS, DELICATES, BULKY** Bedding and **ACTIVE WEAR** cycles. Total wash time will vary based on cycle chosen and options selected.

To use:

1. Turn power on and select a wash cycle which has **Time Saver** as an option.

2. Press the **Time Saver** pad to reduce the overall wash time.

3. Press the **Start/Pause** pad.

More Water (on some models): This option adds approximately 3 gallons to the wash and rinse portions of the cycle. If the option is selected before the cycle starts, the water will be added from the beginning of the wash cycle and later to the rinse. If the option is selected during the wash portion, more water will be added at this point and later to the rinse. Likewise, if the **More Water** option is selected after the wash portion has completed, the washer will add more water to the rinse only. If wash and rinse have completed, the **More Water** pad will no longer be active.

ULTRAFRESH VENT System with ODORBLOCK™: The ULTRAFRESH VENT System with OdorBlock was designed to eliminate excess moisture in the washer following a wash cycle to help prevent odors from developing. This washer was designed to drain water at the end of the cycle more effectively. Following the wash cycle, the user can then choose to leave the door open or select the ULTRAFRESH VENT feature to assist with drying out the gasket and other areas of the washer. The OdorBlock system features multiple components which are manufactured with Microban® antimicrobial technology.* Microban is a safe and effective antimicrobial technology that will last the life of the washer. For more information, please visit **www.microban.com/geappliances.**

ULTRAFRESH VENT is available after the wash cycle is complete and the cleaned laundry has been removed. Once the door is closed, a notification tune will play and the ULTRAFRESH VENT pad LED will blink. Upon pressing the pad, ULTRAFRESH VENT will begin.

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To select ULTRAFRESH VENT at any other point, power on the washer, ensure a cycle is not actively running, and remove any garments from the basket, then press and release the **ULTRAFRESH VENT** pad so that the notification tune plays and the **ULTRAFRESH VENT** pad LED begins to blink. Then press the **ULTRAFRESH VENT** pad again to start the feature.

During the operation of ULTRAFRESH VENT, the door will remain locked and the washer will intermittently spin at low speeds for up to 8 hours.

If garments are detected in the basket during ULTRAFRESH VENT, the washer will instead run **TUMBLE CARE or 1 STEP WASH + DRY**, based on option availability for the model.

The ULTRAFRESH VENT feature may be cancelled at any time by pressing the **POWER** pad, turning the cycle knob, or pressing the **ULTRAFRESH VENT** pad.

*Microban® is a registered trademark of Microban International, Ltd.

1 STEP WASH + DRY (on some models): This option is available on all cycles except **Self Clean**. The **1 STEP WASH + DRY** is intended for small loads only. Use when clothes need to be washed, dried and ready to wear or finished the next morning. This feature will tumble clothes and introduce a constant stream of air into the washer compartment upon completion of select wash cycles. Although the drying portion is set to 8 hours, the clothes can be removed at any time by pressing **Pause** or **Power** to cancel the cycle.

Tumble Care (on some models): Freshly tumbles garments periodically for up to 8 hours after the wash cycle is complete to lessen the setting of wrinkles and creases when the user is not able to move clothing to the dryer right away. At the end of the cycle, the display will scroll “END” and after ten minutes the **Tumble Care** will begin. It can be stopped at any time by pressing the **Power** pad.

PreWash (on some models): Prewash is an extra wash before the main wash. Use it for heavily soiled clothes or for clothes with a care label that recommends prewashing before washing. Be sure to add liquid or powder high-efficiency detergent, or the proper wash additive to the prewash dispenser. Washers equipped with **SmartDispense** will automatically add the proper amount of detergent for prewash based on the load size. **PreWash** must be selected prior to pressing **Start**. The **PreWash** feature will fill the washer (adding the prewash detergent), tumble the clothes, drain and spin. Then the washer will run the selected wash cycle.

NOTE: In some special cycles, the prewash is selected automatically as the default. This selection can be modified at any time.

AutoSoak (on some models): For soaking garments prior to the wash cycle. This option begins with a brief tumble and then proceeds to soak the clothes with water and detergent for a specified period of time. Once complete, the cycle will continue automatically. **AutoSoak** must be selected prior to pressing the start pad. The **AutoSoak** time will add an additional 15 minutes, 30 minutes, 1 hour or 2 hours to the overall wash time. High-efficiency detergent from the main wash compartment in the dispenser is used for the **AutoSoak** period and main wash cycle.

Extra Rinse

This option allows for an extra rinse during a cycle to remove excess dirt and detergent from soiled loads. Press the **Extra Rinse** pad to select.

NOTE: On **Rinse & Spin** cycle, a drain and spin cycle can be achieved by pressing the **Extra Rinse** pad until the LED is no longer illuminated.

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Light (on some models)
The basket light will turn on and remain on for 5 minutes when the door opens, **Start/Pause** pad is pressed, or by pressing the **Light** pad. The basket light can be turned off by pressing and holding the **Light** pad.

Sound: To change the loudness of the end of cycle signal and the press pad volume, press the **Sound pad** as many times as needed to reach the desired volume. There are four sound levels including off.

Control Lock (Light-Control Lock pad) (depending on model): The user can lock the controls to prevent any selections from being made. Or the user can lock or unlock the controls after a cycle has started. Children cannot accidentally start the washer by touching pads with this option selected. To lock/unlock the washer, press and hold the **Control Lock/Light-Control Lock** pad for 3 seconds. A sound is made to indicate the lock/unlock status. The control lock icon on the display will light up when it is on.

NOTE: The **Power** pad can still be used when the machine is locked.

Using the Washer

Dispenser Drawer

Slowly open the dispenser drawer by pulling it out until it stops.

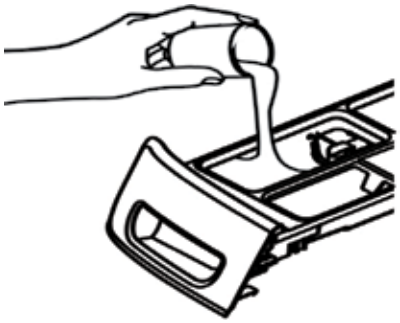
After adding laundry products, slowly close the dispenser drawer. Closing the drawer too quickly could result in early dispensing of the bleach, fabric softener or detergent.

Water may be seen in the bleach and fabric softener compartments at the end of the cycle. This is a result of the flushing/siphoning action and is part of the normal operation of the washer.

Use only HE High-Efficiency detergent.

Do **NOT** put detergent packets in the dispenser drawer.

NOTE: Use only liquid or powder HE detergents and additives in the dispenser drawer. Laundry detergent packets should only be added directly to the wash basket following the manufacturer's directions.



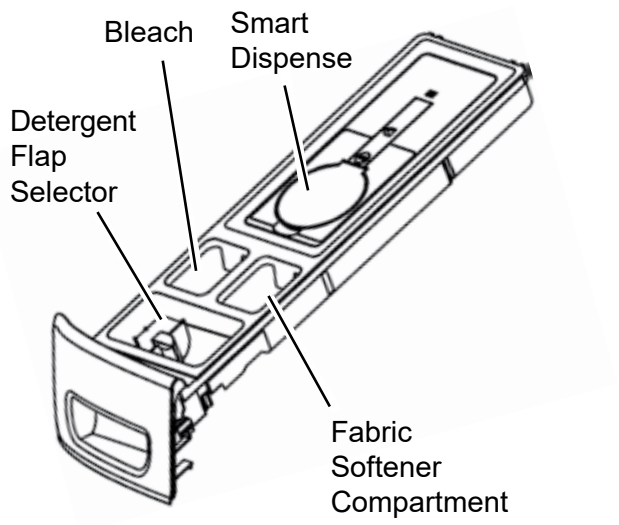
SmartDispense™ (on some models)

When selected, this feature will automatically add detergent to the wash, eliminating the need to add detergent for each load.

The detergent amount selection on the control panel will default to **AUTO** when first powering up the washing machine. When **AUTO** is selected, the amount of detergent needed for each laundry load will automatically be determined based on the size of the load the machine senses.

For **AUTO**, the washer will dispense approximately 1.5 oz. of detergent for an 8 pound normal load. For other loads, it will adjust proportionally based on the size of load and garment type. If select **LESS**, the amount of detergent will be reduced by 40%. This may be desired for higher concentrate detergents or if the user has very soft water. For heavily soiled loads, select **MORE** to add 40% more detergent than the **AUTO** level.

NOTE: Not all cycles will allow the use of the SmartDispense feature. If the light is not illuminated and pressing the **SMART DISPENSE** pad results in a beeping tone, then SmartDispense is not allowed for the cycle that has been selected. Detergent will need to be added directly to the detergent compartment for these cycles.



If it is desired to manually select the amount of detergent for a given load, this can be done by pressing the **SMART DISPENSE** pad on the control panel to select detergent for a **Small** or **Large** load. **Small** will provide less detergent than average and **Large** will provide more detergent than average.

NOTE: If it is desired to manually add detergent for a load, that detergent will need to be added directly to the basket, and the SMART DISPENSE set to off for that particular load.

The smart dispense feature can be disabled by pressing the SMART DISPENSE pad until off is selected.

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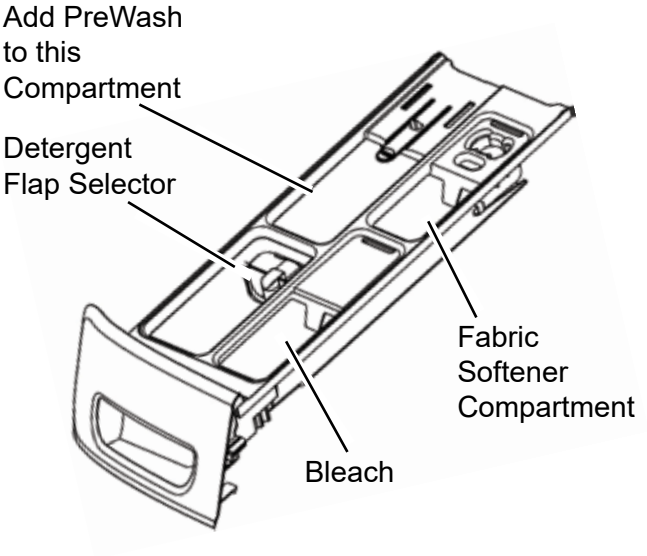
Detergent Compartment

- **Only use high-efficiency detergent in this washer. Use the detergent manufacturer's recommended amount. DO NOT fill above the MAX line.**

The detergent compartment is in the left front of the dispenser drawer.

- **Powder Detergent**: Lift the flap up for powder detergent. This must be done to dissolve and flush detergent properly. Follow the detergent manufacturer's instructions when measuring the amount of powder detergent to use.
- **Liquid Detergent**: Keep the flap down for liquid detergent. This retains the liquid detergent until it automatically flushes at the start of the wash cycle. Follow the detergent manufacturer's instructions when measuring the amount of liquid detergent to use.
- Detergent usage may need to be adjusted for water temperature, water hardness, size and soil level of the load. Avoid using too much detergent in the washer since it can lead to over-sudsing and detergent residue being left on the clothes.



Fabric Softener Compartment

If desired, pour the recommended amount of liquid fabric softener into the compartment labeled "Fabric Softener".

Use only liquid fabric softener in the dispenser.

Dilute with water to the maximum fill line.

Do not exceed the maximum fill line. Overfilling can cause early dispensing of the fabric softener, which could stain clothes.

NOTE: Do not pour fabric softener directly on the wash load.

Liquid Bleach Compartment

If desired, measure out the recommended amount of liquid bleach, not to exceed 1/3 cup (80 ml.) and pour into the compartment labeled "LIQUID BLEACH" marked with this symbol.

It is recommended to use High-Efficiency (HE) bleach in this front-load washer.

Do not exceed the maximum fill line. Overfilling can cause early dispensing of the bleach which could result in damaged clothes.

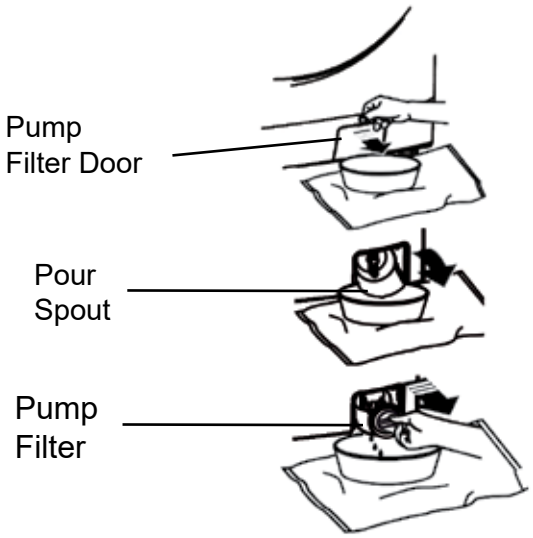
NOTE: Do not use powdered bleach or laundry detergent/additive packets in the dispenser.

Drain Pump Filter

Clean EVERY MONTH to remove any items that may have been caught in the filter or housing.

Due to the nature of the front-load washer, it is sometimes possible for small articles to pass to the pump. The washer has a filter to capture lost items so they are not dumped to the drain. To retrieve lost items, clean out the pump filter.

1. Using a small flat-head screw-driver or coin, open the access door.
2. Place a shallow pan or dish under the pump access door and towels on the floor in front of the washer to protect the floor. It is normal to catch about a cup of water when the filter is removed.
3. Pull down the pour spout.
4. Turn the pump filter counter-clockwise (CCW) and remove the filter slowly, controlling the flow of the draining water.
5. Remove the filter and clean the debris from the filter.
6. Replace the filter and turn clockwise (CW). Tighten securely.
7. Flip up the pour spout.
8. Close the access door by hooking the bottom tabs first, then rotating the access door shut.



Drain Hose Extension

There is a drain hose kit to allow for additional length to the washer drain hose. Only one should be used. The kit number is WH49X316. The maximum height the drain will pump out is 58 inches.

Washer Cycle Defaults

When a cycle is initially set, the default cycle settings are displayed. The following table displays the default selections for each cycle. Times will also change depending if time saver has been selected and/or different options selected.

Time Saver Not Selected	Default Soil Selection	Default Temp Selection	Default Spin Selection	Default Initial Cycle Time
Cycle				
Active Wear	Normal	Warm	Low	50
Bulky Bedding	Normal	Warm	High	64
Cold Wash	Normal	Tap Cold	Max	62
Delicates	Light	Tap Cold	Low	38
Normal (GFW510)	Normal	Warm	Medium	50
Normal (GFW550)	Normal	Warm	Medium	55
Normal (GFW650, GFW850)	Normal	Warm	Medium	55
Power Clean	Extra Heavy	Hot	Max	90
Quick Wash	Extra Light	Warm	High	20
Rinse and Spin	N/A	N/A	Max	19
Sanitize plus Allergen	Heavy	Extra Hot	Max	107
Sanitize with Oxi	Heavy	Extra Hot	Max	75
Self-Clean	N/A	N/A	Medium	51
Towels	Normal	Warm	Max	61
Whites (GFW510, GFW550)	Normal	Hot	High	63
Whites (GFW650, GFW850)	Normal	Hot	High	63

Time Saver Selected	Default Soil Selection	Default Temp Selection	Default Spin Selection	Default Initial Cycle Time
Cycle				
Active Wear	Normal	Warm	Low	37
Bulky Bedding	Normal	Warm	High	51
Delicates	Light	Tap Cold	Low	32
Normal (GFW510, GFW550)	Normal	Warm	Medium	35
Normal (GFW650, GFW850)	Normal	Warm	Medium	35
Towels	Normal	Warm	Max	44
Whites (GFW510, GFW550)	Normal	Hot	High	41
Whites (GFW650, GFW850)	Normal	Hot	High	41

Stacking Instructions

If you are planning to stack the washer and dryer, order Stacking Kit number GFA28KITN to be used for this dryer.

Kit sold separately.

Stack dryer only on washer. Do not stack washer on dryer, washer on washer or dryer on dryer.

Do not modify this installation kit. Any modification will void the product Warranty.

WARNING!

Make sure the dryer is unplugged.

Two or more people are recommended to safely lift the dryer into and out of position.

Avoid damage to the existing utility services.

DO NOT place the washer on top of the dryer.

Location Requirements

When installed in a location other than an alcove or closet, the minimal clearances to combustible surfaces and for air opening are: 1-inch on both sides, and 3-inches' front and rear, and 1-inch on top. Consideration must be given to provide adequate clearance for installation and service.

NOTE: If the dryer is approved for installation in an alcove or a closet, it will be stated on a label on the back.

When installed in an alcove or closet:

- The dryer MUST be vented to the outdoors.
- Minimum clearance between dryer cabinet and adjacent walls or other surfaces is:

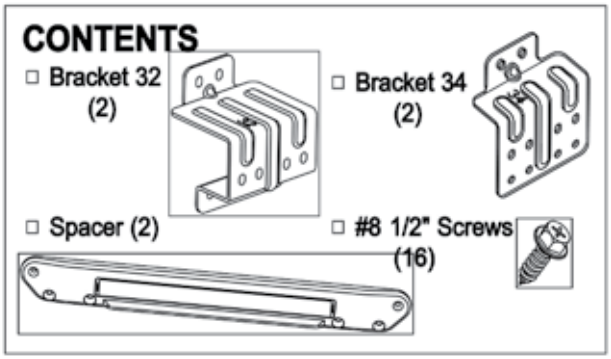
  0” either side*

  0” front

  0” rear

  0” top

- Minimum vertical space from floor to overhead shelves, cabinets, ceilings, etc., is 67.7 inches.
- Closet doors must be louvered or otherwise ventilated and have at least 60 square inches of open area equally distributed. If the closet contains both a washer and a dryer, doors must contain a minimum of 120 square inches of open area equally distributed.



Tools Needed

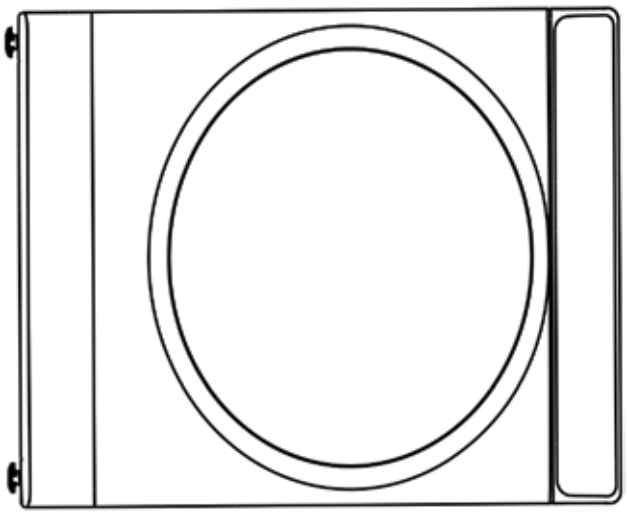
- Phillips-head Screw-driver 
- Level 
- Gloves 
- Open End Wrench 
- Pliers 

Installation Preparation

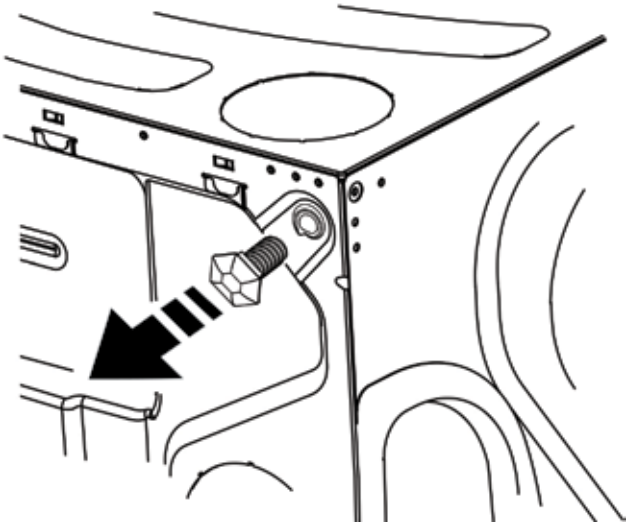
1. Remove the packaging.
2. Flatten the product carton to use as a pad to lay the dryer down on its side. Continue using the carton to protect the finished floor in front of the installation location.

Remove The Leveling Dryer Legs

1. Carefully lay the dryer on its back or side. Use the packing material so not to scratch the finish on the dryer.



2. Use an open-end wrench or pliers to remove all four dryer leveling legs. **NOTE**: Retain the leveling legs for future use.

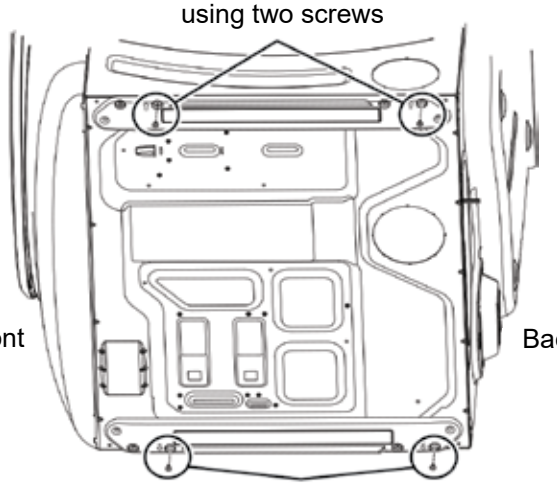


Install Spacers to Dryer Bottom

1. Locate a spacer on the bottom side with its holes over the leveling leg holes. Attach spacer using two screws. Attach the second spacer on the other bottom side using two screws. **NOTE**: The arrows on the spacers should point to the outside.

Make sure the arrows on the spacers point to the outside.

Attach spacer using two screws



Front Back

Attach spacer using two screws

Make sure the arrows on the spacers point to the outside.

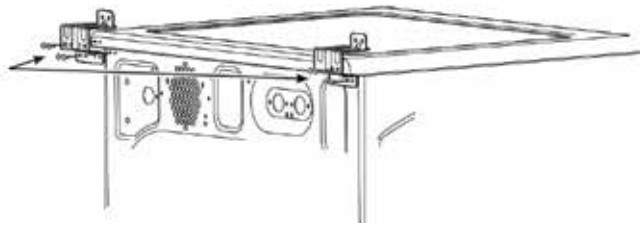
Installing Appropriate Brackets

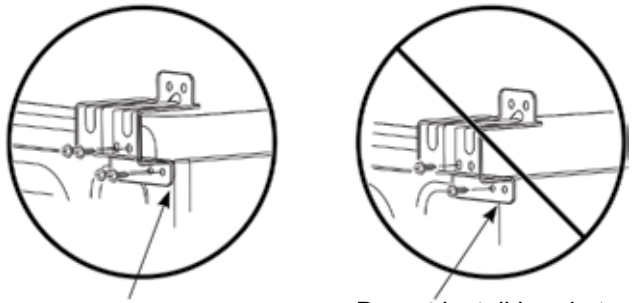
Washer Depth	Dryer Depth	Bracket Number
32-inch	32-inch	32-inch
34-inch	32-inch	34-inch

Select the appropriate brackets for your model sizes. Using the outside holes in the bracket, attach it to the top left corner of the washer back using four screws. Repeat on the top right corner of the washer back.

32 Brackets for 32-Inch Washer and Dryer Combinations

Attach brackets to washer using four screws on each side.





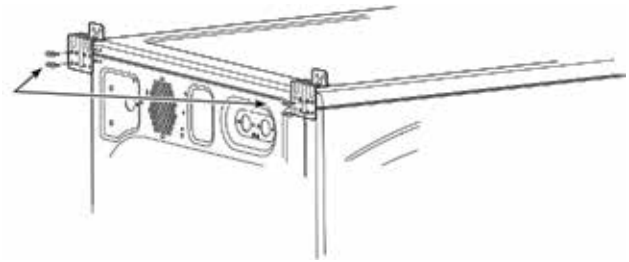
Install brackets flush at washers edges

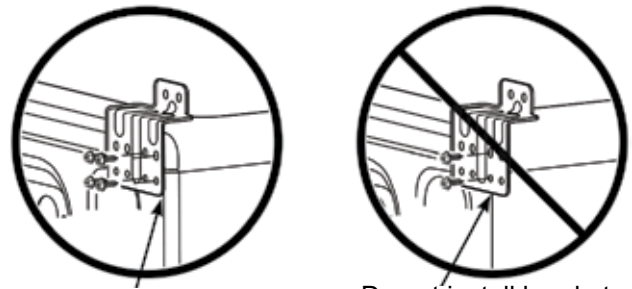
Do not install brackets overhanging washers edges

OR

34 Brackets for 34-Inch Washer and 32-Inch Dryer Combinations

Attach brackets to washer using 4 screws on each side.





Install brackets flush at washers edges

Do not install brackets overhanging washers edges

Prepare The Washer And Dryer

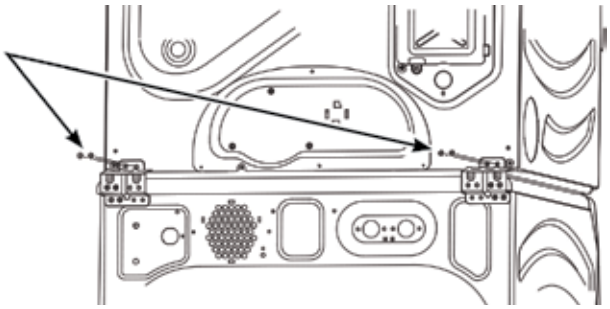
1. Place the washer in the approximate final installation location.
2. Make sure the washer is level. Refer to the washer Installation Instructions for details.
3. Upright the dryer.
4. Reverse the washer and dryer door swings, if desired, before stacking the dryer on the washer. See the washer and dryer Installation Instructions for details.

Install Dryer And Bracket On Washer

1. Lift the dryer onto the top of the washer. Be sure to lift the dryer high enough to clear the washer control panel. Be careful not to scratch the top of the washer with the spacers. Protect the washer control panel with cardboard or other protection.
2. Align the holes in the back of the dryer with the holes in the bracket sticking up from the washer. Attach both brackets to the dryer with two screws on each side.

32 Brackets for 32-Inch Washer and Dryer Combinations

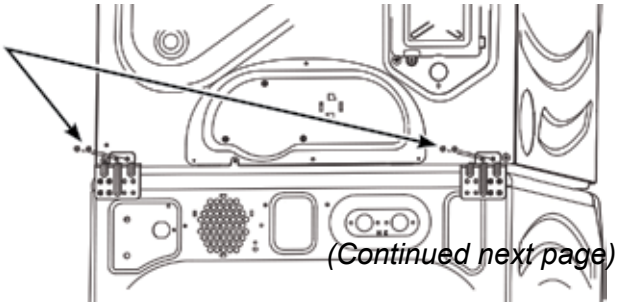
Attach brackets to washer using two screws on each side.



OR

34 Brackets for 34-Inch Washer and 32-Inch Dryer Combinations

Attach brackets to washer using two screws on each side.

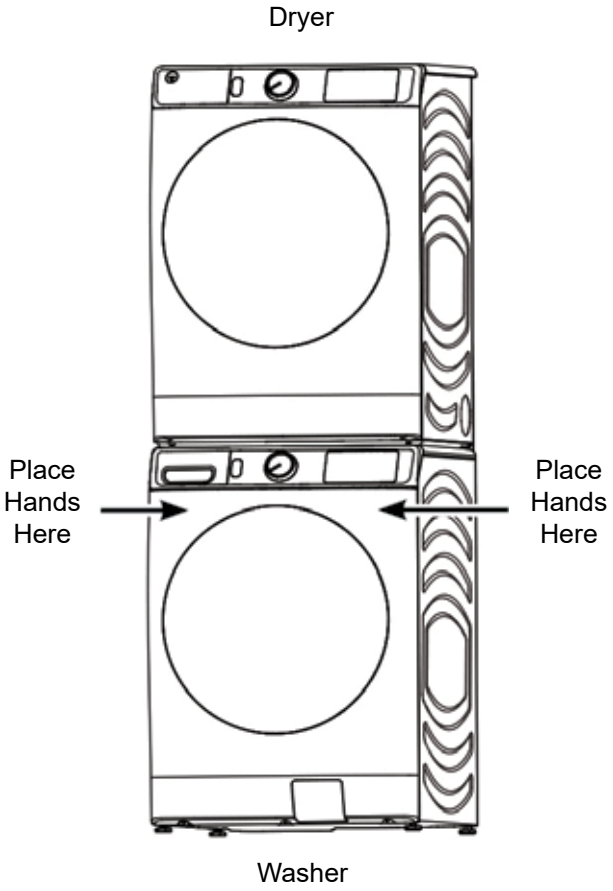


(Continued next page)

Finalize The Installation

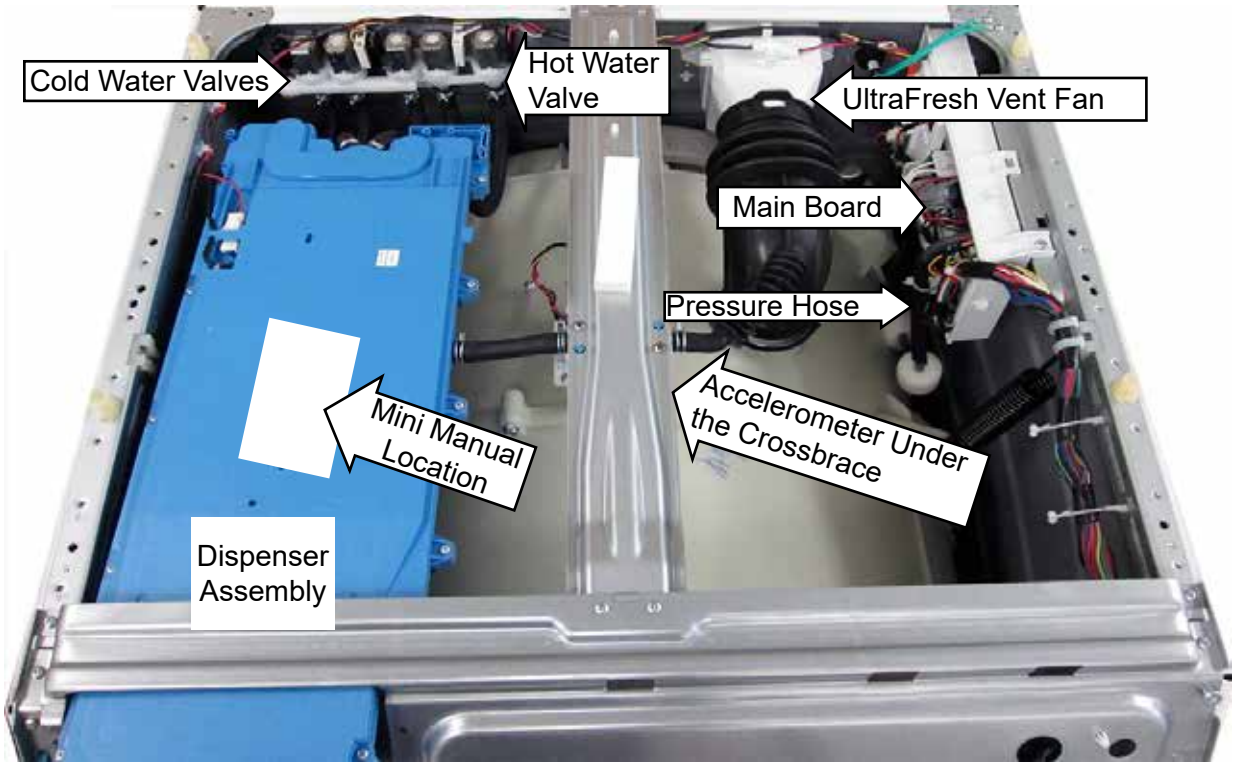
CAUTION: Do not push on the dryer once installed to top of the washer. Pushing on the dryer may result in pinched fingers.

1. Refer to the washer Installation Instructions to complete the washer installation.
2. Refer to the dryer Installation Instructions to complete the dryer installation.
3. Carefully slide or walk the stacked washer and dryer into place. Use felt pads or other sliding device to assist moving and to protect flooring.
4. Verify the units are level. Make adjustments to the washer feet if necessary to level. It is always best to set the washer feet to the minimum height necessary to level the washer and dryer properly.

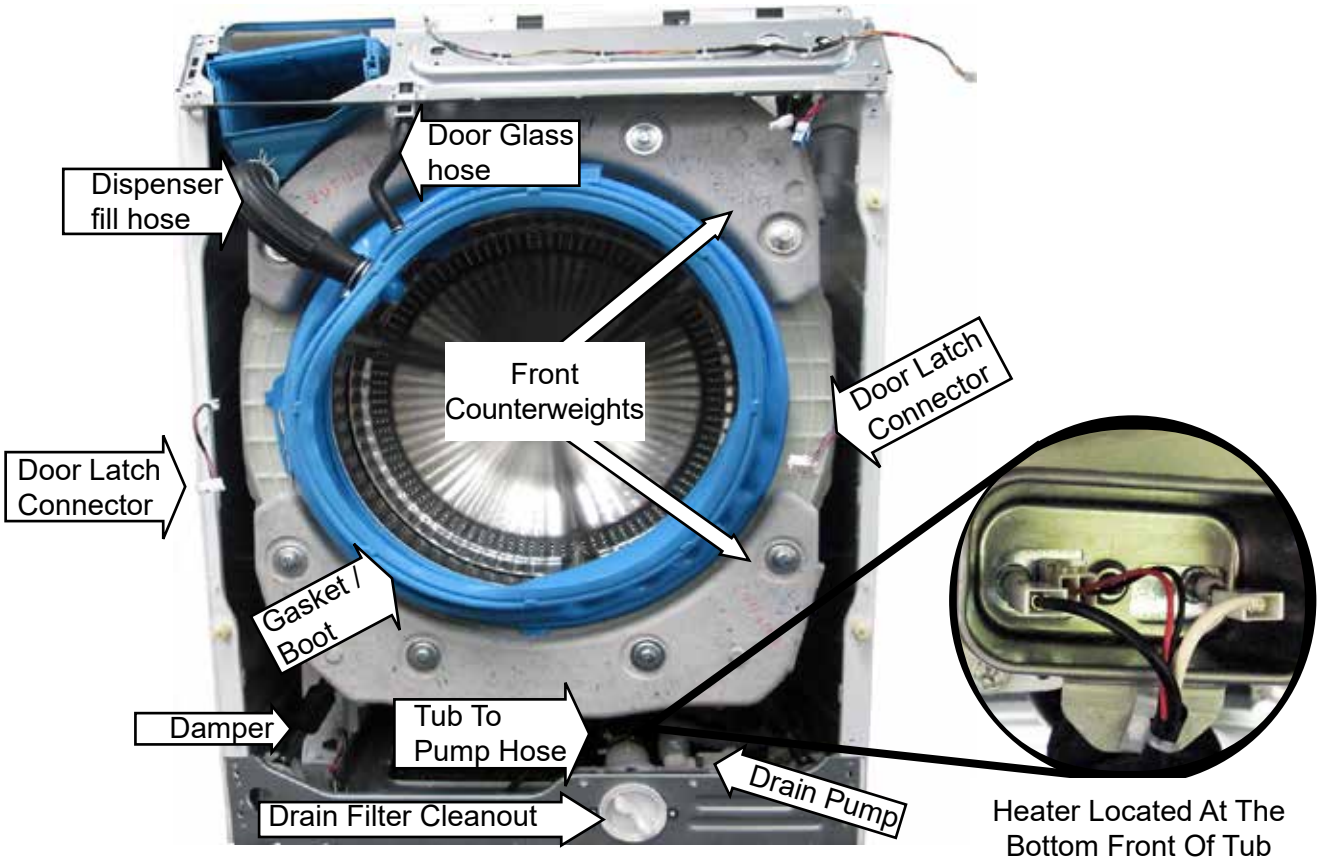


Component Locator Views

Top View



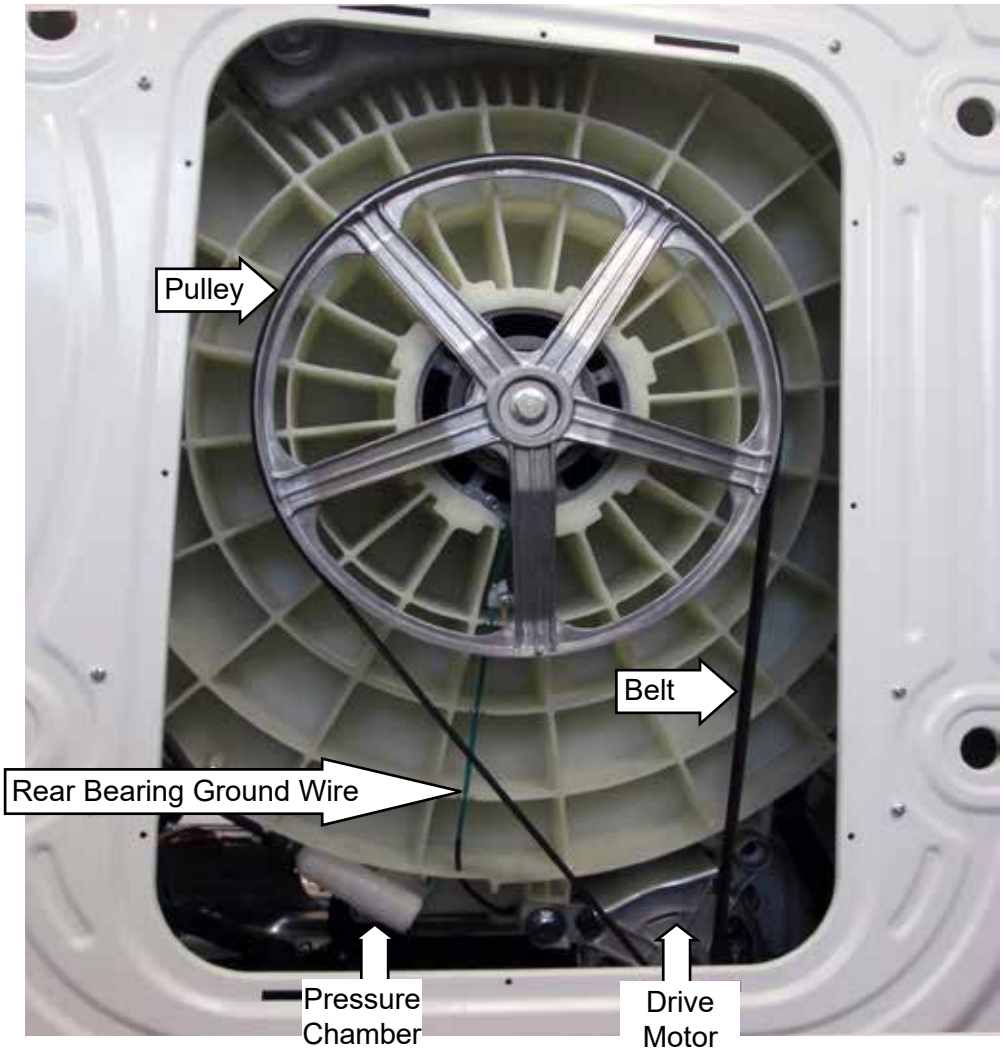
Front View



Heater Located At The Bottom Front Of Tub

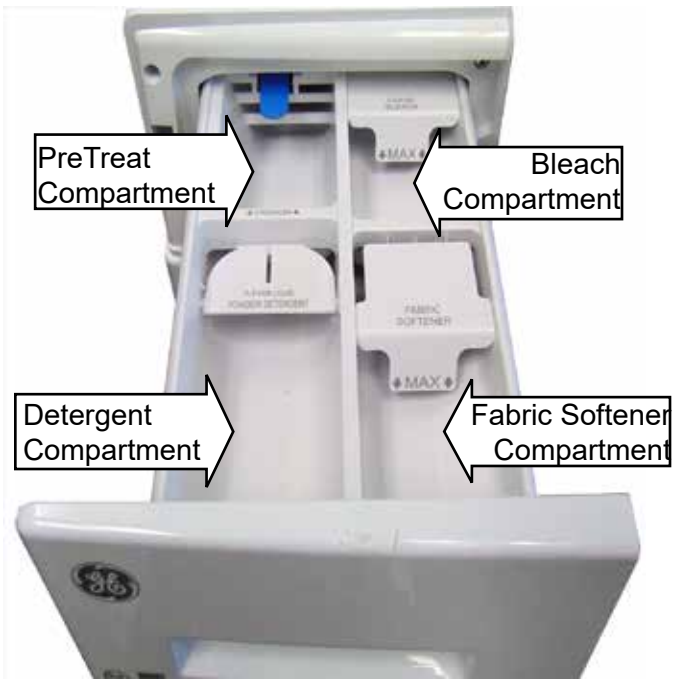
(*Continued next page*)

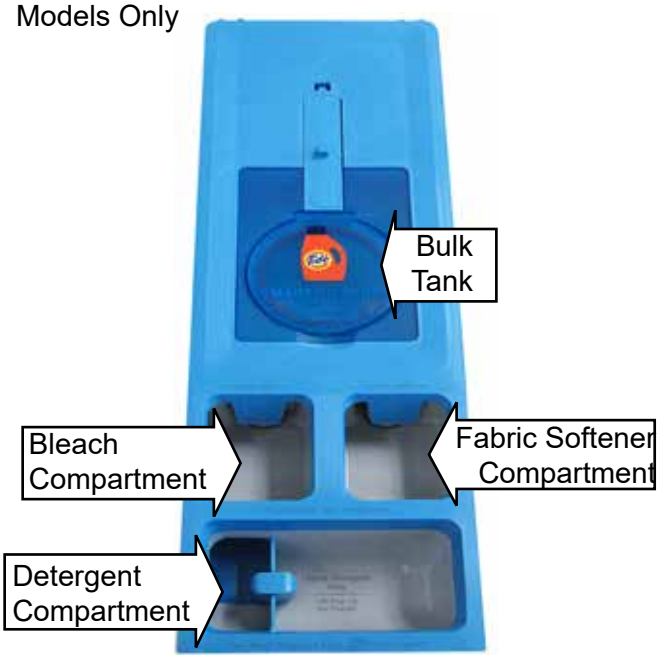
Rear View (Back Cover Removed)



Dispenser View

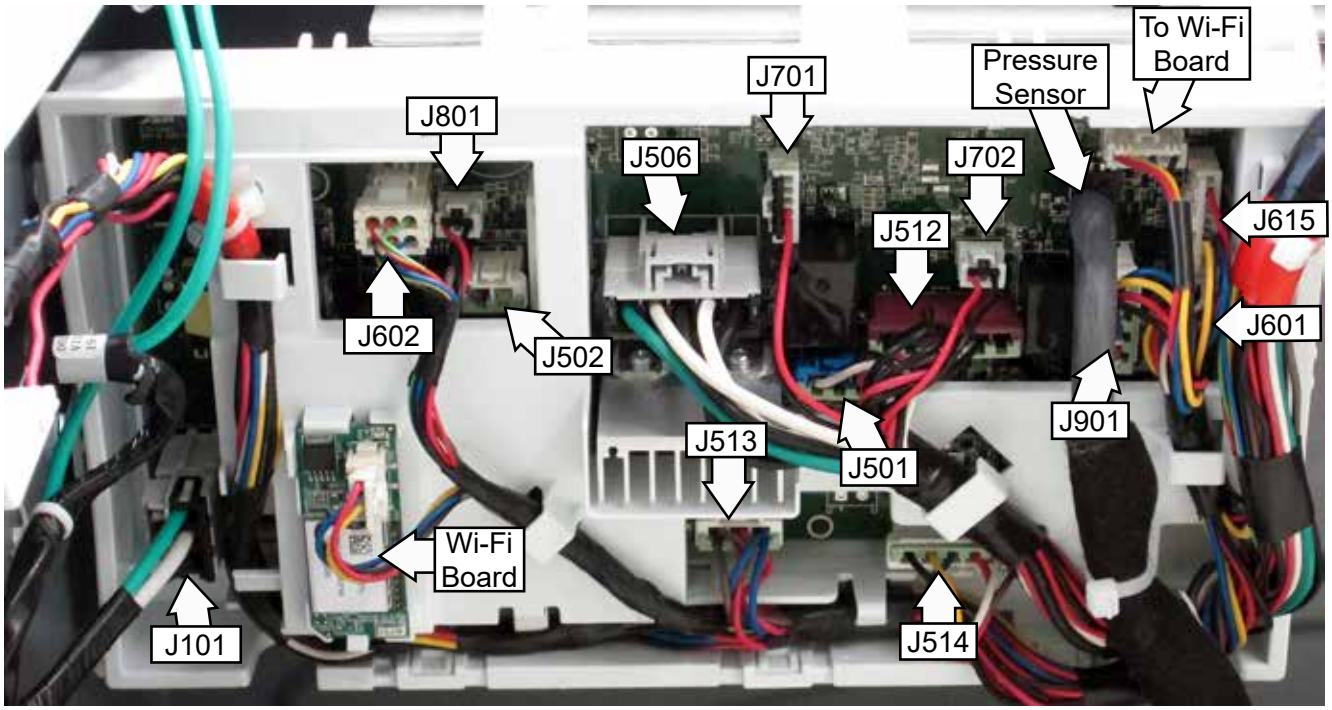
NOTE: Bulk Tank On GTW650 and GTW850 Models Only





Main Board

NOTE: Wire colors in the following pictures may not be the same as the machine being serviced.



J101	Board Line Voltage
J501	Damper (Pin 1: Open Switched Line) (Pin 2: Neutral) (Pin 3: Closed Switched Line)
J502	Damper (Pin 1: COM Switched Line)
J506	AC Voltage to Heater, AC Voltage to Inverter
J512	AC Voltage Out to Drain Pump, AC Voltage Out to Fan, Damper Detection (Pin 5)
J513	AC Voltage Out to Door Lock Assembly
J514	AC Voltage Out to Water Valves
J601	DC Voltage Out to Inverter Board and Communication Between Main and Inverter Boards
J602	DC Out to RJ45
J615	DC Out to User Interface and Communication Between Main Board and User Interface
J701	DC Out to Thermistor
J702	DC Voltage Out to Reed Switch
J801	DC Voltage Out to Tub Light
J901	DC Voltage Out to Accelerometer and Communication Between Main Board

User Interface Board (UI)

J101	DC Voltage in from Main Board and Communication Out to Main Board

Accelerometer Board

J901	DC Voltage Comm in from Main Board

Inverter Board

J101	Line and Neutral
J301	Voltage Out to Stator
J401	For Resistance Checking Only to Drive Motor
J502	Output and Input to Hall Sensor in Motor

Wi-Fi Board

J101	DC Voltage in from Main Board

Control Panel

The control panel is held in place with five Phillips-head screws behind the dispenser drawer and two tabs on the right side of the control panel. Also when the dispenser drawer is removed, the RJ45 connector can be accessed.

NOTE: If the RJ45 rubber cover is pulled out of the control panel, use a little detergent to reinsert it back into the control panel.

Control Panel Removal

1. Pull the dispenser out to the stop position.
2. Press down on the lock tab, then pull the dispenser out from the control panel.

3. Remove the five Phillips-head screws from the control panel dispenser recess.

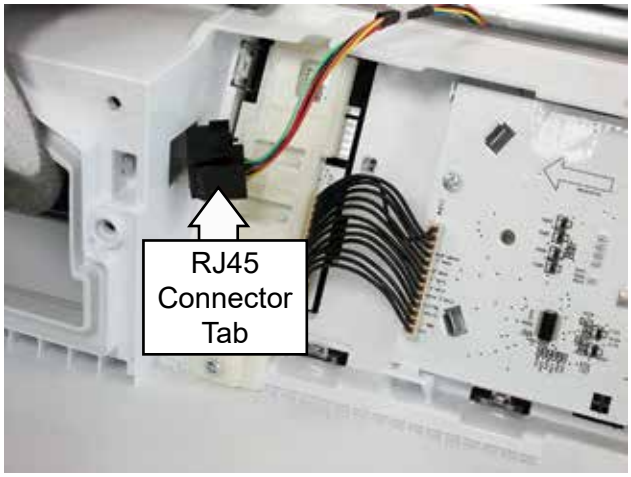
There are two different types of screws used. Be sure to note the locations of the screws.

4. Pull the control panel out slightly and raise the left side of the control panel upwards. This will disengage the top left side tab.

5. Pull the control panel up and off from the front panel and disconnect the harness.

(*Continued next page*)

6. Push in on the tab that secures the RJ45 connector to the control panel.



Top Panel

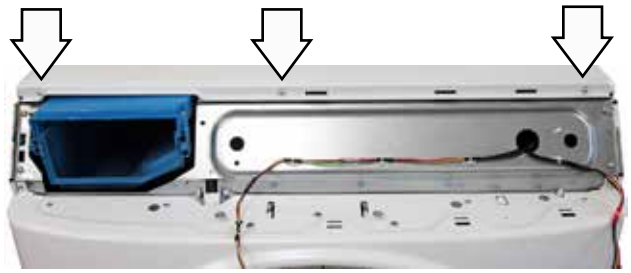
WARNING: Sharp edges may be exposed when servicing the washer. Use caution to avoid injury and wear Kevlar gloves or equivalent protection.

NOTE: Combined Phillips-head and metric hex-head screws can be utilized throughout this appliance. Either a Phillips screw-driver or metric wrench can be used to extract or install these screws.

Removal of the top panel provides access to the dispenser, water valves, water level sensor, two RJ45 connector housings and line filter.

Top Panel Removal

1. Remove the control panel (see **Control Panel Removal**, under **Control Panel**, in this section).
2. Remove three Phillips-head screws at the front of the top cover.



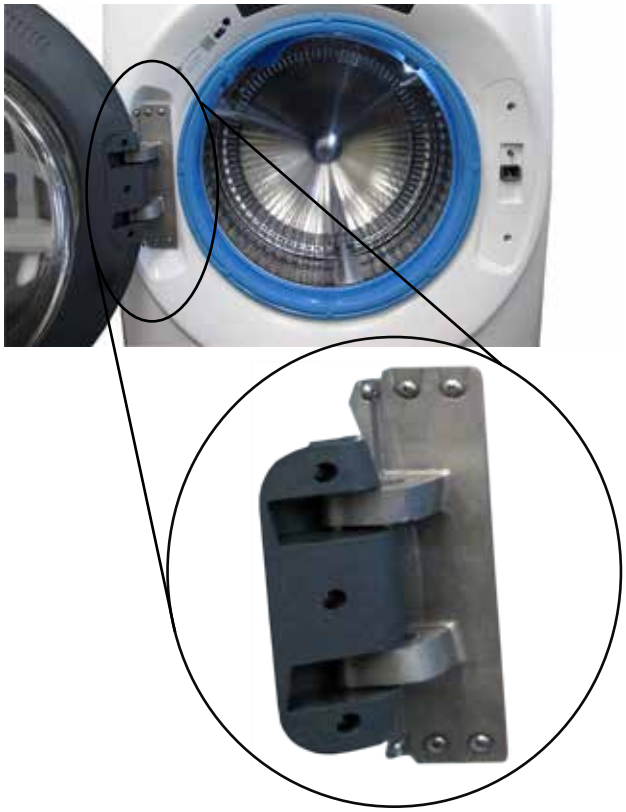
3. Pull the top panel forward to disengage the rear guide posts and then lift up.

Door

The door is reversible and can be ordered as a complete assembly (hinge included). The door hinge is attached to the front panel with six Phillips-head screws and two hooks that engage the two cutouts in the front panel.

Door Removal

1. Remove the six Phillips-head screws that hold the hinge to the front panel. The door will stay in place.
2. Lift the door and hinge 1/4-inch to disengage the hinge hooks from the front panel.



Door Reversal

WARNING: Shock Hazard Unplug the appliance or turn off the circuit breaker before servicing. Pressing the Power pad DOES NOT disconnect power.

WARNING: Shock Hazard

Certain internal parts are intentionally not grounded and may present a risk of electric shock only during servicing.

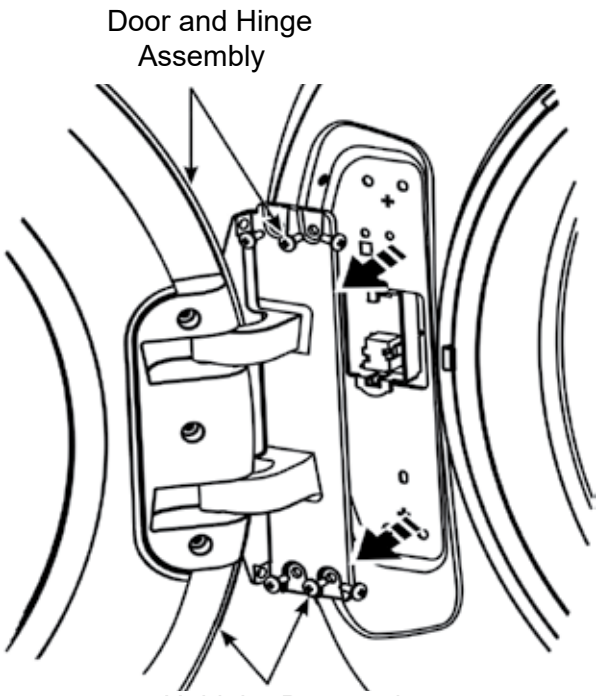
Service Personnel: DO NOT contact the following parts while the appliance is energized: water valve, drain pump, NTC, heater, door lock, inverter board, motor and MC board.

Tools Needed

- Phillips-head Screw-driver 
- Lock Bar, Provided With Machine 

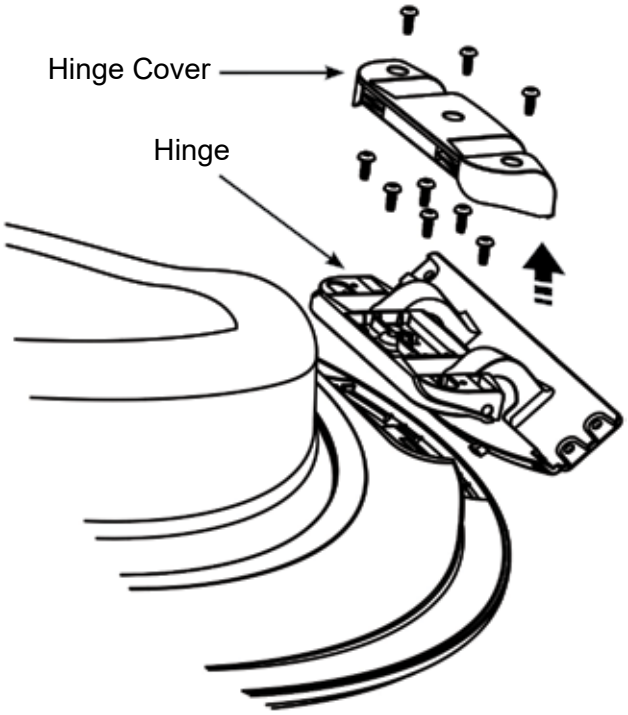
Step 1: Remove The Door Assembly

- Open the washer door.
- While supporting the door, remove the 6 screws from the hinge in the washer face.
- Lift the door assembly to remove it from the washer face and set it on a protective surface.



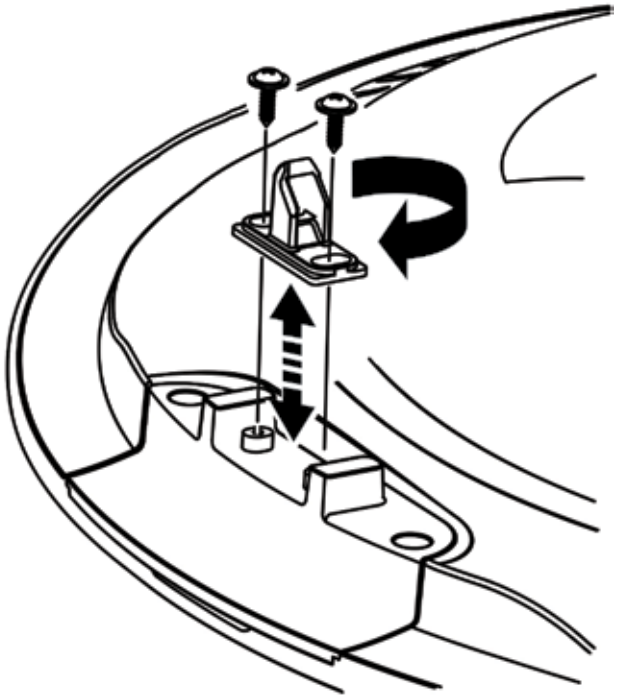
Step 2: Remove Hinge Cover And Door Hinge

- Remove the three screws from the hinge cover and remove the cover.
- Remove the six screws from the hinge and remove the hinge from the door.



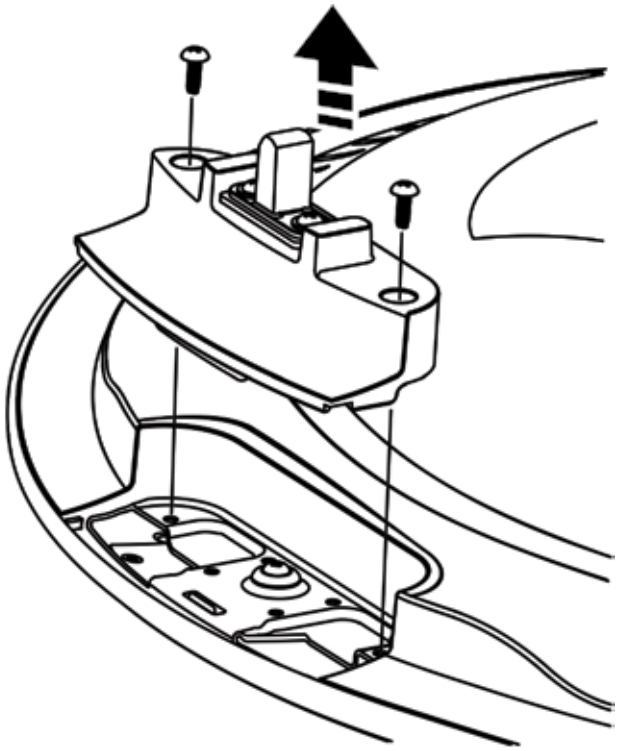
Step 3: Remove, Reverse And Replace Door Striker

- Remove the two screws from the striker. Rotate the striker 180° and reinstall the striker with its screws.

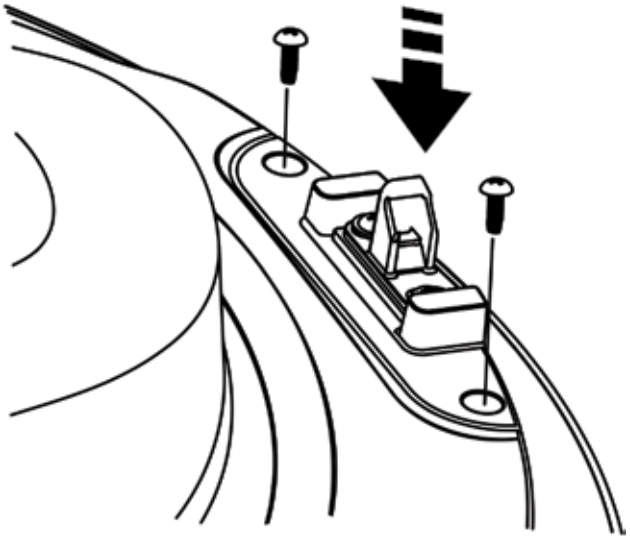


Step 4: Remove, Reverse And Replace Door Striker

- Remove the two screws from the striker assembly and remove the assembly by pulling it toward the center, pushing it up and pulling it out.

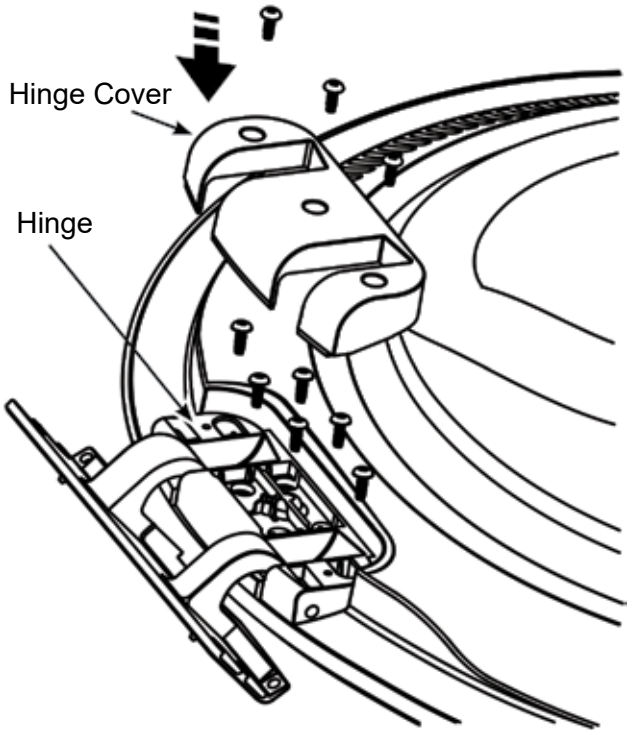


- Rotate the striker assembly and replace it on the opposite side with its screws.

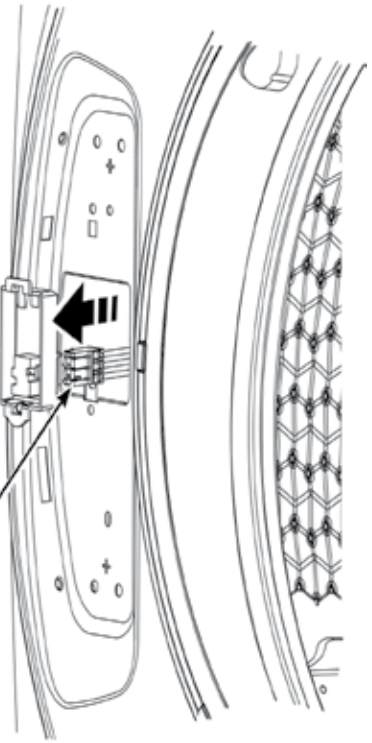


Step 5: Replace The Door Himge And The Cover On The Opposite Side

- Rotate the door hinge and replace it on the oppositeside with its screws.
- Rotate the door hinge cover and replace it on the opposite side with its screws.



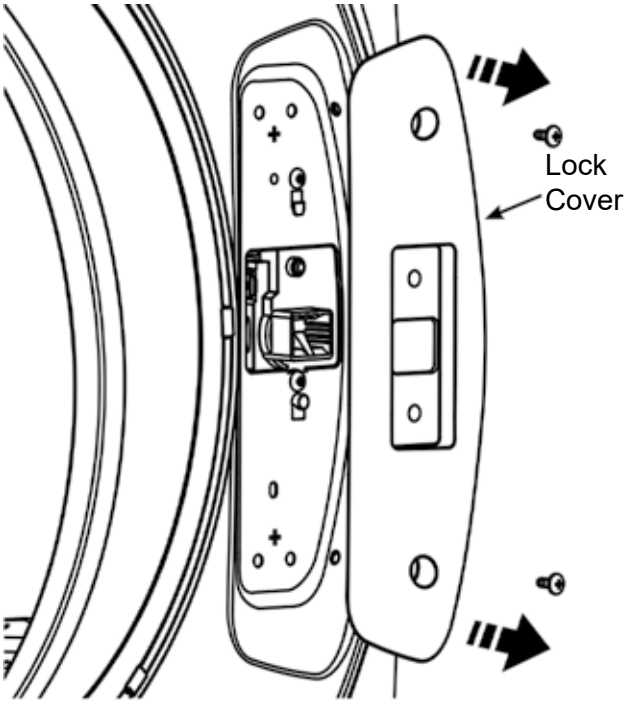
Step 6: Remove The Terminal Holder And Disconnect The Pin Connector From The Washer



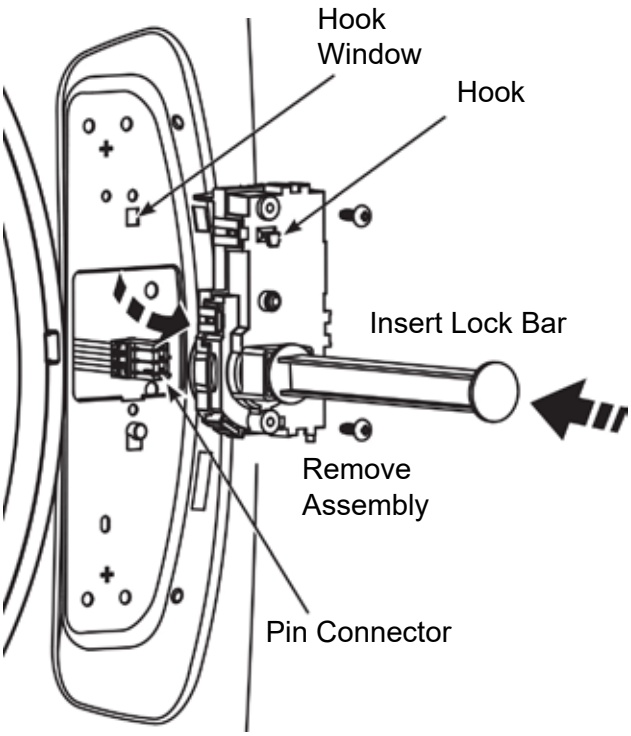
- Using your fingers, pry the terminal holder from the washer face.
- Disconnect the pin connector.

Step 7: Remove Lock Assembly And Install On The Other Side Of Washer

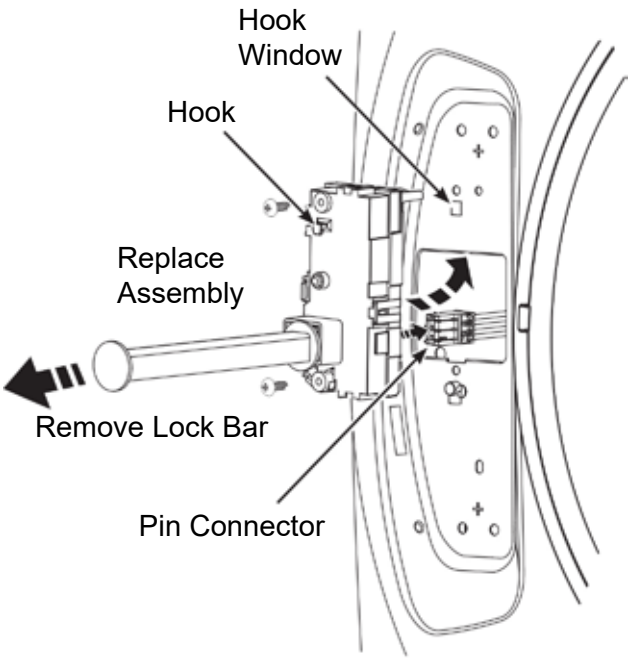
- Remove the two screws from the lock cover and remove it from the washer face.



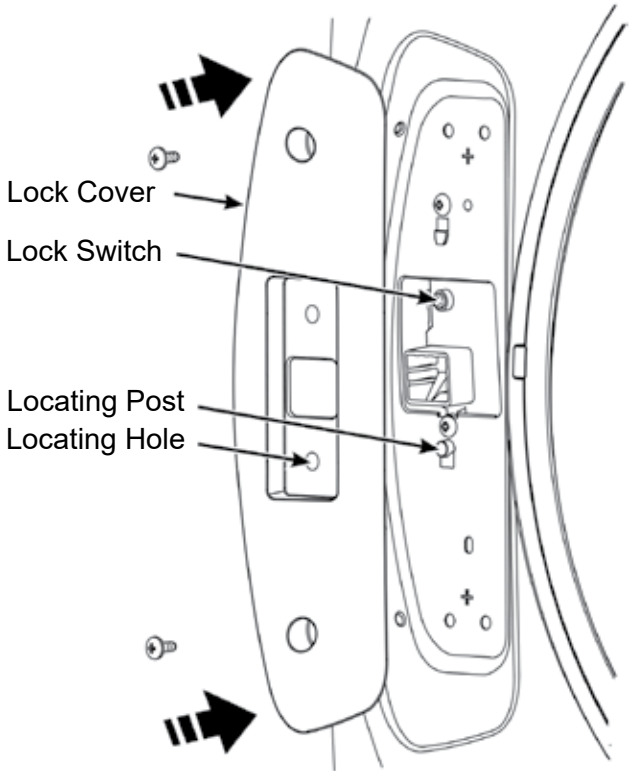
- Insert the provided lock bar into the lock mechanism in the washer face. Remove the lock assembly by removing its two screws, using the lock bar to lift it up to unhook, tilting and pulling it out of the washer face. Disconnect its pin connector by unsnapping its locks.



- Do NOT rotate lock assembly. Move it to the opposite side of the washer and connect the pin connector making sure it is fully snap locked together. Tilt and insert the lock assembly into the washer face, lift it up and latch its hook into its window. Replace its screws. Remove the lock bar from the assembly and retain for future use.

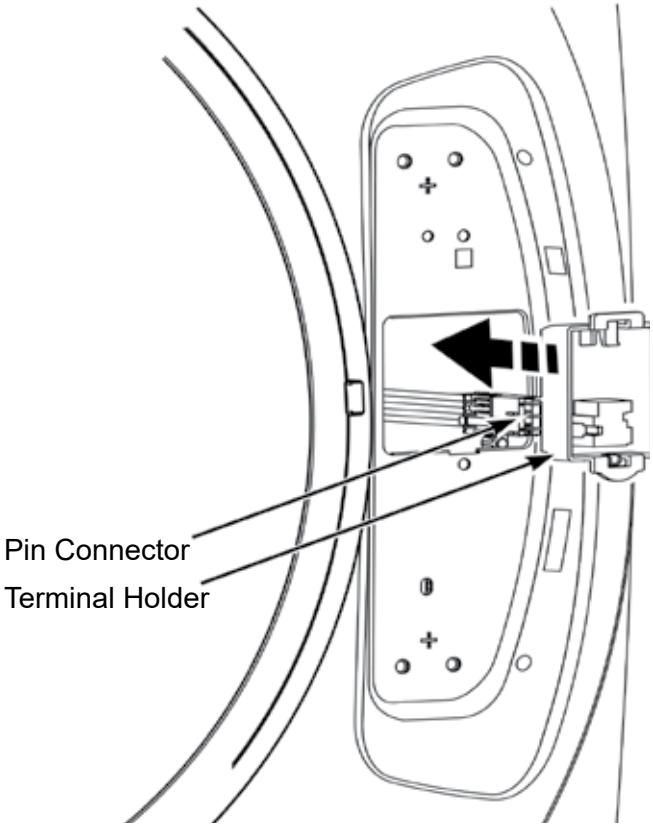


- Install the lock cover over the lock assembly, making sure the locating post fits into the locating hole and that the lock switch operates freely. Replace its screws.



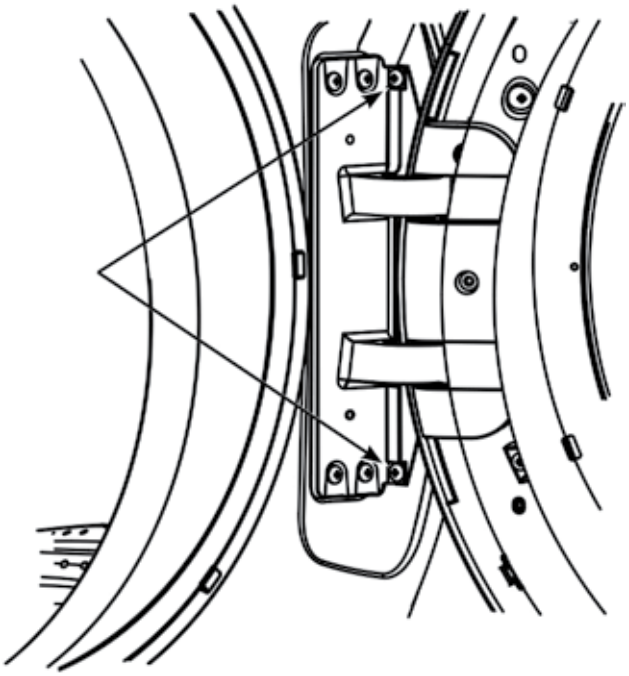
Step 8: Reconnect Pin Connector From The Washer And Replace The Terminal Holder

- Reconnect the pin connector and press the terminal holder back into the washer face on the opposite side.



Step 9: Replace The Door Assembly

- Lift the door assembly into place and secure it onto the washer face with its six screws.



- Close the washer door.

  NOTE: Make sure the door opens and closes correctly. If not, repeat all steps making sure all parts and screws are securely seated.

- Connect power cord and turn on the breaker.
- Run the washer through a complete cycle to verify proper operation.

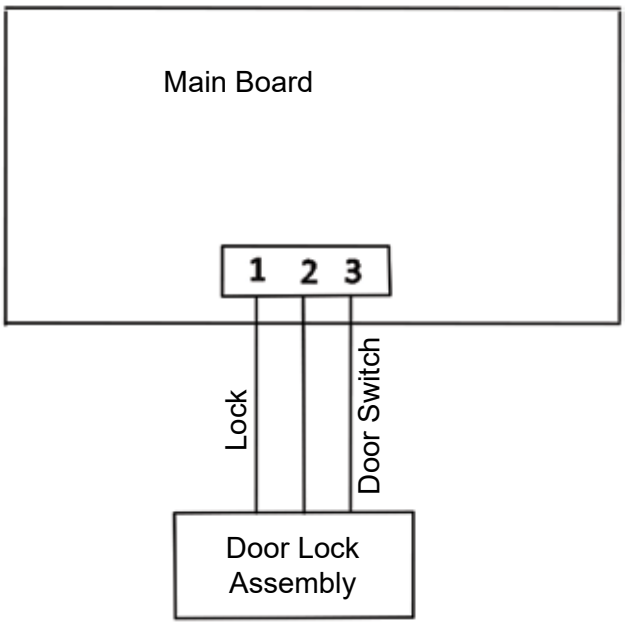
Door Lock

The door lock assembly consists of the door switch and locking mechanism. The lock mechanism functions are as follows:

- To transition the lid lock solenoid, the control shall drive the lock coil for exactly 5 AC half-cycles (40 milli-seconds +/- 10 ms.).
- The control shall wait 1-second before reading the lock feedback to see if the transition is successful.
- The control shall wait at least 1.5-seconds between retries if a lock transition fails.
- The control shall try up to three times if the lock transition fails (a minimum 1.5-seconds delay between each try is required).
- If the lock is not successful after three tries, it shall provide a 30-second cool down period before trying again.
- After cool down the control will try an additional four times (with delay). If the four tries are unsuccessful, a 180-second cool down will be applied and a "Critical Lid Lock Fault" will be set.

Retry logic should reset on successful lock attempt or on critical lid lock fault.

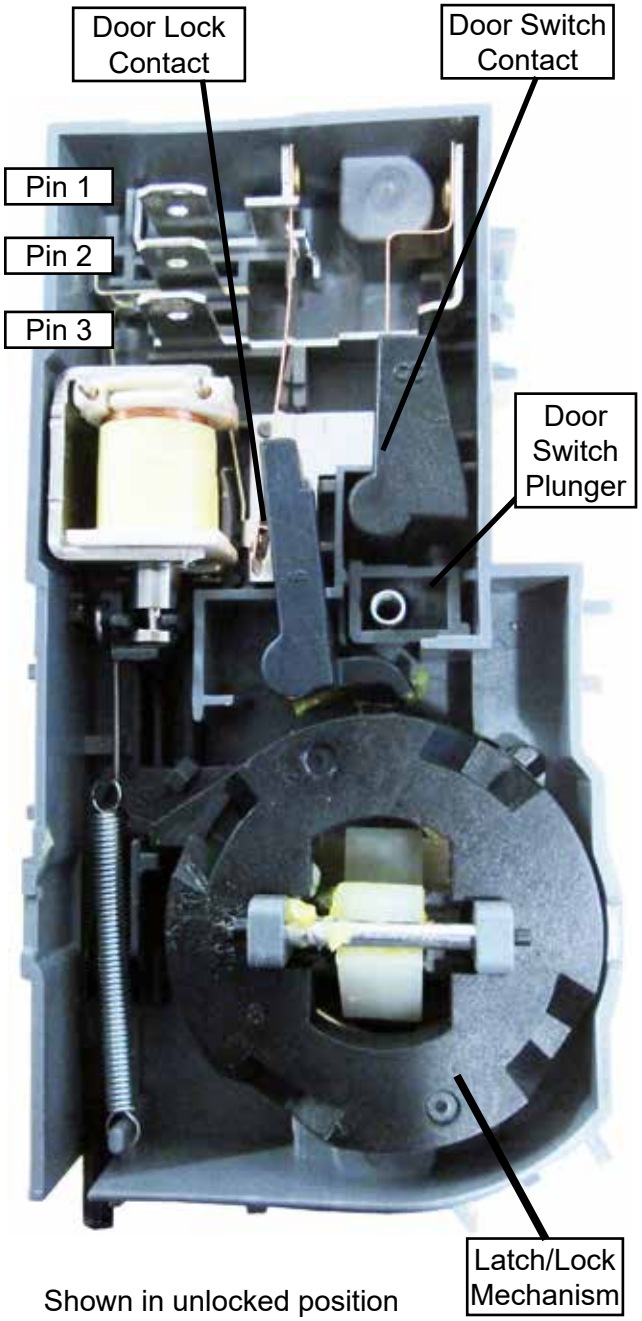
Door Lock Assembly Diagnosing



When locked J513 (2) is line

Checking from the Main Board

1. To check the door switch, with the door closed, pins 2 to 3 will read approximately 127 ohms. Pin 1 to 2 will read open. If no reading from pins 2 to 3, replace the door lock assembly.
2. To check the door lock, with the door closed, pins 1 to 2 and 2 to 3 will read approximately 127 ohms. If no reading from either pin sets, replace the door lock assembly.
3. With the door unlocked and open, pins 1 to 2 and 2 to 3 will read open. If there is a reading, replace the door lock assembly.



Shown in unlocked position door open.

(*Continued next page*)

The image below shows the door lock assembly in the locked position. If the door is locked with clothes in the washer, remove the top panel, reach inside down to the bottom of the lock assembly and push the button in.

When reversing the door assembly, the lock assembly will need to be moved to the opposite side as well. Using the latch tool will assist with removing the lock assembly.

Lock Assembly Removal/Reversal

1. Remove the two screws securing the door latch cover to the front panel.

2. Remove the door lock by utilizing the latch tool supplied to the consumer with the washer to hold the door lock assembly and removing two Phillips-head screws securing the door lock assembly to the panel.

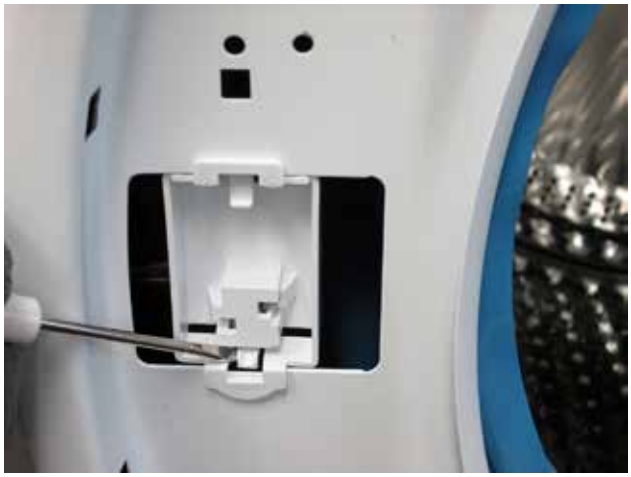
NOTE: The lock assembly can be removed without removing the gasket.

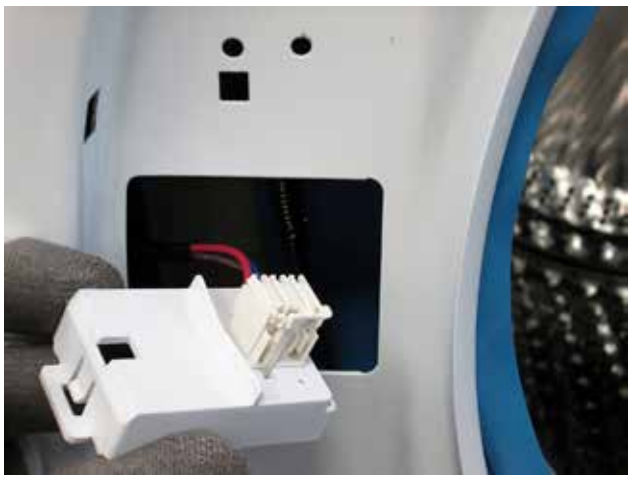
(*Continued next page*)

3. Remove the lock assembly from the front panel and disconnect the harness from the door lock assembly and set aside.

4. Remove the door assembly (See **Door Removal**, under **Door** in this section) to reveal and remove the door latch harness holder.

5. Push down on the tab securing the harness holder to the front panel and remove. Disconnect the harness connector from the holder.





6. If just reversing the door, reconnect the lock assembly to the harness connector on the opposite side.

Back Cover

The back cover must be removed to access the belt, pulley, pressure chamber, and motor.

Back Cover Removal

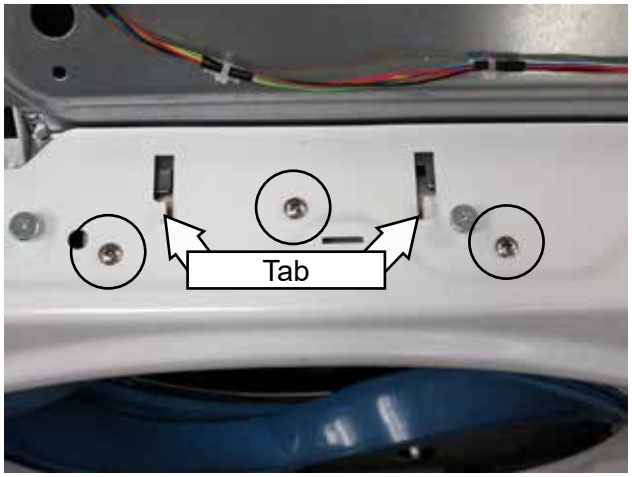
The back cover is attached to the washer with eight Phillips-head screws. Pull the bottom of the panel outward slightly and slide downward to remove from the underside.

Front Panel

The front panel is inserted onto four posts that are attached to each side of the cabinet and held in place with four Phillips-head screws. A gasket provides a watertight seal between the front panel and outer tub. The front of the gasket is secured to the front panel flange by a spring and wire located in the fold of the gasket. The door and door lock assembly are attached to the front panel, as well as the damper.

Front Panel Removal

1. Remove the Control Panel (see **Control Panel** in the **Cabinet and Structure** section of this service guide).
2. Remove the tub gasket from the front panel (see **Tub Gasket Removal** under **Tub Gasket** later in this section).
3. Remove the three Phillips-head screws securing the damper to the front panel located top center of the front panel. Slide the damper toward the back releasing the tabs from the panel.

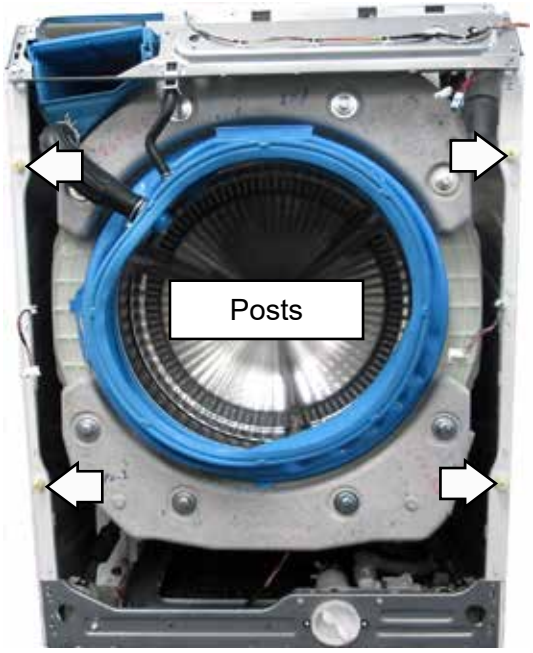


4. Remove the six Phillips-head screws at the bottom of the front panel. One of which is a post screw.

NOTE: The drain filter funnel and access door do NOT need to be removed to remove the front panel.

5. Remove three Phillips-head screws from the bottom of the front panel.

6. Remove the door and door lock assembly (see **Door Removal** under **Door** and **Lock Assembly Removal/Reversal** under **Door Lock** in this section).



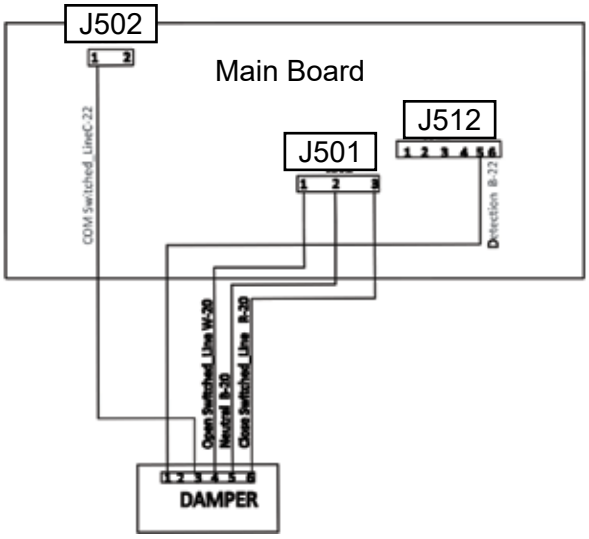
7. Lift the front panel up and away from the front four posts on the cabinet and set aside.

Damper

The damper is used to allow fresh air inside of the tub and basket to help eliminate odors, keep the tub and basket dry when not in use and allow air to circulate when using the 1-step wash and dry feature. It is located at the front of the washer. Screwed to the front panel and clamped to the door gasket.

Damper Diagnosing

A quick check for the damper is to insert a finger into the opening to verify the damper door is not loose in the housing. If good, check the winding resistances of the damper motor.

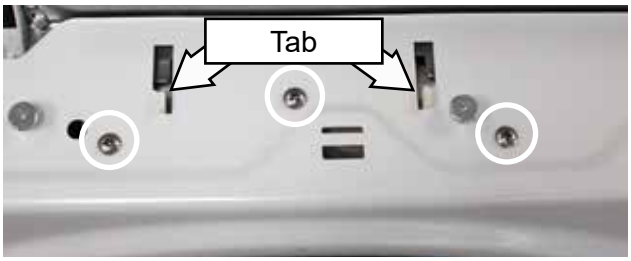


1. Check opening winding from pin 1 to pin 2 at the J501 connector on the main board.
2. Check closing winding from pin 2 to pin 3.

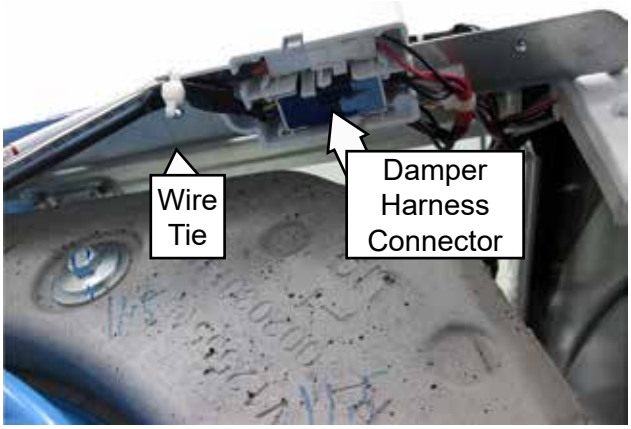
They both should read approximately 4.2k ohms.

Damper Removal

1. Remove the control panel (see **Control Panel Removal** under **Control Panel** in this section).
2. Remove the three Phillips-head screws securing the damper to the front panel, located top center of the front panel.
3. Slide the damper toward the back releasing the tabs from the panel.



4. Remove the tub gasket from the front panel (see **Tub Gasket Removal** under **Tub Gasket** later in this section).
5. Remove the front panel (see **Front Panel Removal** under **Front Panel** in this section).
6. Remove the wire tie securing the damper harness to the harness connector holder.



7. Disconnect the damper harness connector.
8. Remove the damper clamp that secures the damper to the gasket and remove damper.

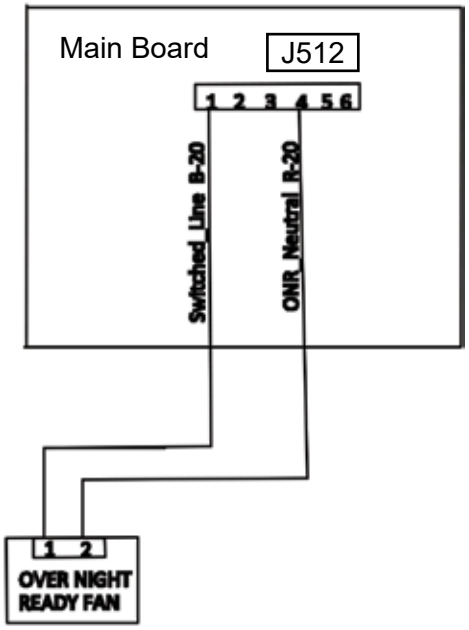
NOTE: Although removing the wire tie and disconnecting the damper connector can be difficult, damper removal can be accomplished without removing the front panel. But the wire tie must be reinstalled.

Overnight Dry Fan

The overnight dry fan is used for the 1-step wash and dry of small loads. This cycle is the only cycle when the fan is used. It is not used for the UltraFresh or Tumble Care cycles.

Fan Diagnosing

Check the overnight dry fan from the main board J512 connector pin 1 to pin 4. Should read approximately 26.5 ohms and is rated 120 VAC.

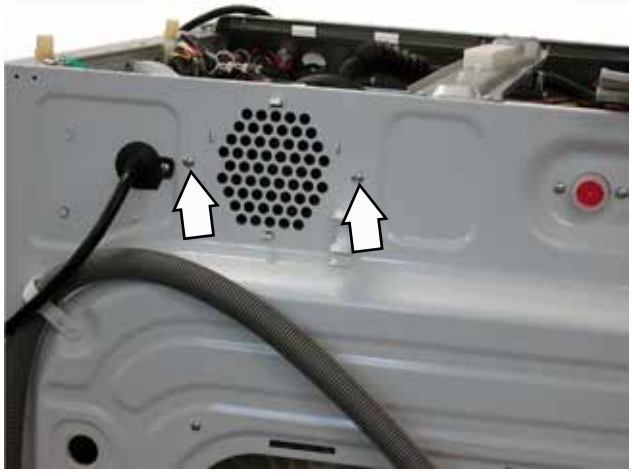


Overnight Dry Fan Removal

1. Remove the control panel and top panel (see **Control Panel** and **Top Panel** in this section).
2. Remove the overnight dry hose from the fan housing by pulling up on the hose clip lip.

3. Disconnect the fan harness connector.

4. Remove the two screws securing the fan housing to the cabinet. The screws are located on the rear of the washer cabinet.



5. Remove fan from the fan housing. When reinstalling the fan into the housing, ensure the tag on the fan is facing out toward where the hose connects to the housing.

(*Continued next page*)

6. Located inside the tub is a self-cleaning screen filter. To access this filter if it needs to be replaced, remove the hose clamp securing the water tube to the nozzle in overnight hose. This is what cleans the filter in the tub.

7. Then remove the clamp that secures the overnight hose to the tub.

8. Lift the hose away from the tub to expose the filter screen.

9. Remove the filter from the tub and clean or replace as needed. This is a self-cleaning filter and should not need to be serviced.

Tub Light

The tub light is an LED light used to illuminate the basket to make viewing easier for the consumer. It is mounted into the door gasket. The tub light will turn on when the door is opened or if turned on from the control panel. The LED will turn off after five minutes. If the light is already on and the door is opened; the 5-minute timer will restart. When the door is closed, the light will turn off.

LED Diagnosing

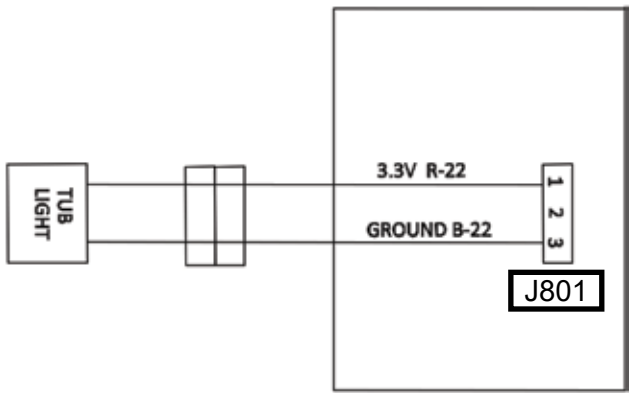
The LED tub light is a diode that lights up. It operates on approximately 3.3 VDC. This is checked from the J801 connector on the main board. If voltage is present but the LED does not light up, verify the light is good.

1. Disconnect the J801 from the main board or disconnect the in-line connector to the LED.

2. Set the meter to Diode setting.

3. With the black lead of the meter on the **red** wire of the LED, and the red lead of the meter on the **black** wire of the LED, the meter should read approximately 0.727, if good.

If the red lead of the meter is on the **red** wire and the black lead on the **black** wire, there should be no reading.



There is also an inline connector for the tub light. The complete main harness does not need to be replaced unless the harness is found to be the fault.

Tub Light Removal

1. Remove the control panel and front panel (see **Control Panel** and **Front Panel** in this section of the guide).

(*Continued next page*)

2. Disconnect the inline harness connector to the tub light.

3. Push the light through the gasket from the inside.

Tub Gasket

The tub gasket provides a watertight seal between the front panel and the outer tub. The front of the tub gasket is secured to the front panel flange by a wire clamp located in the fold of the gasket. The back of the tub gasket is attached to the outer tub lip with a wire and bolt gasket clamp.

Tub Gasket Removal

These instructions show the door gasket (boot) being removed with the control panel, top panel and front panel removed.

1. Remove the control panel, and top panel (see **Control Panel** and **Top Panel** in this section of the guide).

2. Open and remove the door assembly for easy handling of the front panel.

3. Remove the outer gasket clamp by grasping the wire clamp spring with pliers at the bottom of the tub gasket, pull down and away from the gasket. Tuck the gasket inward.

Wire Gasket
Clamp Spring

4. Remove the front panel (see **Front Panel Removal** under **Front Panel** is this section of the guide).

(*Continued next page*)

5. Disconnect the hose that connects to the glass clean nozzle.

6. Pull the nozzle out from the inside of the gasket. There is a notch for positioning when reinstalling.

7. Disconnect the fill hose from the gasket. It is a resistance fit to the gasket. Pull it out of the opening. No need to disconnect the hose clamp.

8. Remove the LED tub light by pushing it through to the outside of the gasket.

9. To remove the damper from the gasket, remove one Phillips-head screw from the clamp securing the damper to the gasket.

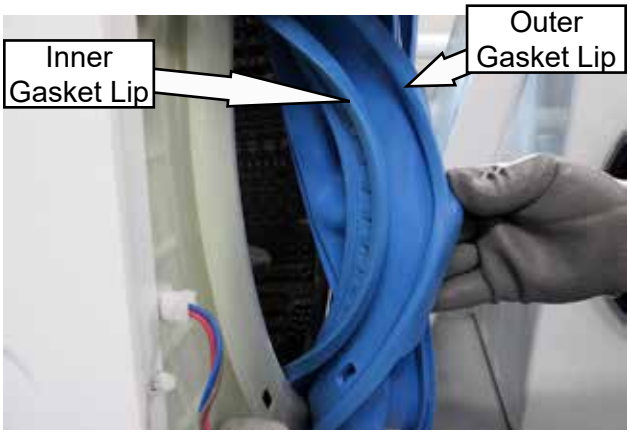
10. Remove the inner clamp using a 9/32 socket, turning counter-clockwise (CCW).

11. Pull the clamp and gasket away from the tub.

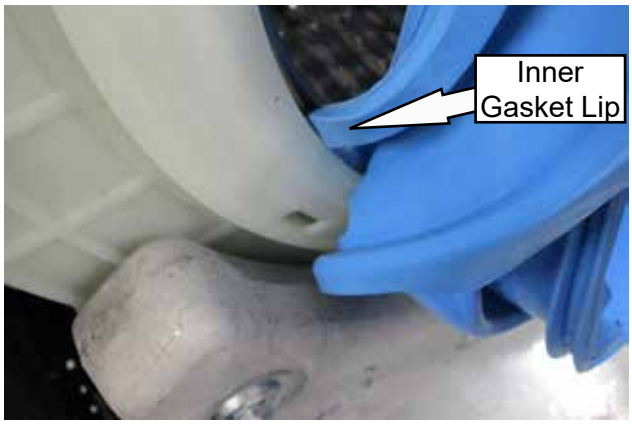
(*Continued next page*)

Tub Gasket Reinstallation

1. When reinstalling the gasket, lubricate both inner and outer lips of the gasket with liquid detergent. This will make the gasket slip into position easily. Counter weights do not have to be removed.

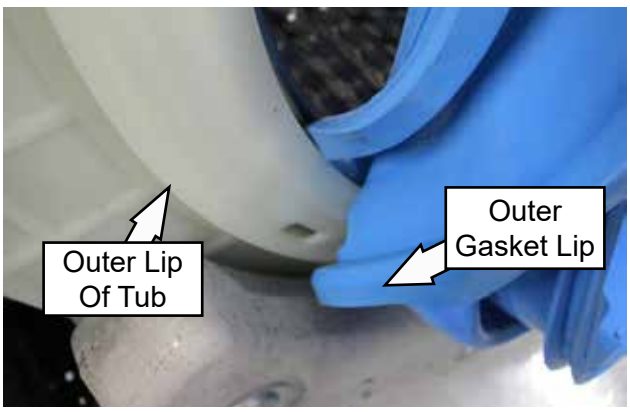


2. Insert the inner lip of the gasket between the basket and the tub ensuring it is seated all the way in position.

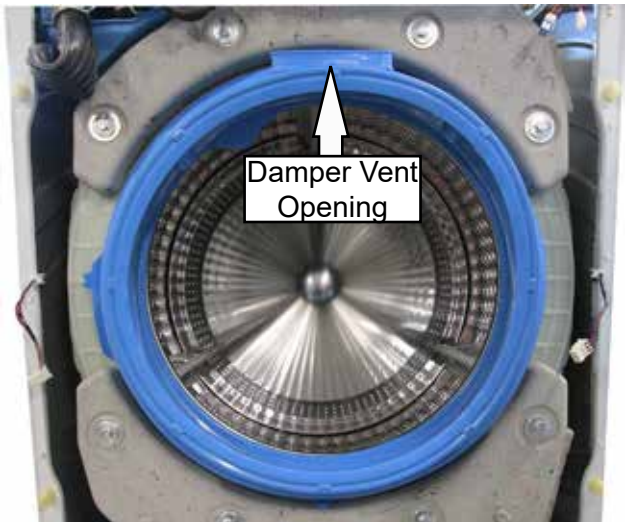


3. Ensure that the gasket does not rub the basket by rotating the basket. If it rubs the basket, make adjustments as needed before installing the inner clamp.

4. Push the outer lip of the gasket over the outer lip of the tub. The lube (liquid detergent) will allow the gasket to slip into place.



5. Ensure the gasket is properly positioned. The damper vent opening should be located at the 12 o'clock position.



6. Reinstall the inner gasket clamp. The screw part of the clamp should be located at the 9 o'clock position.

7. Reinstall the front panel, lock assembly, and door.

(*Continued next page*)

8. With the spring of the wire clamp at the bottom of the tub gasket (boot), insert the wire clamp into the lip of the gasket.

9. Using pliers, pull the spring of the wire clamp, stretching it so the rest of the wire clamp can be inserted into the lip of the gasket.

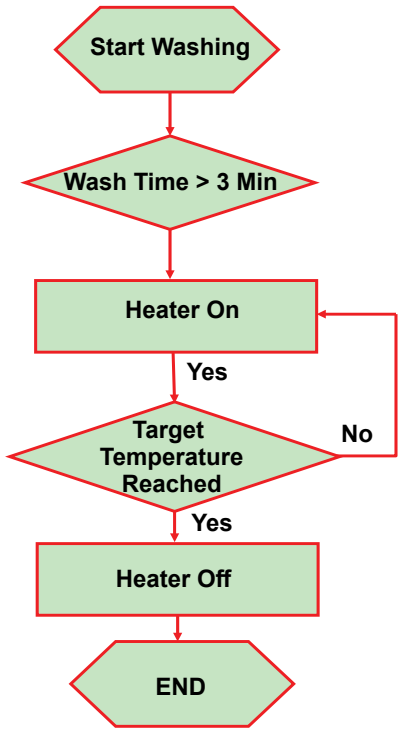
10. Again, ensure the gasket is still seated flat against the front panel. If not, make necessary adjustments.

11. Reinstall the tub LED light, door glass spray nozzle, damper and dispenser fill hose nozzle into the gasket.

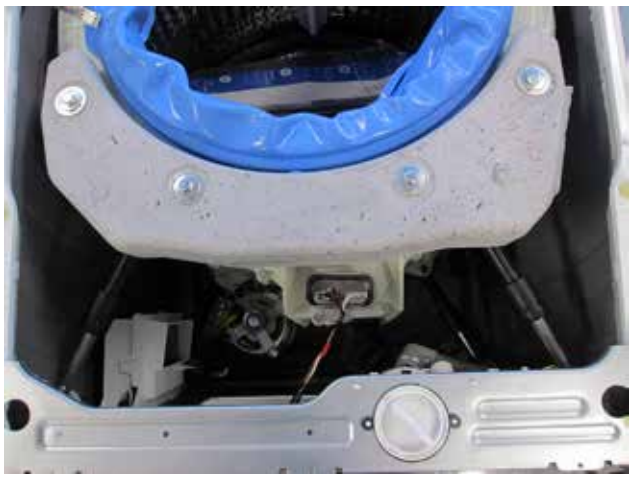
Heater Assembly (650 and 850 Models)

- The heater operates only when **Sanitize** or **Tub Wash** is selected.
- The control does not pause to allow the heater to heat the wash water to the sanitize temperature.

Heater Algorithm



The heater assembly is to the front half of the outer tub. It is accessed from the front of the washer with the front panel removed.



(*Continued next page*)

The heater assembly is held in place by a bracket attached to the outside of the outer tub, and a 10-mm hex-nut which presses a rubber gasket against the tub opening.

When the 10-mm hex-nut is tightened, it squeezes the rubber gasket between two mounting plates to seal the heater assembly to the opening of the tub.

The 10-mm hex-nut is set from the factory at 35- to 40-in. pounds of torque.

Heating Element Specifications

Voltage, amps and resistance can be checked from the J506 connector pins 4 and 5 on the main board.

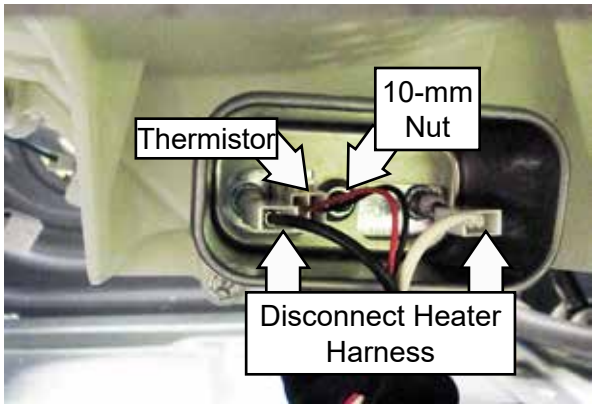
- 120 VAC
- 1,000 watts
- Approximately 8.3 amps
- Approximately 14.1~15.6 Ω (ohms)

Operation of the heater assembly can be checked by using Service Mode Test 20 (see the **Service Mode Test** in the **Diagnostics and Service Information** section of this guide).

Specific failures associated with the heater assembly can initiate Fault Codes 37 (see **Fault Codes** section in this service guide).

Heater Removal

1. Drain the washer using the drain pump filter (see **Using The Washer** in the **Control Features** section of this service guide).
2. Remove the front panel (see **Front Panel** in the **Cabinet and Structure** section of this service guide).
3. Disconnect the thermistor harness connector.
4. Disconnect the **black** and **white** wires from the heater.



5. Loosen the 10-mm hex-nut until it is flush with the end of the stud.
6. Push inward on the 10-mm hex-nut to relax the rubber gasket.
7. Grasp and pull the heater straight out from the outer tub.

Heater Installation

1. When reinstalling the heater, ensure that it slides into the heater support bracket attached to the inside of the tub as shown below.

2. Seat the heater assembly in the tub opening.
3. Install the 10-mm hex-nut and use a torque wrench to tighten the 10-mm hex-nut to 35 to 40-in. pounds of torque.

CAUTION: Proper torque must be applied to the 10-mm hex-nut to assure a proper seal. Under-torqueing could cause water leakage; over-torqueing could cause the tub to crack.

4. Connect the thermistor wire harness.
5. Connect the **brown** and **blue** wires to the heater.

Thermistor

The control uses a water temperature sensor (thermistor) to regulate the wash water temperature.

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 by activating the appropriate water valve.

The thermistor has a negative temperature coefficient (as temperature increases, resistance decreases).

Resistance can be measured at the thermistor wire harness. Make sure to disconnect the wire harness to isolate the thermistor before taking resistance readings.

Temp °C	Temp °F	Approx. Ω (ohms)
-10°	14°	57.4417
-5°	23°	44.9731
0°	32°	35.4632
5°	41°	28.1563
10°	50°	22.502
15°	59°	18.0968
20°	68°	14.6421
25°	77°	11.9159
30°	86°	9.7435
35°	95°	8.0112
40°	104°	6.6216
45°	113°	5.5006
50°	122°	4.5914
55°	131°	3.8502
60°	140°	3.243
65°	149°	2.7431
70°	158°	2.3298
75°	167°	1.9865
80°	176°	1.7002
85°	185°	1.4604
90°	194°	1.2589
95°	203°	1.0888
100°	212°	0.9447

Operation of the thermistor can be checked by using Service Test Mode t08 (see the **Service Mode Test** in the **Diagnostics and Service Information** section of this guide).

Specific failures associated with the thermistor can initiate Fault Code F3 (see **Fault Codes** section in this service guide).

The thermistor is part of the heater assembly. If the thermistor is bad, replace the heater assembly.

Temperature Setting	Water Temperature
Tap Cold	Tap Cold
Cold	60°F +/- 5°F
Warm	90°F +/- 5°F
Hot	110°F +/- 5°F
Extra Hot Sanitize/Tub Clean	160°F +/- 5°F Turns on Heater

User Interface (UI) Board

The User Interface (UI) Board is mounted to the control panel assembly under the plastic cover. It consists of the display board, cycle select board and the power/pause button board. They are all connected together and come all as one part.

NOTE: The cycle select knob does not need to be removed as it will stay with the control panel.

User Interface (UI) Board Diagnosing

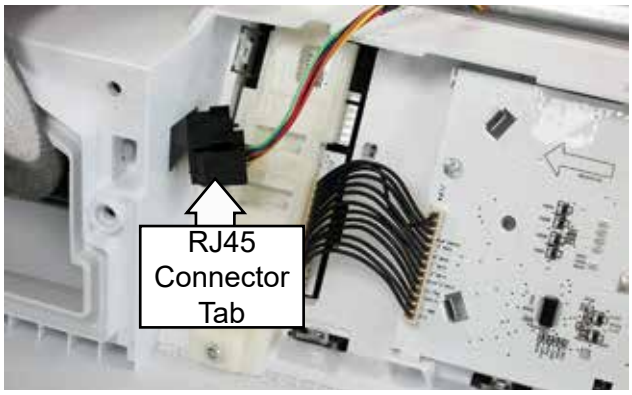
The User Interface (UI) board is powered by the Main Board from the CN1 connector. If the User Interface board is not working, check for approximately 12 VDC from pin 1 to pin 3 on the 7-pin connector from the main board to the User Interface board. If voltage is present at the UI Board, replace the UI board. If no voltage, check harness and connectors. If good, replace the main board.

User Interface (UI) Board Removal

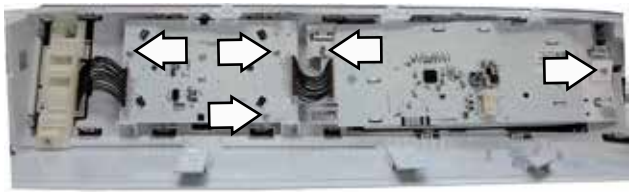
1. Remove the control panel (see **Control Panel** in the **Cabinet and Structure** section of this service guide). Then place the control panel face down on a protective surface.

2. Remove the single harnesses that supply DC voltage to the UI board.

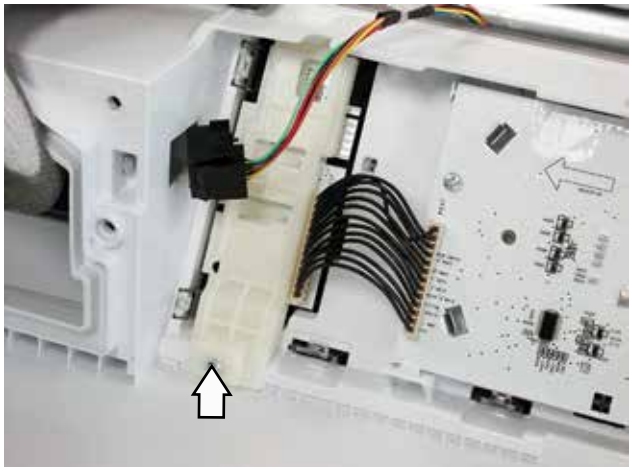
3. Disconnect the RJ45 connector by pushing in the tab on the connector. Then rotate the connector from the control panel.



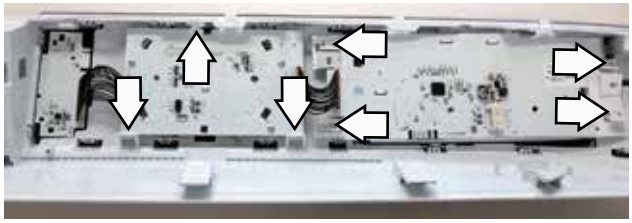
4. Remove five Phillips-head screws securing the two larger parts of the UI board to the control panel.



5. Then remove the one Phillips-head screw that secures the power/pause button to the control panel.



6. While pushing in on the seven clips that holds the UI board to the control panel assembly, pull upwards on the UI Board. If the board is not held with an upward pressure on it, the clips will refasten, not letting the board to disengage from the control panel assembly.

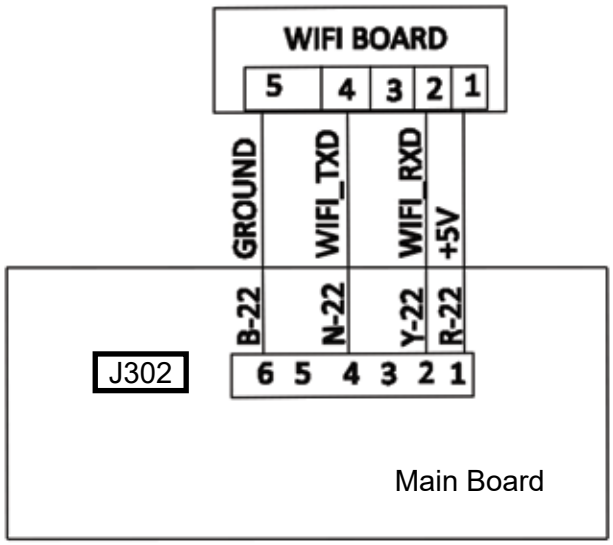


Wi-Fi Board

The Wi-Fi board is powered by the Main board from the J302 connector. It is located/mounted on the housing of the Main board.

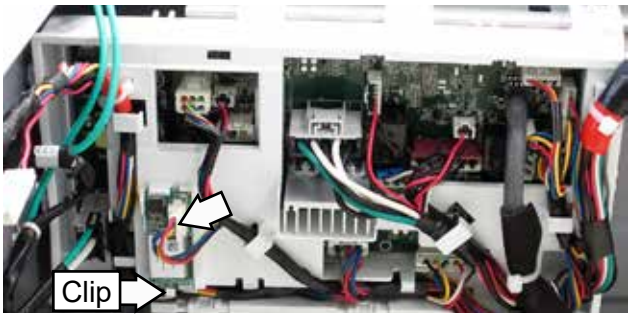
Touch Board Diagnosing

If the Wi-Fi board is not working, check for approximately 5 VDC from pin 1 to pin 6 at the J302 connector on the Main Board. If no voltage, check harness and connectors. If good, replace the Main board. If voltage is present, replace the Wi-Fi board.



Removing the Wi-Fi Board

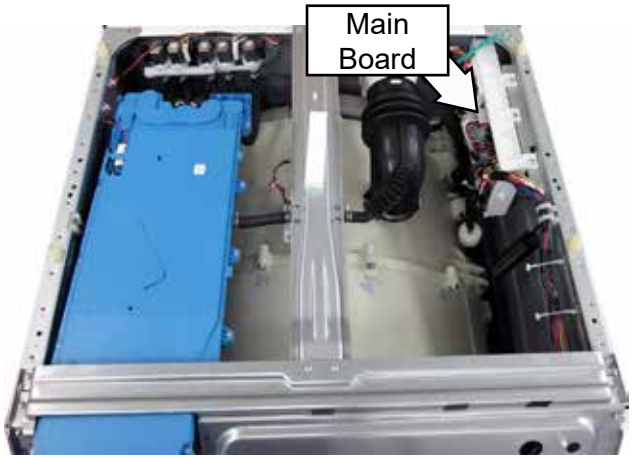
1. Remove the harness connector from the Wi-Fi board.



2. Push downward on the bottom clip securing the Wi-Fi board to the Main Board Housing. Then lift the board away from the Main board housing.

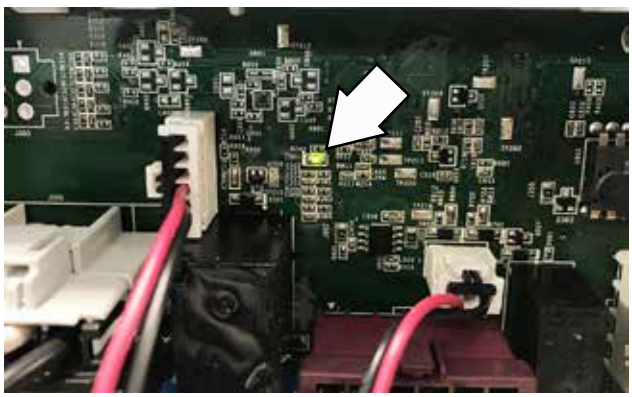
Main Board

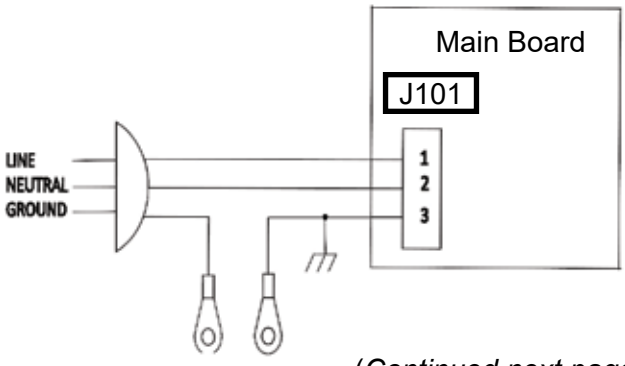
The main board powers the User Interface (UI) and Inverter boards. The main board receives commands from the User Interface board and controls washer operation, communicating with the UI and inverter through low voltage pulses. The main board is enclosed in a protective housing and cover located inside the cabinet, at the top right side of the washer cabinet.



Main Board Diagnosing

Check for 120 VAC at the outlet. If voltage is there, check for 120 VAC between the **black** and **white** wire at the J101 connector on the main board. If no voltage is found, check the wire harness and connector integrity. If voltage is found at the main board, but no heartbeat LED flashing on the main board, replace the board.

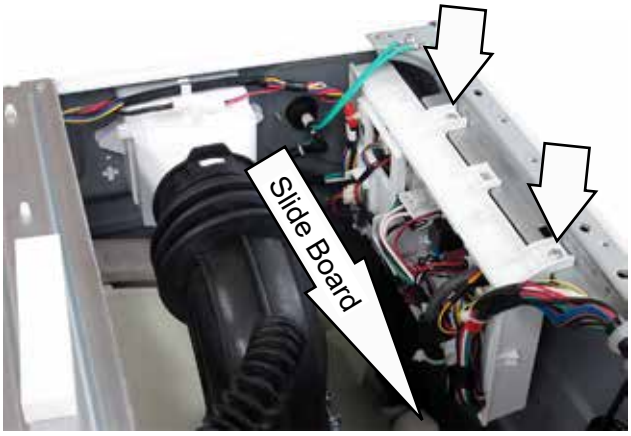




(*Continued next page*)

Main Board Removal

1. Remove the Top Panel (see **Top Panel** in the **Cabinet and Structure** section of this service guide).
2. Remove the two Phillips-head screws that attach the Main Board to the cabinet.



3. Slide main board toward the front of the cabinet to disengage the board housing tabs (one top center and two at the rear) from the cabinet.
4. Disconnect the harness from the main board.

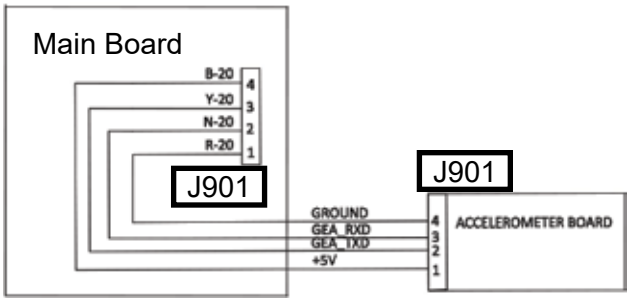
Accelerometer Board

The accelerometer board is located on the top side of the tub directly under the cross brace.

The accelerometer senses when the load is off balance. Upon acceleration of the basket during spin, the accelerometer sends a signal back to the main board. This will cause the main board to stop the spin cycle and try to rebalance the load.

Accelerometer Board Diagnosing

Check for 5 VDC from pin 1 to pin 4 at connector J901 on the accelerometer board. If voltage is present, replace the accelerometer board. If no voltage, check between pin 1 and pin 4 at J901 connector on the main board. If voltage is present, check the harness continuity. If no voltage, replace the main board.



Removing The Accelerometer Board

1. Remove the control panel and top cover (See **Control Panel** and **Top Cover** sections in this guide for removal).
2. Remove two Phillips-head screws securing the accelerometer board to the tub.
3. Disconnect the harness connector from the accelerometer board.

NOTE: There is a wire tie securing the harness to the accelerometer board that needs to be removed. This can be done using a pair of needle-nose pliers.

Inverter Board

The inverter board converts AC to a high DC voltage to power the drive motor. It also receives a lower DC communication voltage from the main board which will make the motor rotate back and forth for agitation, or ramp up to a high speed spin. The inverter board is enclosed in a protective housing and cover located inside the cabinet, at the bottom left of the washer cabinet.

Inverter Diagnosing

The inverter receives 120 VAC from the main board at the J506 connector Pin 2 **white** wire to pin 3 **black** wire. It then converts the 120 VAC to a variation DC voltage that goes out to the motor.

CAUTION: DO NOT test the output DC voltage from the inverter to the motor!! The best practice would be to read the resistance between any two wires that connect to the stator. This should read approximately 14.2 Ω (ohms) for a single phase. If proper resistance is found and the inverter has 120 VAC at the P101 connector, replace the inverter.

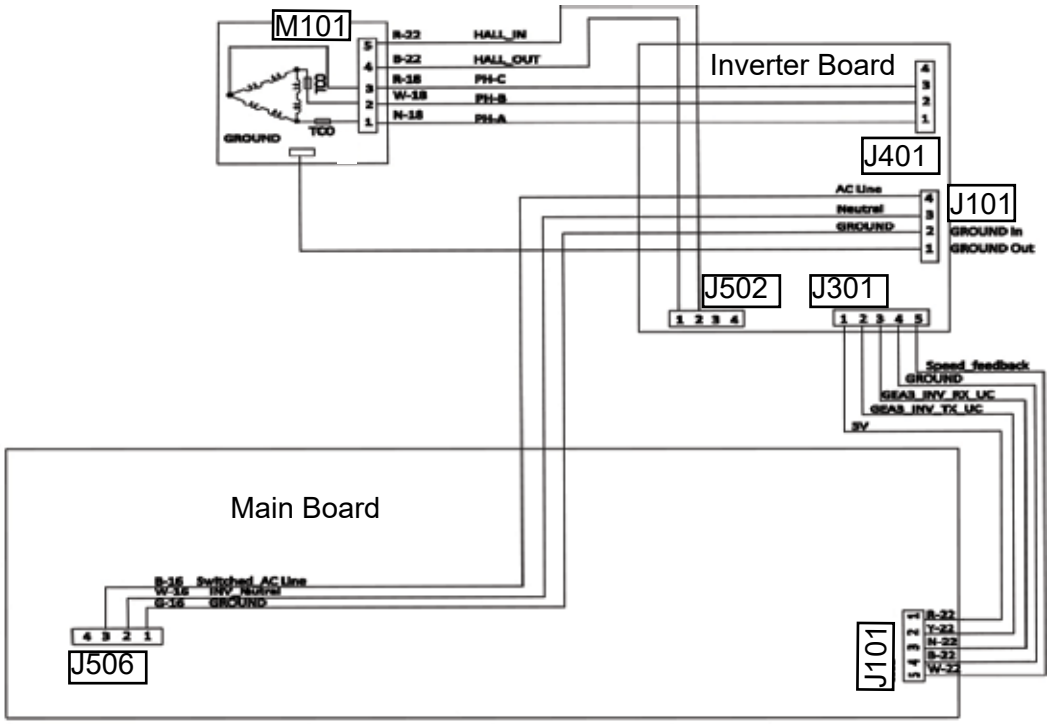
The inverter also receives commands from the main board at the P232 connector. The voltage here is 12 VDC.

Inverter Board Removal

1. Remove the back cover (see **Back Cover** in the **Cabinet and Structure** section of this service guide).
2. Remove the three Phillips-head screws that attach the main board to the rear of the cabinet.

NOTE: Because of the tightness of the harness, it might help to remove the main board screws as well as the inverter mounting screws to assist with the inverter board removal.

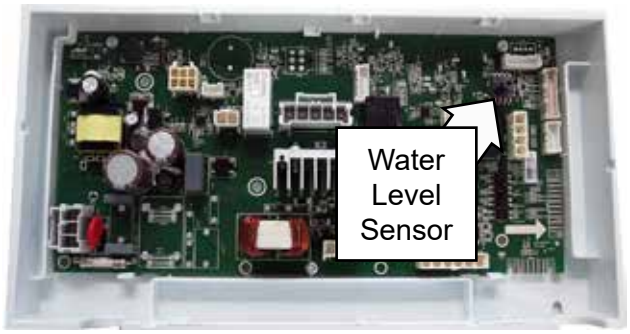
3. Lift up the main board box to unhook it from the rear of the cabinet.
4. Disconnect the harness from the inverter board.
5. Unclip four clips that secure the board access cover to the inverter board.
6. Disconnect the remaining harness connectors



Fill System

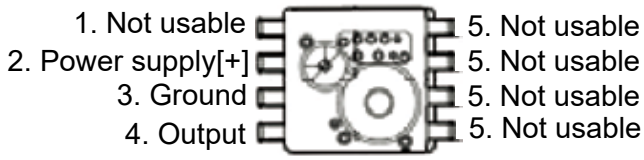
Water Level Pressure Sensor

The water level sensor is located on the main board. It is connected by a hose to an air chamber near the bottom of the outer tub and operates by a DC voltage signal to the board.



The voltage is monitored by the Main Board, which turns off the water valves when the desired water level is achieved.

Sensor output voltage can be read from the pressure sensor between pins 3 and 4. If shorted between pin 2 and pin 3, it will cause the board to shut down. The board will come back on.



When the water level rises in the washer tub, air is trapped in the air chamber located on the rear of the tub near the bottom.

As the water level rises, the air pressure in the air chamber increases. The pressure is translated into a DC voltage signal by the water level sensor. The DC voltage will vary, depending upon water level.

Water Levels

The wash water level is approximately 1.86 inches deep at the bottom center of the wash basket.

Pressure Sensor Inches To Voltage		
Course	**Water Height (Inches)**	**Voltage (DC)**
Empty	0"	0.5
Normal Wash	1.86"	0.81
Normal Rinse	2.4"	0.9
Quick Wash	1.86"	0.81
Quick Wash Rinse	2.4"	0.9
Bulky Bedding Wash	2.75"	0.96
Bulky Bedding Rinse	3"	1
Rinse Spin Rinse	2.4	0.9
Self-Clean Wash	4"	1.16
Self-Clean Rinse	4"	1.16
Door Open	7.25"	1.7
Overflow	11"	2.32
Lowest Point In Basket	0.8"	0.63

The drain pump will be activated when the main PC board detects frequency under 36 Hz. (Flood Protection). In flood protection mode, the pump will run until reset level is reached. Flood protection is active even in the idle mode, as long as the door is closed.

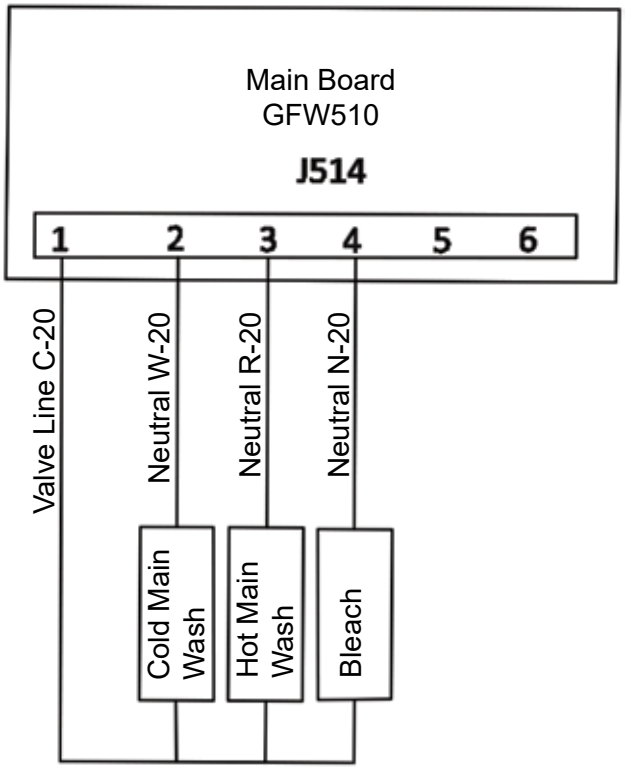
Operation of the water level sensor can be checked by using Service Mode test 10. (See the **Service Mode Test** in the **Diagnostics and Service Information** section of this service guide.)

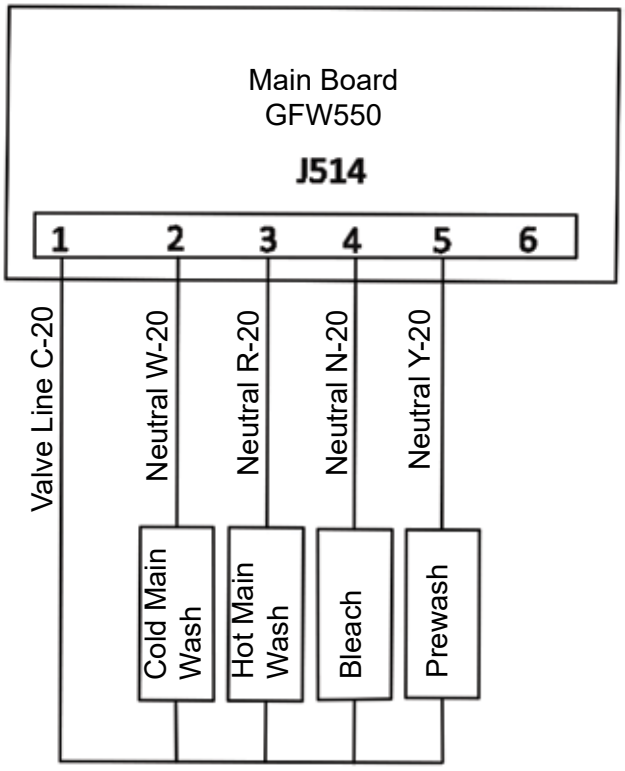
Specific failures associated with the water level sensor can initiate fault codes 6, 8, 20, 25, and 65 (see the **Fault Codes** section in this service guide).

The water level sensor is located on the Main Board, top right side of the cabinet.

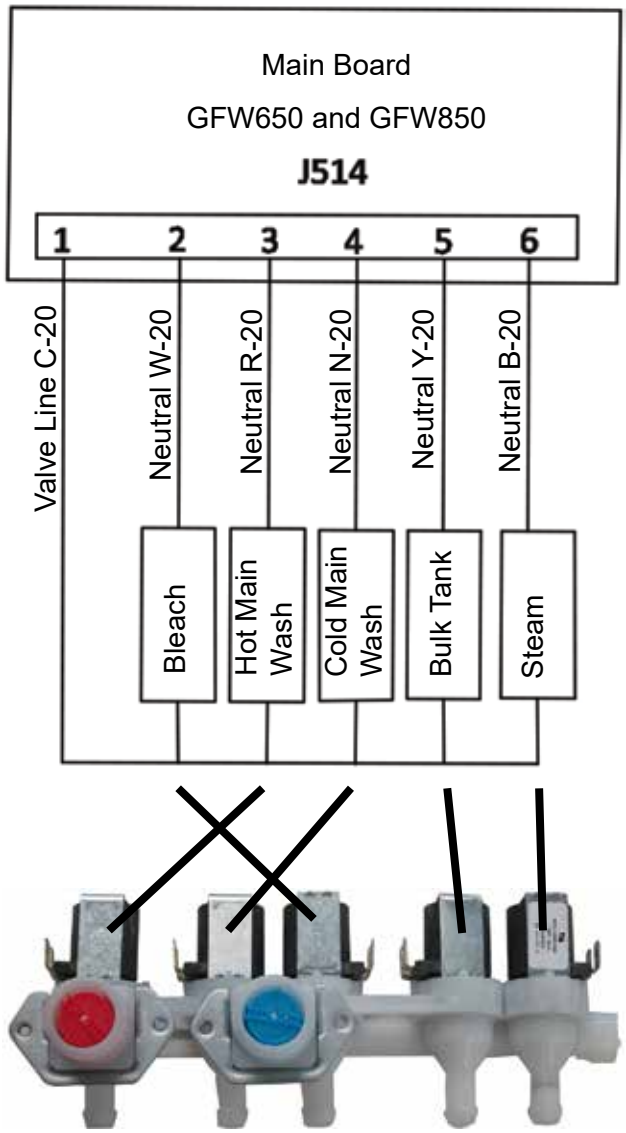
Water Valves

There are different water valves that may be found depending on the washer being serviced. A single hot water valve and a double cold, triple cold or quadruple cold water valve.





NOTE: Prewash is only on the GFW550 Model.



The valve is located at the rear of the cabinet and held in place with four Phillips-head screws. Each valve is only available as a complete assembly.

Flow rates are as follows:

- **Hot**: 2.97 GPM
- **Cold Main Wash**: 2.90 GPM
- **Bleach**: 2.90 GPM
- **Bulk Tank / Pretreat**: 2.90 GPM
- **Steam**: 0.48 GPM

Each solenoid coil has an approximate resistance value of 1.0k ohms.

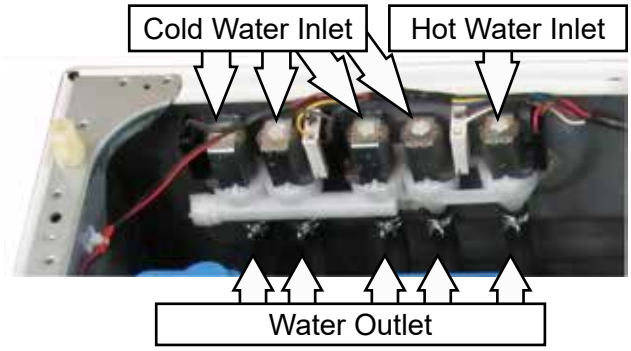
Operation of the water valves can be checked by using Service Mode tests: 6, 7, 8, 19, 21, 22 and 23 (see the **Service Mode Test** in the **Diagnostics and Service Information** section of this guide).

(*Continued next page*)

Failures associated with the water valves can initiate the Consumer Help Indicator if no water enters or is turned off at the house supply. Or any of the following fault codes: 6, 8, 19, 20, 25, 27 or 65. (See the **Fault Codes** section in this service guide).

Water Valve Removal

1. Remove the top panel (see **Top Panel** in the **Cabinet and Structure** section in this service guide).
2. Disconnect the wire harness(es) from the solenoid coil(s).
3. Note the location of the valve outlet hoses and disconnect the hose(s):



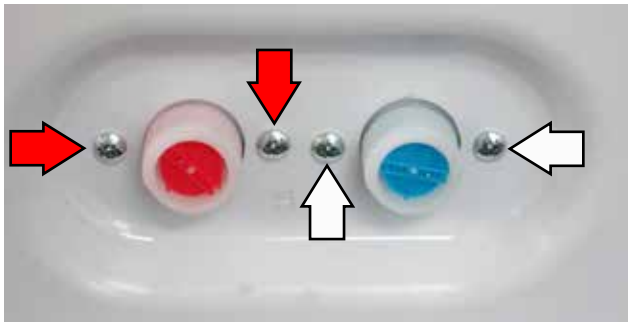
NOTE: The valve outlet hose(s) can be difficult to remove.

a. Squeeze the clamp and slide it back.

b. If necessary, carefully break the hose loose by inserting a small flat-blade screw-driver under the hose to break the seal.

c. Remove the hose.

4. Remove the four Phillips-head screws that attach the valve to the cabinet.



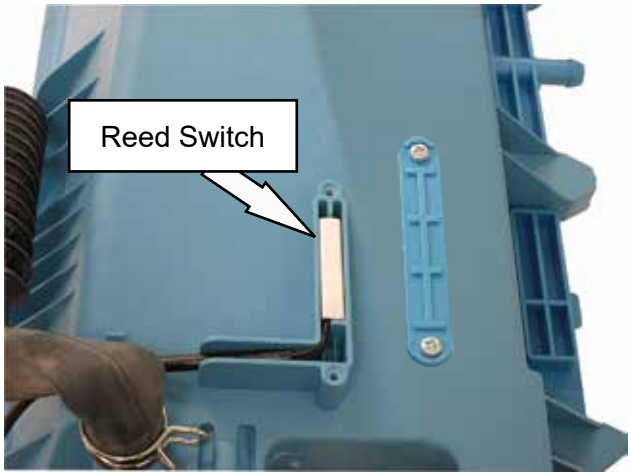
NOTE: Red arrows indicate hot water valve screws.

Bulk Dispenser Assembly

The dispenser assembly provides automatic dispensing of detergent, prewash, bleach and fabric softener as long as the user fills the compartments prior to starting the washer.

The products added to the dispenser are diluted with water before they are dispensed into the wash tub. This is accomplished by the water valves and a plastic conveyer snapped to the top of the dispenser that directs the outputs from the valves to the detergent, prewash, bleach and softener chambers. The bulk tank uses water pressure to pull detergent from the tank utilizing a check valve inside the asperozzle assembly. There is also a float that has a magnet on the bottom of it. When the detergent level is low, it activates the reed switch on the bottom of the dispenser box alerting the tank is low.

(*Continued next page*)



The bleach cup will always and automatically flush with water near the end of every wash cycle before going into rinse. There is not a consumer selectable function.

Dispenser Assembly Removal

1. Remove the top panel and control panel (see **Top Cover** and **Control Panel** in the **Cabinet and Structure** section of this service guide).
2. Squeeze the large hose clamp and slide it down onto the tub fill hose.
3. Remove the tub fill hose from the dispenser box.

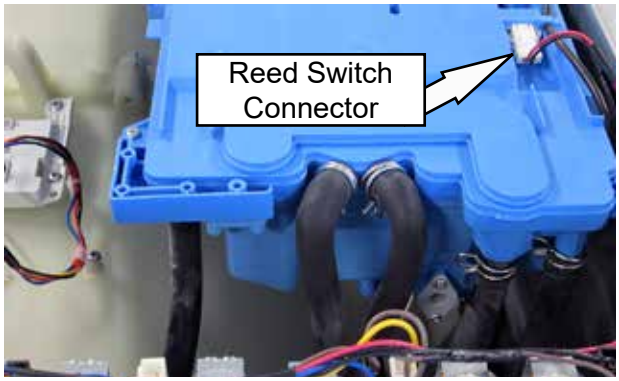
4. Remove the inlet and the dispenser vent hoses from the dispenser:

   a. Squeeze each clamp and slide it back.

   b. If necessary, carefully break each hose loose by inserting a small flat-blade screwdriver under the hose to break the seal.

   c. Remove the hoses.

   d. Disconnect the reed switch harness connector.



5. Slide box toward the rear to disengage tab from the side rail.

Drain System

Drain Filter

The drain pump comes with a consumer cleanable filter. It is accessible through an access door at the bottom of the front panel. To access the filter:

1. Use a coin or small flat-blade screw-driver to open the access door.

Fold the drain pump funnel down, turn the filter counter-clockwise (CCW) and pull it from the drain pump.

Caution: Under some conditions, up to 1 quart of water may drain out when the pump drain filter is removed. Ensure to have a shallow pan to catch the excess water.

Drain Pump

The pump consists of a 120 VAC, 60 Hz motor, impeller, impeller housing, and a removable filter that helps prevent foreign objects from entering the pump impeller and drain outlet.

- The pump runs whenever the washer is in the spin function of a cycle.
- The pump runs if the water level sensor detects frequency under 36k Hz (overflow level), and the washer is plugged in. (See **Water Level Pressure Sensor** in the **Fill System** section of this service guide**.)**
- The pump is capable of eliminating 10 gallons per minute.
- Recommended minimum standpipe diameter is 1 1/4-inches.
- Standpipe minimum height is 24-inches, measured from the floor at the washer location.
- Standpipe maximum height is 96-inches, measured from the floor at the washer location.
- The pump motor has an approximate resistance value of 19.5 Ω (ohms).

The resistance can be checked from the main board, connector J512 **brown** wire pin 2 to **black** wire pin 3.

Operation of the drain pump can be checked by using Service Mode test 12 (see the **Service Mode Test** in the **Diagnostics and Service Information** section of this guide)

Specific failures associated with the drain pump can initiate Fault Code 18 (see **Fault Codes** section in this service guide).

The drain pump is attached to the chassis bottom with two Phillips-head screws. The front of the pump has two stabilizing posts that go through two rubber grommets in the chassis front.

(*Continued next page*)

Drain Pump Removal

1. Ensure water is drained from the washer as explained in the **Drain Filter** section.
2. Remove the front panel (see **Front Panel** in the **Cabinet and Structure** section of this service guide).
3. Remove the tub to pump hose and drain hose from the drain pump.

4. Disconnect the harness connectors from the drain pump.
5. Remove two Phillips-head screws securing the drain pump to the chassis bottom. Then slide the pump toward the rear. This will release the two stabilizing posts that go through two rubber grommets in the chassis front. Lift the pump out from the cabinet.

Motor Assembly

The motor assembly consists of a reversible, variable speed, 3-phase induction DC motor, and sensor. The motor drives the tub drive pulley with a 7-rib belt. The sensor monitors motor RPM and is connected to the control board. The motor assembly is checked from the front of the washer and removed from the rear.

Motor Diagnosing

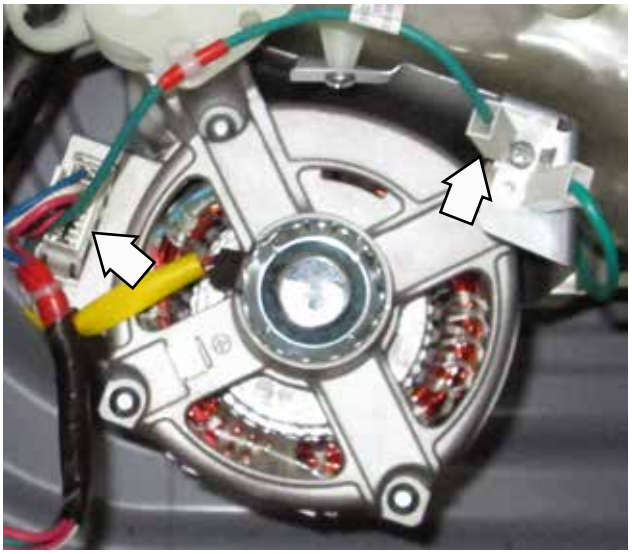
Resistance can be measured at the motor wire connector. The motor windings have an approximate resistance value of 14.2 Ω between any two of the three wires. If resistance is missing from any one of the phases, replace the stator.

- **Red** to **white**: 14.2 Ω (ohms)
- **Red** to **blue**: 14.2 Ω (ohms)
- **White** to **blue**: 14.2 Ω (ohms)

Specific failure associated with the motor can initiate Fault Code 3. However other fault codes could possibly be the result of a bad motor as well (see **Fault Codes** section in this service guide).

Motor Assembly Removal

1. Remove the back cover (see **Back Cover** in the **Cabinet and Structure** section of this service guide).
2. Disconnect the harness from the motor along with the left ground terminal as looking at the motor from the front.
3. Remove the drive belt from the motor and pulley.



4. From the back, remove the 13-mm bolt that secures the rotor to the tub.

(*Continued next page*)

5. Slide the motor toward the rear of the washer and set it on the washer base.

6. Push forward on the tub assembly and rotate the motor shaft upwards to remove the motor from the rear of the washer.

Operation of the motor assembly can be checked by using Service Mode tests 15 and 26 (see the **Service Mode Test** in the **Diagnostics and Service Information** section of this guide).

Specific failures associated with the motor assembly can initiate Fault Code 3 (see **Fault Codes** section in this service guide).

NOTE: When reinstalling the motor belt, insure it is positioned using the outer most motor pulley as shown.

Also, to make it easier to reinstall the drive belt, a wire tie can be used to hold the belt onto the pulley as it is rotated.

Suspension and Tub Assembly

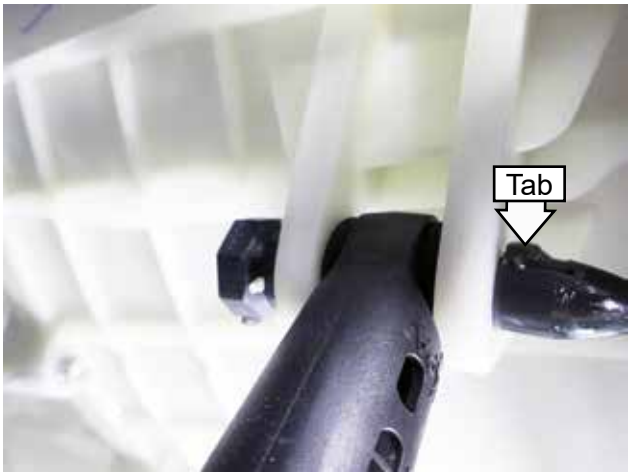
Dampers

There are four dampers securing the tub to the bottom chassis. There are two dampers on the left side, and two damper on the right side. Each of the four dampers are attached to the outer tub and the bottom damper brackets with a plastic removable pin.

The bracket is secured to the bottom of the chassis with a combination 8-mm hex-head Phillips-head bolt.

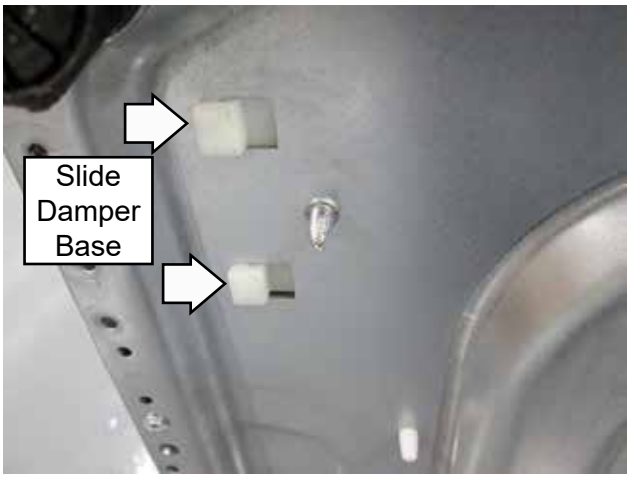
Damper Removal

1. Depending on the damper being repaired, Remove the front panel or the back cover (see **Front Panel or Back Cover** in the **Cabinet and Structure** section of this service guide).
2. Remove the plastic pin from the top and bottom of the damper that secures it to the tub and the base bracket. The tab on the pin needs to be pushed in for the pin to come out. A 1/2-inch socket works well to hold the tab in while pulling the pin out.



3. Remove the damper from the washer.
4. If the damper bracket needs to be replaced, a Phillips-head or 8-mm socket can be used to remove the bolt.

5. Then slide the damper bracket to remove it from the washer base.



Outer Tub Assembly

The outer tub assembly is constructed in two halves and contains the wash basket. The bearing and seal assembly is part of the outer tub rear half. The outer tub assembly is supported by two suspension springs and four dampers. Each spring is located between the top of the tub assembly and a cabinet top brace, one on each side. Washer stabilization is achieved by the use of four dampers that are located between the bottom of the tub assembly and chassis, two on each side.

Outer Tub Assembly Removal

Removing the outer tub assembly requires it to be taken apart while still in the cabinet. This can be done by following the instructions below.

1. Ensure that the washer is empty using the drain pump filter. Ensure to have a shallow pan to catch the excess water.
2. Remove the top cover, control panel, front panel and back cover (see **Top Panel**, **Control Panel**, **Front Panel**, and **Back Cover** in the **Cabinet and Structure** section of this service guide).
3. Remove the drive belt from the motor and pulley by walking it off of the pulley.
4. Using a 15-mm socket, remove the belt pulley from the basket shaft on the rear of the washer. This bolt is torqued to 450-inch pounds so it will take a little extra force to remove it.

5. Disconnect the **green** ground wire from the tub bearing on the rear tub to the motor shield, the **red** and **white** wires from the heater, and the thermistor connector.

6. Remover the pressure chamber from the rear of the tub. Disconnect the pressure hose and remove two Phillips-head screws securing the pressure chamber to the tub.

(*Continued next page*)

7. Remove the drain hose from the bottom of the rear half of the tub.

8. Remove the heater assembly from the front side of the tub (see **Heater Removal** under **Heater Assembly (650 and 850 Models)** in the **Cabinet and Structure** section of this service guide).

9. Remove the two front counter weights by removing the eight 13-mm bolts securing the weights to the tub; there are four for the top weight and four for the bottom weight. There are mounting guide posts molded onto the tub so the weights will not fall when the bolts are removed.

CAUTION: The counter weights are approximately 15-pounds each, and could cause injury if dropped on fingers or toes.

10. Remove the tub fill and the dispense vent hoses from the tub (see **Dispenser Assembly Removal**, under **Dispenser Assembly** in the **Fill System** section of this service guide).

11. Disengage the front dampers from the tub (see **Dampers** in the **Suspension and Tub Assembly** section of this service guide).

12. Remove the fifteen 10-mm bolts securing the tub front half to the tub rear half.

NOTE: There is a seal between the front and rear halves of the tub. If the seal is damaged when separating, replace it.

13. Slide the inner basket out of the rear half of the tub.

NOTE: The rear tub seal and bearing are pressed into the rear half of the tub. To replace them, the rear tub half will need to be replaced.

14. The basket baffles can be remove by removing two Phillips-head screws and sliding the baffle toward the front of the basket and pulling out.

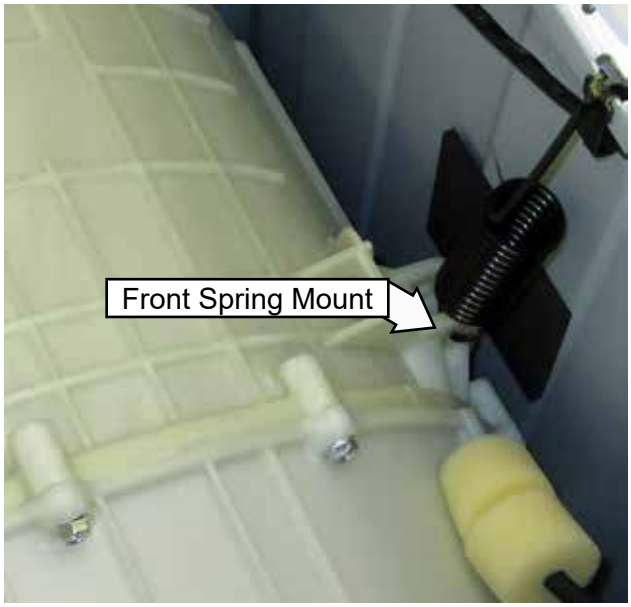
15. Disconnect the dispenser vent hose from the tub (see **Dispenser Assembly Removal**, under **Dispenser Assembly** in the **Fill System** section of this service guide).

16. Disengage the two remaining dampers from the rear half of the tub.

(*Continued next page*)

17. Disengage the springs supporting the rear half of the tub and remove the rear tub half.

NOTE: Both the right and left springs connect to the tub in the front openings of the molded tub spring mounts. For proper balance, ensure that the springs are reinstalled in the original mounts.



Diagnostics and Service Information

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

Diagnostic Guide

Before testing the washer operation using the Service Mode, check the following:

1. Is the power cord firmly plugged into the outlet?
2. Has the house fuse or circuit breaker trip or blown?
3. Are both the hot and the cold water faucets open and are the hoses not kinked or clogged?
4. Before opening the washer to access electrical components, remove power to the washer.
5. Check all connections. Look for broken or loose wires, failed terminal, or wires not pressed into connections thoroughly.
6. Check and clean connectors in common areas where the possibility of corrosion can occur.
7. Resistance check must be made with power cord unplugged from outlet, and with wiring harness or connectors disconnected.

Consumer Help Indicator	
CHI is the way to communicate a simple remedy for some situations that the consumer can perform without the need to call for service. The chart below describes the helpful messages the consumer may notice scrolling on the display when they return to start another load. These messages will provide simple remedies the consumer can quickly perform.	
"Spin" light blinking	If an out-of-balance condition is detected by the washer, the Spin light will blink during the remaining portion of the cycle and will stay illuminated for a short time after cycle completion. When this occurs, the washer is taking actions to correct the out-of-balance condition and complete the cycle normally. In some cases, the washer may not be able to balance the load and spin up to full speed. If the load is more wet than normal at the end of the cycle, redistribute the load evenly in the wash basket and run a Drain & Spin cycle.
“H2O SUPPLY” (Water not entering washer)	Check house water supply. Did you forget to turn on one or both supply valves after installation or coming back from vacation? As soon as the message starts to scroll, the washer will initiate a 4-minute lock-out period. The washer controls won’t respond/change during this time. After the 4 minutes, begin cycle again. If you try to bypass the lock-out period by unplugging the washer, the 4-minute timer will start over again.
“CAnCELEd”	“CAnCELEd” may scroll on the display if the machine was paused for longer than 24 hours, water was left in the machine for 15-minutes with door open, or if the machine has stopped itself before the cycle completed due to certain errors. As soon as the message starts to scroll, the washer will initiate a 4-minute lock-out period. The washer controls won’t respond/change during this time. After the 4-minute period, begin the cycle again. If you try to bypass the lock-out period by unplugging the washer, the 4-minute timer will start over again. If the problem persists, call GE Appliances at 800.GE.CARES (800.432.2737) for service.
"Door"	Will be display if after three cycles have been started without opening the door. Washer will not start another cycle until the door is opened. If it still will not start after the door is opened, it is a possible door switch issue.

Consumer Fault Code Mode Entry

- From an idle state only (all LED's off), press and hold Start pad for 10 seconds.
- After holding Start pad for 10 seconds, all LED's will turn on, signifying user may release Start pad.

Behaviors While In Consumer Fault Code Mode Entry

- The Pause and Door Lock LED's should be constantly blinking while in CFCM.
- The first fault, if present, will show on the display.
- Pressing the Start pad will display the next fault code.
  - Fault code will blink on the Seven Segment Display (SSD).
- At the end of the fault list, or if no faults present:
  - Seven Segment Display (SSD) will blink “—”.

Exiting Consumer Fault Code Mode Entry

- Pressing any pad (other than Start) or turning any knob will exit Consumer Fault Code Mode.
- Consumer Fault Code Mode will time out after 10 minutes.

Service Mode Entry

Press and hold Start pad while rotating cycle selection knob 180 degrees, then release Start pad.

- Once service mode is entered, all LED's will be flashing.
- The cycle selection Knob is now used to control the test selection menu.
  - Rotating the knob clockwise (CW) will increment the test numbers in the display.
  - Rotating the knob counter-clockwise (CCW) will decrement the test number in the display.
- Once test number is selected, pressing Start will begin the selected test.

Exit Field Service Mode

- Field service mode will time out after 30 minutes if there is no user activity.
- Press and hold (3 second) Start pad.
- Press Power pad.

Service Mode Tests

Test No.	Test Name	Description
0	All LED's on	All LED's on the display will blink including "88" on the SSD at a rate of 1Hz
1	Fault Codes	• Pressing Start pad will blink the first fault code. • Display fault code in SSD. • At end of list, OR if no fault codes are present, unit will flash "- -". • Use the fault table. • Faults with an ID greater than 100 will not be displayed. These are "engineering faults".
2	Personality ID	• Pressing Start/Pause will start the test. • Flash the set personality after pressing Start. • Use SSD to show personality.
3	MC Application Version (Critical)	After selecting this test, press the Start pad to toggle through the software version number as follows: Example: v01.23 • First Press: "01" on SSD • Second Press: "23" on SSD
4	MC Application Version (Non Critical)	After selecting this test, press the Start pad to toggle through the software version number as follows: Example: v01.23 • First Press: "01" on SSD • Second Press: "23" on SSD
5	MC Parametric Version (Non Critical)	After selecting this test, press the Start pad to toggle through the software version number as follows: Example: v01.23 • First Press: "01" on SSD • Second Press: "23" on SSD **NOTE**: We only show the Non-Critical version number because the Critical parametric version number must match the application Non-Critical version number for the control to boot. If you get to service mode, then the parametric Critical version is correct.
6	Hot Water Valve	• Pressing Start/Pause will toggle the hot water valve on and off. • Door will lock while test is active. • Test will have a timeout for how long valve will be on (1 minute). • The valve will turn off when the test is exited.
7	Cold Water Valve	• Pressing Start/Pause will toggle the cold water valve on and off. • Door will lock while test is active. • Test will have a timeout for how long valve will be on (1 minute). • The valve will turn off when the test is exited.
8	Fabric Softener Dispenser	• Pressing Start/Pause will toggle the fabric softener valve on and off. • Door will lock while test is active. • Test will have a timeout for how long valve will be on (1 minute). • The valve will turn off when the test is exited.

(*Continued next page*)

Test No.	Test Name	Description
10	Pressure Sensor	• Pressing Start/Pause will start the test. • Door will lock while test is active. • Pressure sensor test will have a timeout. • Cold valve will turn on at start of the test. • The test will watch for the following pressure levels: 3", 4", 5", 6", 7". • At start of the test, the following LEDs will start blinking: Extra Light, Light, Normal, Heavy, Extra Heavy. • As each pressure level is crossed, the corresponding LED will stop blinking.
12	Drain Pump	• Pressing Start/Pause will toggle the bulk valve on and off. • Test will have a timeout for how long valve will be on (1 minute). • The valve will turn off when the test is exited.
13	Door Switch	• Pressing Start/Pause will start the test. • When the door is open, the Soil Level "Light" LED will blink. • When the door is closed, the Soil Level "Extra Light" LED will blink. • Closing the door causes another status LED to blink.
14	Spin	• Pressing Start/Pause will start the test. • Spin test will perform child safety. • The door must be closed to start the test. If door is open, the lock LED will blink. • When started, the mode will shift to spin if required and the door will be locked. • When mode shift is complete, the unit will begin spinning. • Spin test will have a timeout (4 minutes). • No OOB detection during the spin. • The spin will stop when the test is exited. • The door will unlock once the speed reaches 0 after the test is exited.
15	Tumble	• Pressing Start/Pause will start the test. • Tumble test should perform child safety. • The tumble will stop when the test is exited.
16	Clear All Fault Codes	• Pressing Start/Pause will clear all Fault codes.
17	Change Personality	• Pressing Start/Pause will start the test. • Pressing the Start pad will display the next valid personality. • Pressing and holding the Start pad for the selected personality will write it to NV and reboot.
19	Bulk Detergent Dispense Valve	• Pressing Start/Pause will toggle the valve on and off. • Test requires door to close before beginning. Door will lock while test is active. • Test will have a timeout for how long valve will be on (1 minute). • The valve will turn off when the test is exited.

(*Continued next page*)

Test No.	Test Name	Description
20	Heater and Thermistor	• Pressing Start/Pause will start the test. • Heater test should perform child safety. • The door must be closed and locked during the test. If the door is open, the lock LED will blink. • When started, a steam fill routine will be performed. • After fill, the heater will turn on and will have a timeout (5 minutes). • The SSD display will show the thermistor temperature.
21	Prewash Valve	• Pressing Start/Pause will toggle the valve on and off. • Test requires door to close before beginning. Door will lock while test is active. • Test will have a timeout for how long valve will be on (1 minute). • The valve will turn off when the test is exited.
22	Sump Steam Valve	• Pressing Start/Pause will toggle the valve on and off. • Door will lock while test is active. • Test will have a timeout for how long valve will be on (1 minute). • The valve will turn off when the test is exited.
23	Bleach Valve	• Pressing Start/Pause will toggle the valve on and off. • Door will lock while test is active. • Test will have a timeout for how long valve will be on (1 minute). • The valve will turn off when the test is exited.
24	Damper	• Pressing Start/Pause will toggle the damper state. • When the damper feedback indicates that the damper is open, the Soil Level "Light" LED will blink. • When the damper feedback indicates that the damper is closed, the Soil Level "Extra Light" LED will blink.
25	OND Fan (Overnight Dry)	• Pressing Start/Pause will toggle the fan state. • When the fan is on, the Soil Level "Light" LED will blink. • When the fan is off, the Soil Level "Extra Light" LED will blink. • Not all models have a fan (only 850 models have fans).
26	Accelerated Spin Test	• Pressing Start/Pause will start the test. • Spin test will perform child safety. • The door must be closed to start the test. If the door is open, the lock LED will blink. • Damper must be closed to start ramp up. • When started, the mode will shift to spin if required and the door will be locked. • Spin test will have a timeout (approximately 2 minutes). • No OOB detection during the spin. • The spin will stop when the test is exited. • The damper will be open and door will unlock once the speed reaches 0 after the test is exited. • Seven Segment Display (SSD) will display the current speed. The SSD only has 3 digits so the displayed speed needs to be multiplied by 10. For example, the SSD shows 110 so the speed is 1,100 RPM.

Fault Codes

Fault Code	Description	Trigger Condition	Action
0	No Faults	Displayed in Service Mode only when there are no faults to display.	• Displayed when no faults are found.
1	Lock Monitor	This fault is set if the motor shaft speed exceeds 45 RPM for 5 seconds while in spin mode and unlocked. This fault can also occur if the basket is manually spun by hand.	• Check the door lock using Service Mode spin test 14. • Check door lock harness connectors both at the main board and at the door lock assembly. • Replace door lock if this happens frequently.
2	Door Monitor	Control did not get Door closed signal from switch while motor was moving. Could mean the switch didn't close or control didn't get the signal because of lack of connection.	• Check the door lock using Service Mode spin test 14. • Check door lock harness connectors both at the main board and at the door lock assembly. • Replace door lock if this happens frequently.
3	Locked Rotor Monitor	For 5 straight seconds control not seeing signal changes indicating the motor is turning while trying to spin. Could mean the motor isn't rotating or control didn't get the signal because of lack of connection.	• Physically check the washer for anything preventing motor movement. • Verify hall sensor is connected to the main harness. Put washer in Service Mode and run test 14 (Spin). If hall sensor is bad or disconnected, the basket will start to spin normally and then stop spinning after approximately 5 seconds. Ensure hall sensor is properly connected and positioned on the motor. If basket spins for approximately 15 seconds, the hall sensor is most likely NOT the cause. • Measure the resistance of each motor phase winding, If TCO is tripped, wait approximately 45 minutes for TCO to reset and make sure motor moves freely and that nothing is jamming it, replace motor if it does not. • Check the door lock using service mode spin test 14. • If unit doesn't spin, replace inverter board or the main board.
6	Critical Flood Level by Pressure	Control received an extended period of pressure readings that is nearing over-flow levels. Voltage Output must be present. Could mean water did get that high due to briefly stuck water valve. Voltage output of sensor too high for actual water level because of sensor or water in pressure tube increasing pressure.	• Check pressure tube for pinches where it goes through main board. • Check pressure tube for trapped water. • Check water valve operation and for any leaking water valves. • Use pressure sensor test 10 to ensure correct pressure sensor operation. • Ensure pressure chamber port is free from obstruction using drill bit size 1/16-in. by hand so as not to drill through the inner wall.

(Continued Next Page)

Fault Code	Description	Trigger Condition	Action
8	Pressure Sensor Loss	Determines if appropriate pressure changes are seen during fill. It assumes there is a pressure leak, a clog in the pressure hose/system delaying the increase in pressure, or a significant amount water leaking out.	• Check to make sure house water supply valves are turned on. • Check water valve operation. • Check pressure tube for pinches where it goes through top cover grommet. • Use pressure sensor test 10 to ensure correct pressure sensor operation. • Check pressure tube for trapped water. • Ensure pressure chamber port is free from obstruction using drill bit size 1/16-in. by hand so as not to drill through the inner wall.
9	Door Switch Redundancy	Three cycles have been completed without any door opening.	• Open and close the door to clear the fault. • Check harness and connectors that go to the door switch. • Use test 13 to ensure system can detect the correct door state with the Spin and Rinse LED's. • Consumer education that four cycles cannot be run back-to-back without opening and closing the door. • If the fault will not clear, replace the door lock.
15	Water Temp Sensor Invalid	The thermistor is disconnected, not present, or has failed.	• Run Service Mode heater and thermistor test 20 to verify heater and thermistor. • Check thermistor resistance from connector J701 on the control board. Validate the resistance matches the table in mini-manual. • Check the heater resistance from connector J503 on the control board from pin 4 to 5. • Check wiring harness and connections. • Replace thermistor or heater if resistance is out of spec.
17	Dry Load Sense Timeout	Dry load sense times out and moves to the next part of the cycle selected. This occurs when the washer is not reaching the target speed within a defined time limit for the load type selected.	• Check for water in the bottom of the tub. If so, drain and try cycle again. • Check the basket for excessive friction. Basket should spin freely. If not, find source of friction and remove it. • This can also happen if a cycle is started with wet clothes. • Consumer education to doesn’t load the washer with wet clothes.

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Fault Code	Description	Trigger Condition	Action
18	Drain Pump Clearing Algorithm Failed	Pressure sensor indicates water in the tub after attempting to drain.	• Fill tub using Service Mode test 7 and check drain pump operation using Service Mode test 12. • Check drain hose for blockages. • Confirm standpipe height is within recommended guidelines. • If pump does not operate, check that the resistance of the pump matches resistance table and verify 120 VAC while pump is operating at J512. • Check pressure tube for pinches where it goes through top cover grommet. • Use pressure sensor test 10 to ensure correct pressure sensor operation. • Check pressure tube for trapped water. • Ensure pressure chamber port is free from obstruction using drill bit size 1/16-in. by hand so as not to drill through the inner wall.
19	UI State Timeout	This will happen if a cycle is paused for greater than 24 hours or if the pressure sensor reads greater than 0.5-in. while the machine is off for greater than 24 hours.	• Check for leaking water valves. • Use pressure sensor test 10 to ensure correct pressure sensor operation. • Consumer education on leaving sopping wet items in basket for more than 24 hours. • Pausing the machine for greater than 24 hours can cause this. • Can be caused by out-of-balance. • Can be caused by starting a cycle with the "no spin" option selected. • Check the output voltage from the pressure sensor to ensure it matches the water level in the basket according to the pressure sensor chart. • Check pressure tube for trapped water. • Ensure pressure chamber port is free from obstruction using drill bit size 1/16-in. by hand so as not to drill through the inner wall.
20	Critical Flood Level by Gallons	Water volume into the tub exceeded 41 gallons as calculated by the control. 1. Pressure tube is momentarily pinched, has water in it, partial blockage if Flood fault 12 occurs. 2. Low water pressure/ flow or permanent pressure system blockage if NO Flood fault 12 occurs.	• Check pressure tube for pinches where it goes through top cover grommet. • Check pressure tube for trapped water. • Check for any leaking water valves. • Check home water pressure. • Check the output voltage from the pressure sensor to ensure it matches the water level in the basket according to the pressure sensor chart.
22	Out of Balance (OOB) During Dry Load Sense	Large wet/OOB load being washed. This is set if OOB condition is detected during dry load sense algorithm. Dry load sense will be abandoned and wet load sense will be started.	• Check for excessively OOB load. Customer Education on how to distribute load. • Check the basket for excessive friction or for being excessively out of round. Basket should spin freely and without wobble. If friction is found, remove it. If basket is bad, replace it. • Check speed sensor for loose connection to the motor.

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Fault Code	Description	Trigger Condition	Action
23	Critical Door Lock Failure	Cycle canceled due to inability to reach desired door lock state.	• Verify the door is closed properly, if door does not close freely, lift the door until it closes freely. • Replace door lock and door lock harness then run below actions. • Check the door lock using service mode spin test 14 to ensure door lock operation. • Verify that the door lock is not blocked by any external debris. • Check door switch continuity at J513 on the control. • Check continuity of door lock position. Opened or Closed. • Check for proper operation of door lock. 120 VAC while activating. • Check door lock wiring harness from the control to lock assembly.
24	Door Logic Failure	Door lock failure. This fault is set if the system perceives the door to be both OPEN and LOCKED for 5 consecutive seconds.	• Replace door lock and door lock harness, then run below actions. • Check the door lock using Service Mode spin test 14 to ensure door lock operation. • Check harness and connections from the control to the door lock assembly for damage and continuity. • Run a spin cycle. Pull up on the door during spin for more than 5 seconds and see if this fault occurs.
25, 65	Pressure Sensor Dropout, Pressure Sensor Continuous Gallons Monitor	This fault is set when the pressure is above 6-in., then later drops to less than 1-in. for 5 seconds without draining.	• Check to make sure house water supply valves are turned on. • Check water valve operation. • Check for proper drain pipe and stand pipe height. • Check pressure tube for pinches where it goes through control board. • Use pressure sensor test 10 to ensure correct pressure sensor operation. • Check pressure tube for trapped water. • Ensure pressure chamber port is free from obstruction using drill bit size 1/16-in. by hand so as not to drill through the inner wall.
26	Out of Balance (OOB) Ended Final Spin	Washer detected an out of balance load and was unable to reach final target spin speed.	• Run Drain & Spin cycle to ensure basket reaches final spin speed and the Spin LED does not blink (a blinking Spin LED indicates that an out of balance was detected during final spin). • Check for any basket loose or damage or abnormal noise. • Check to make sure unit is firmly seated on all four legs, doesn't rock, and is leveled. • If washer spins properly, educate consumer on how to properly load and distribute their clothes in the washer basket to prevent an OOB.

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Fault Code	Description	Trigger Condition	Action
27	IMP Overheated	Inverter over temperature (> 221°F) for 5 seconds	• Check whether drum is easy to tumble. • Check that motor has no signs of over temperature. • Reset inverter board by unplugging washer for 30 seconds. Run a drain and spin by selecting Rinse+Spin cycle and select no rinse by pressing Rinse until both Extra and Normal lights turn off. • Enter Service Mode and check that fault has cleared. • If fault persists, or unit does not spin, replace inverter board.
29	Drive System Self-Check Fault	MCU failed self-check. One fault over the checking process (ROM, RAM, CPU Registers, Stack, Clock) triggers the fault. The self-checking is continuously performed by MCU.	• Run a spin test in service mode to verify motor operation. • If no movement, check rotor, stator, harness and connectors for damage. • If above components are good, replace inverter board.
30	Main Board Over Voltage	When connected to power, voltage is higher than 160 VAC.	• Check if the voltage is higher than 160V. • If voltage is normal, replace the main control board.
31	Main Board Self Check Failed	MCU failed self-check. One fault over the checking process (ROM, RAM, CPU Registers, Stack, Clock, AD) triggers the fault. The self-checking is continuously performed by MCU.	• Check door lock, door switch, water temperature sensor. • Check harness and connections. • If above is checks good, replace the main control board.
32, 77	Critical door Lock Failure: Can't Unlock Door	Cycle canceled due to inability to unlock door.	• Verify the door is closed properly, if door is not close freely, lift the door until close free. • Replace door lock and door lock harness then run below actions. • Check the door lock using Service Mode spin test 14 to ensure door lock operation. • Verify that the door lock is not blocked by any external debris. • Check door switch continuity at J513 on the control. • Check continuity of door lock position. Opened or Closed. • Check for proper operation of door lock. 120 VAC while activating. • Check door lock wiring harness from the control to lock assembly.

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Fault Code	Description	Trigger Condition	Action
33, 34, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 66, 67, 68, 69, 71, 72, 73, 74, 83	Inverter Fault	Any of these faults can be set if the inverter board reports a fault.	• Run Service Mode spin test 14 to full completion. If cycle fully completes, no further action required. • Check line voltage for 102 VAC to 132 VAC. • Check all inverter board harness connections. • Check motor TCO continuity at J502 (inverter board). If open, should reset after 45 minutes. • Check for continuity through each pair of motor phase windings. If any windings found open, replace motor. • If the above repair actions don't clear the fault, replace inverter board.
35, 59, 60, 61, 63, 64	Accelerometer Faults	Any of these faults can be set if the accelerometer board reports a fault.	• Run Service Mode spin test 14 to full completion. If cycle fully completes, no further action required. • Check accelerometer board harness connections. • If the above repair actions don't clear the fault, replace accelerometer board.
37	Heater	Fault is set if the thermistor doesn't see at least 3 degrees Fahrenheit heat rise after the heater has been on for 5 minutes.	• Run Service Mode heater and thermistor test 20 to verify heater and thermistor. • Check thermistor resistance from connector J701 on the control board. Validate the resistance matches the table in mini-manual. • Check the heater resistance from connector J503 on the control board from pin 4 to 5. • Check wiring harness and connections. • Replace thermistor or heater if resistance is out of spec.
38, 39, 40, 84	Vent Damper	Fault is set if close/open feedback is not fails after 5 seconds.	• Run Service Mode damper test 24 to verify feedback open/close. • Check wiring harness and connections. • Replace damper if damper feedback open/close is not detected.
57	Door Lock Fault Water Above Door by Pressure	This fault is set when door is unlocking while water level detected by pressure sensor is above than threshold.	• Check pressure tube for trapped water. • Check each valves operation. (Replace water valve and send back to GE Appliances.) • Use pressure sensor test 10 to ensure correct pressure sensor operation. • Check pressure tube for pinches where it goes through top cover grommet. • Ensure pressure chamber port is free from obstruction using drill bit size 1/16-in. by hand so as not to drill through the inner wall.

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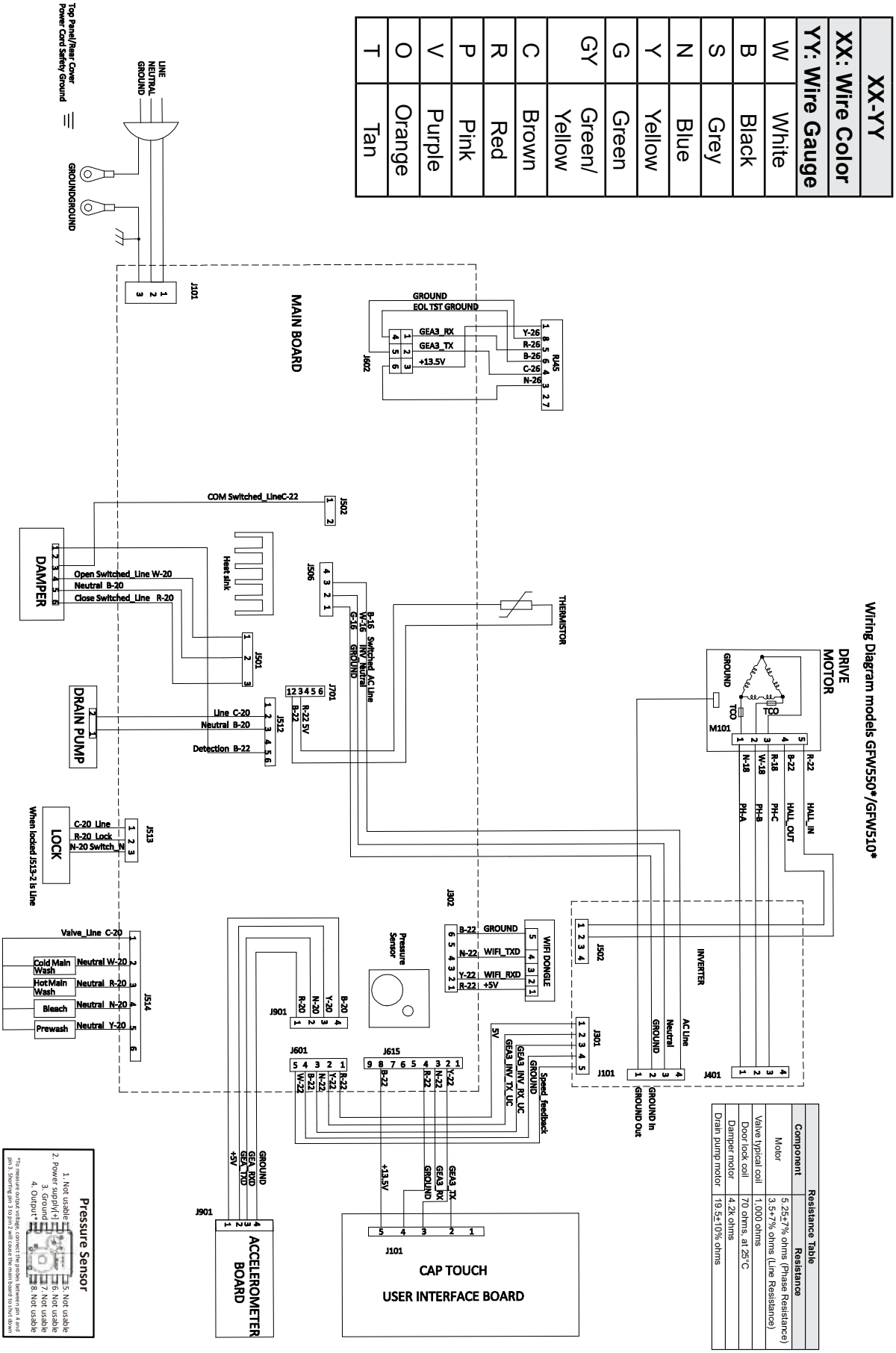
Fault Code	Description	Trigger Condition	Action
58	ADC Health Check Fault	After drain control should go to idle End Cycle ADC Health Check Fault. This fault is set when any ADC Self-Diagnosis channel reports an out-of-tolerance value for 10 seconds.	• Replace main board.
62	Inverter Power And Door Lock Monitor	The fault is set when the system request inverter power full and the door in unlocked for more than 5 seconds.	• See Fault Code 2.
70	Inverter Volt/ Hertz Start Up	Inverter volt hertz star up 135 is set five times in one cycle.	• Review voltage and frequency at supply line. • Replace the inverter.
77	See Fault Code 32	See Fault Code 32	• See Fault Code 32
78	Board Communication API Mismatch	The Main Board detects that it doesn't have the same API version as another board.	• Update software
85	Voltage Detected by MC	Voltage detected by MC is outside acceptable window	• Review voltage and frequency at supply line. • Replace the Main Control board.

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

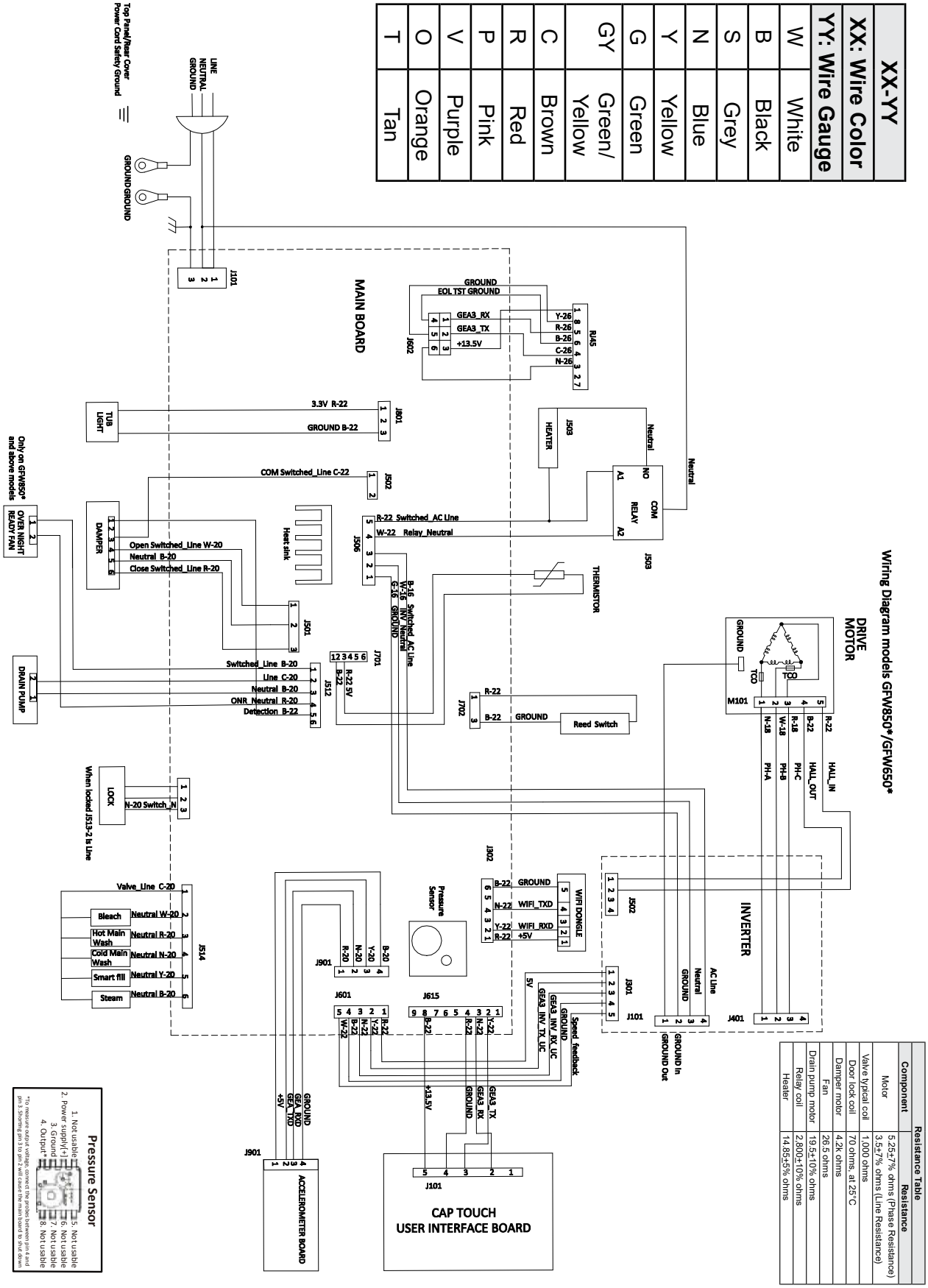
510 / 550 Schematic

XX-YY	
XX: Wire Color	YY: Wire Gauge
W	White
B	Black
S	Grey
N	Blue
Y	Yellow
G	Green
GY	Green/ Yellow
C	Brown
R	Red
P	Pink
V	Purple
O	Orange
T	Tan



650 / 850 Schematic

XX-YY
XX: Wire Color
YY: Wire Gauge
W White
B Black
S Grey
N Blue
Y Yellow
G Green
GY Green/ Yellow
C Brown
R Red
P Pink
V Purple
O Orange
T Tan



Resistance Table	
Component	Resistance
Motor	5.25±7% ohms (Phase Resistance) 3.5±7% ohms (Line Resistance)
Valve typical coil	1,000 ohms
Door lock coil	70 ohms, at 25°C
Damper motor	4.2k ohms
Fan	26.5 ohms
Drain pump motor	19.5±10% ohms
Relay coil	2,800±10% ohms
Heater	14.85±5% ohms

Index

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