



## FOR SERVICE TECHNICIAN ONLY—DO NOT REMOVE OR DESTROY

	<div data-bbox="776 205 1010 256"> <b>WARNING</b></div> <div data-bbox="721 281 1062 323"><b>Electrical Shock Hazard</b></div> <div data-bbox="639 348 1143 470">Disconnect power before servicing. Replace all parts and panels before operating. Failure to do so can result in injury or death.</div>
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### **IMPORTANT** **Electric Discharge (ESD)** **Sensitive Electronics**

ESD problems are present everywhere. ESD may damage or weaken the electronic control assembly. The new control assembly may appear to work well after repair is finished, but failure may occur at a later date due to ESD stress.

- Use an anti-static wrist strap. Connect wrist strap to ground connection point or unpainted metal in the appliance.  
–OR–  
Touch your finger repeatedly to ground connection point or unpainted metal in the appliance.
- Before removing the part from its package, touch the anti-static bag to a green ground connection point or unpainted metal in the appliance.
- Avoid touching electronic parts or terminal contact; handle electronic control assembly by edges only.
- When repackaging failed electronic control assembly in anti-static bag, observe above-mentioned precautions.

### **IMPORTANT** **Electrical Shock Notes**

- The power must be disconnected before servicing by unplugging the machine or disconnecting the circuit breaker.
- The machine must be electrically grounded through the lead in the 3-prong power cord. The cord must be plugged into a grounded appliance outlet that has been properly installed. If local codes require an additional ground connection, use a 16-gauge or larger wire to connect the washer cabinet to an established ground. In all cases, the grounding method must comply with all local electrical codes and ordinances.

### **DIAGNOSTIC GUIDE**

Before testing washer operation, check the following:

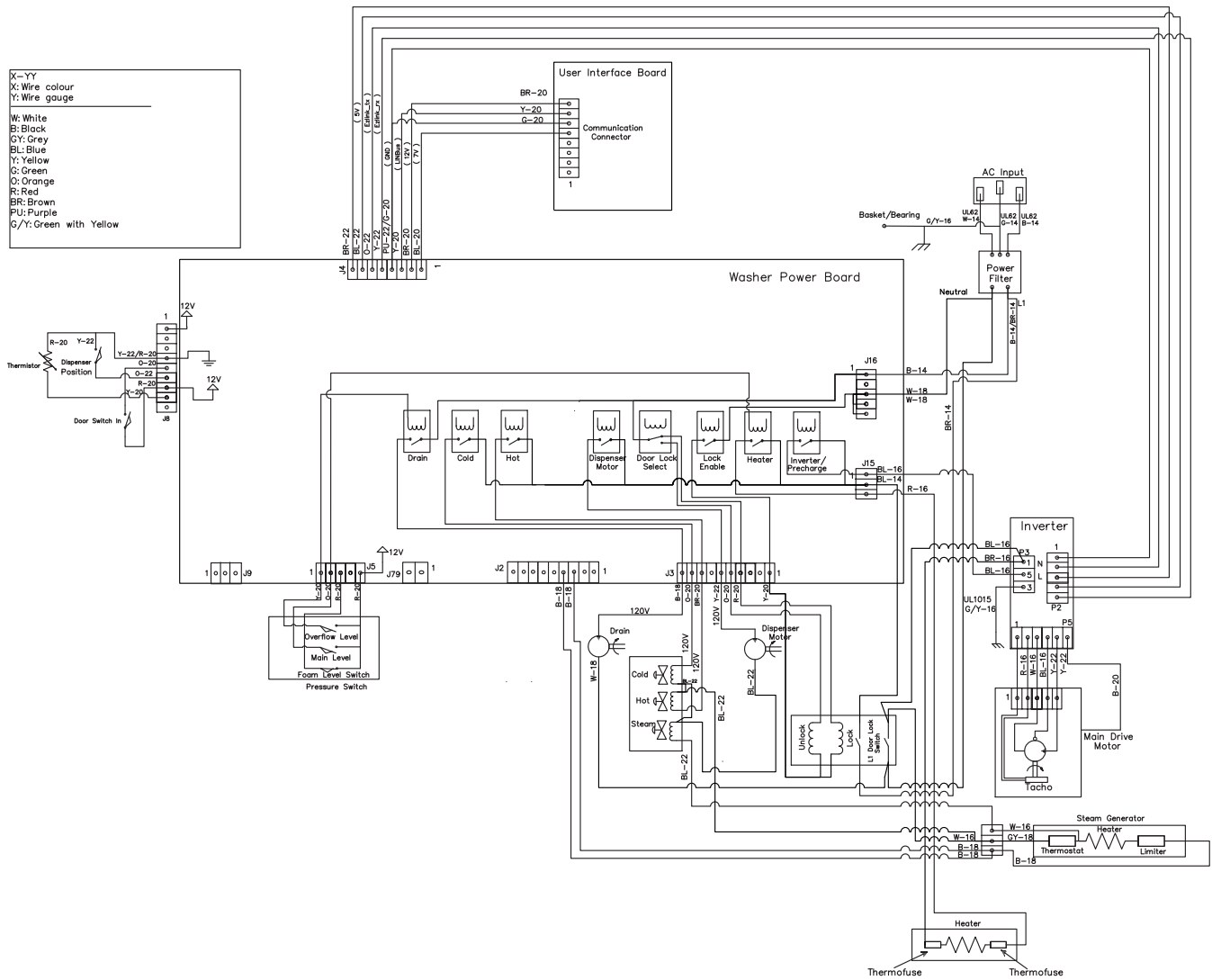
- Is the power cord firmly plugged into a live circuit?
- Has a household fuse blown or circuit breaker tripped? Time delay fuse?
- Are both hot and cold water faucets open and water supply hoses unobstructed?
- Before opening the unit, make sure the washer is unplugged from the power outlet.
- Check all connections before replacing components. Look for broken or loose wires, failed terminals or wires not pressed into connections far enough.
- The most common cause for control failure is corrosion on connectors. Therefore, disconnecting and reconnecting wires will be necessary throughout test procedures.
- Connectors: Look at top of connector. Check for broken or loose wires. Check for wires not pressed into connector far enough to engage metal barbs.
- Resistance check must be made with power cord unplugged from outlet, and with wiring harness or connectors disconnected.

## WIRE DRAWING – MODELS: GFWH2400, GFWH2405



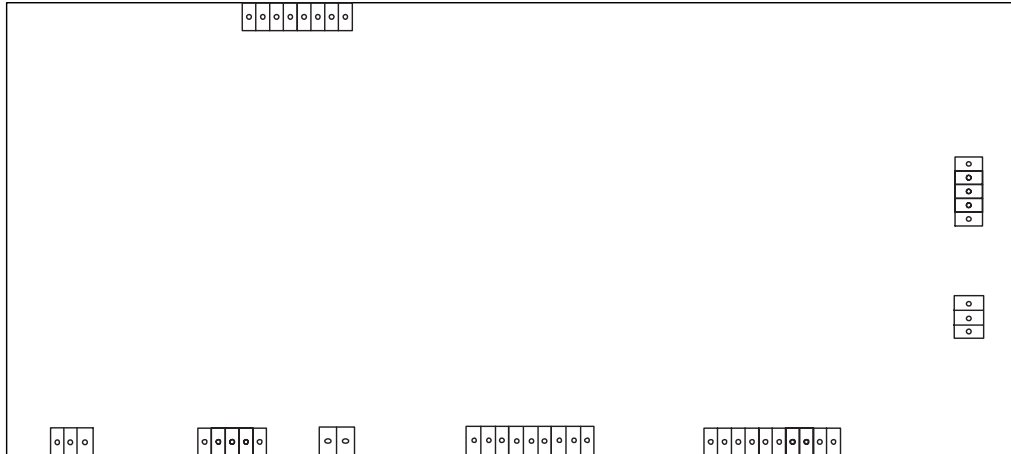
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## WIRE DRAWING – WITHOUT BULK DISPENSER – MODEL: GFWS3500, GFWS3505, GFWS3600, GFWS3605



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### CONTROL BOARD CONNECTION LOCATIONS



### SERVICE MODE

**To ENTER service mode:** Press (while the unit is idle – the screen is blank): **Extra Rinse–Delay Start–Extra Rinse–Delay Start–Extra Rinse–Delay Start**

**To EXIT service mode:** Press the Power button when in the Service Mode Menu Screen

### SERVICE MODE SELECTIONS

- 1. Error Codes**  
Checks for any error codes reported by the controls.
- 2. Version Information**  
Checks the software version.
- 3. EEPROM Test**  
Checks the memory on the user interface control board, then the memory on the Power Board.
- 4. UI Test**  
Verifies all LEDs and Display operate correctly.
- 5. Pump Test**  
Test drain pump.
- 6. Water Level Sensor**  
Fills to all 3 levels, then pumps out water.
- 7. Temperature & Heater**  
Verifies that both the Thermistor and Heater are working correctly.
- 8. Tumble Test**  
Verifies washer tumbles (i.e., Wash Cycle).
- 9. Spin Test**  
Verifies washer spins. **Note:** No out-of-balance detection will be performed here, so the washer will spin up regardless of any out-of-balance condition in the drum.
- 10. Dispenser Test**  
Verifies the dispenser motor works and can locate all 4 dispenser positions.
- 11. Vibration Test**  
Tests the washer vibration by spinning to the extra high spin speed as fast as possible. **Note:** No out-of-balance detection will be performed here, so the washer will spin up regardless of the out of balance that is placed in the drum.
- 12. Steam**  
Tumbles while operating the steam generator.
- 13. Out of Balance**  
Spins at a low RPM and outputs the Out of Balance Reading of the Inverter
- 14. AutoSpin Profile**  
Tests each spin speed of the washer. **Note:** No out-of-balance detection will be performed here, so the washer will spin up regardless of any out of-balance condition in the drum.
- 15. Hot Water Test**  
Verifies hot-water valve turns on/off.
- 16. Cold Water Test**  
Verifies cold-water valve turns on/off.
- 17. Slow Acceleration Test**  
Slowly accelerates to the maximum spin speed. **Note:** No out-of-balance detection will be performed here, so the washer will spin up regardless of any out of-balance condition in the drum.

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**SERVICE MODE**

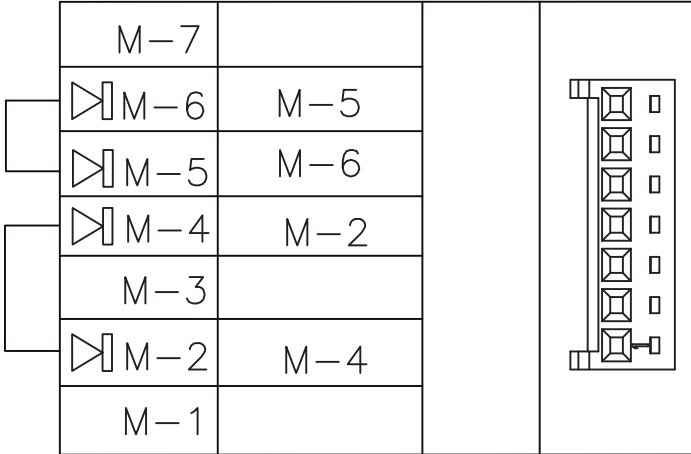
Service Mode Test	Sequence
Error Codes	<b>Start/Pause</b> Displays error codes. Turn knob to display multiple error codes.
	<b>Start/Pause</b> Clears highlighted error code from machine
	<b>Power</b> Returns to service mode screen
Version Info	<b>Start/Pause</b> Displays the current version of software. Turn the knob to display all versions (EUI, SUI, EPB, SPB, IPB)
	<b>Power</b> Returns to service mode screen
EEProm Test	<b>Start/Pause</b> Displays "--" for a while, then displays UI Memory status
	<b>Turn Knob</b> Displays PB status
	<b>Power</b> Returns to service mode screen
UI Test	<b>Start/Pause</b> Lights up LEDs and Display
	<b>Power</b> Returns to service mode screen
Pump Test	<b>Start/Pause</b> Begins running the drain pump
	<b>Power</b> Interrupts draining and returns to service mode screen
Water Level Sensor	<b>Start/Pause</b> Unit begins to drain. When draining is complete, displays "E" for Empty
	<b>Start/Pause</b> Fills to foam level. Displays "E" until fill is complete, then shows "F" for Foam
	<b>Start/Pause</b> Fills to normal level. Displays "F" until fill is complete, then shows "M"
	<b>Start/Pause</b> Fills to overflow level. Display shows "M" until fill is complete. When overflow level is reached, the pump begins to drain out the water
	<b>Power</b> Drains and returns to service mode screen
Temp Sensor and Heater	<b>Start/Pause</b> Displays "current" temperature. Unit fills with water and gets heated. Temperature should increase with time.
	<b>Power</b> Drains and returns to service mode screen
Hot Water Valve Test	<b>Start/Pause</b> Fills with hot water. Display shows "Hot"
	<b>Power</b> Drains and returns to service mode screen
Cold Water Valve Test	<b>Start/Pause</b> Fills with cold water. Display shows "Cld"
	<b>Power</b> Drains and returns to service mode screen
Tumble Test	<b>Start/Pause</b> Unit tumbles. Displays "tt"
	<b>Power</b> Returns to service mode screen
Spin Test	<b>Start/Pause</b> Displays "current" rpm. Unit begins spinning at 410 rpm
	<b>Start/Pause</b> Ramps up to 1050 rpm. Displayed as "A50"
	<b>Start/Pause</b> Ramps up to 1150 rpm. Displayed as "B50"
	<b>Start/Pause</b> Ramps up to 1300 rpm. Displayed as "D00"
	<b>Power</b> Ramps down and returns to service mode screen
Dispenser Test	<b>Start/Pause</b> Displays "P" and dispenser moves to position 1
	<b>Start/Pause</b> Displays "D" and dispenser moves to position 2
	<b>Start/Pause</b> Displays "B" and dispenser moves to position 3
	<b>Start/Pause</b> Displays "F" and dispenser moves to position 4
	<b>Start/Pause</b> Repeats above sequence, starting with "D"
	<b>Power</b> Drains and returns to service mode screen
Vibration Test	<b>Start/Pause</b> Spins up to 1300 rpm as fast as possible, then goes back to service mode screen. No Out of Balance Check.
	<b>Power</b> Interrupts and returns to service mode
Steam	<b>Start/Pause</b> Displays "SEA," tumbles at 43 rpm in 15/3/15 increments. Enables steam generator throughout duration of test.
	<b>Power</b> Steam generator turns off, drum stops, returns to service mode screen
Out of Balance Check	<b>Start/Pause</b> Unit spins at a low RPM and displays the Out of Balance number being measured by the Inverter. 255 means that the Inverter has not yet checked the Out of Balance Value. Once the 255 is updated, any number below 15 is normal Out of Balance operation. Any number between 15 and 20 is marginally acceptable. Any number greater than 20 means an abnormal Out of Balance is detected.
	<b>Power</b> Returns to service mode screen
Auto Spin Profile	<b>Start/Pause</b> Slowly ramps to 90, then 120, then 90, then 410
	<b>Power</b> Interrupts and returns to service mode screen
Slow Acceleration Test	<b>Start/Pause</b> Slowly ramps to the maximum spin speed.
	<b>Power</b> Returns to service mode screen

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### SERVICE MODE (cont.)

Service Mode Test	Sequence	
Bulk Pump Test	<b>Enter</b>	Displays "left detergent pump," water fills and primes left detergent
	<b>Start</b>	Displays "softener pump" and begins priming
	<b>Start</b>	Displays "right det pump" and begins priming
	<b>Start</b>	Continues cycling through the bulk pumps
	<b>Power</b>	Drains and returns to service mode screen
Bulk Sensor	<b>Enter</b>	Displays the status of Left Detergent, Softener and Right Detergent
	<b>Power</b>	Returns to service mode screen
Auto Spin Profile	<b>Enter</b>	Slowly ramps up to 90, then 120, then 410
	<b>Power</b>	Interrupts and returns to service mode screen
Bulk Manual Priming	<b>Enter</b>	Displays "prime left detergent," "prime softener," "prime right detergent" with one highlighted
	<b>Enter</b>	Begins priming selected, with water on to rinse it from dispenser drawer
	<b>Power</b>	Drains, then returns to service mode screen
Bulk Primed Status	<b>Enter</b>	Displays "left detergent pump," "softener pump," "right detergent pump" with one highlighted
	<b>Enter</b>	Displays "left det primed status." Choose status "yes" (lines primed) or "no" (lines not primed)
	<b>Enter</b>	Returns back to "Bulk Primed Status"
	<b>Power</b>	Returns to service mode screen
Steam	<b>Enter</b>	Displays "Steam," tumbles at 43 rpm in 15/3/15 increments. Enables steam generator throughout duration of test.
	<b>Power</b>	Steam generator turns off, drum stops, returns to service mode screen

## Model Select Plug

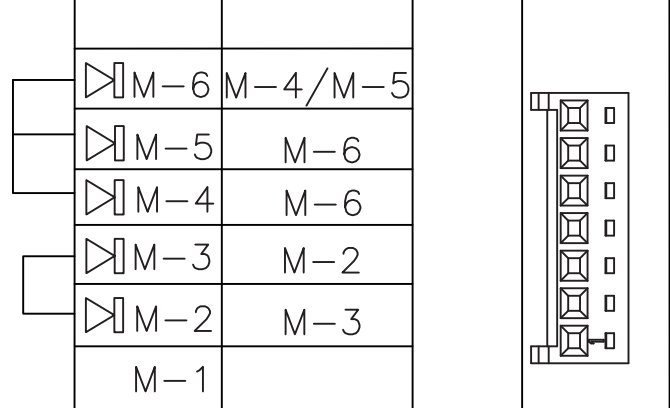


### GFWH2400, 2405

To determine if correct model select plug is assembled:

1 GFWH2400, 2405. Turn unit on. Turn knob to active wear. Time on display should read 1:04.

2 GFWH3500, 3505, 3600, 3605. Turn unit on. Turn knob to steam refresh. Time on display should read 0:17.



### GFWS3500, 3505, 3600, 3605

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ERROR CODES		
Error Code	Description	Action
E1 UI EEPROM E2 Power EEPROM	Internal problem with UI or MC board	<ul style="list-style-type: none"> <li>• Replace board as necessary.</li> </ul>
E4 Thermistor Short E5 Thermistor Open	Water Temperature Sensor Problem	<ul style="list-style-type: none"> <li>• Check integrity of wiring and connections between main control and Thermistor Assembly.</li> <li>• Using ohmmeter, measure Thermistor resistance. If outside expected range, replace Thermistor Assembly.</li> </ul> <p>IF ABOVE STEPS DO NOT CLEAR THE PROBLEM:</p> <ul style="list-style-type: none"> <li>• Replace the main control.</li> </ul>
E6 Pressure Switch	Water Level Sensor Problem	<ul style="list-style-type: none"> <li>• Check integrity of wiring and connections between main control and Water Level Sensor.</li> <li>• Check integrity of Water Level Sensor, replace if necessary.</li> <li>• Check drain system.</li> </ul> <p>IF ABOVE STEPS DO NOT CLEAR THE PROBLEM:</p> <ul style="list-style-type: none"> <li>• Replace the main control.</li> </ul>
E7 Slow Fill	Fill Problem	<ul style="list-style-type: none"> <li>• Ensure manual water valves are fully open.</li> <li>• Check if water strainers on solenoid valve assembly are clogged.</li> <li>• Check for obstructions inside inlet water hoses.</li> <li>• Ensure solenoid valves do not leak when the valves are de-energized and the washer is powered down.</li> <li>• Measure coil resistance for both valves. If outside range (1000–1250 ohms at room temp.), replace solenoid valve assembly.</li> </ul> <p>IF ABOVE STEPS DO NOT CLEAR THE PROBLEM:</p> <ul style="list-style-type: none"> <li>• Replace solenoid valve assembly.</li> </ul>
E8 Drain System	Drain Problem	<ul style="list-style-type: none"> <li>• Ensure pump strainer is clean and free of debris.</li> <li>• Check for obstruction inside the drain hose.</li> <li>• Check pump impeller blades and bearing; if evidence of blade damage or seized bearings are present, replace the pump.</li> <li>• Check the electrical connections at the pump motor and harness.</li> <li>• Measure pump motor resistance. If outside range (9–14 ohms at room temp.), replace the pump.</li> </ul>
E9 Dispenser Motor	Dispenser Problem	<ul style="list-style-type: none"> <li>• Check for obstruction in dispenser mechanism and linkages.</li> <li>• Check the electrical connections at the motor feedback switch and in the harness.</li> <li>• Check the electrical connections of water valves in the harness.</li> </ul> <p>IF ABOVE STEPS DO NOT CLEAR THE PROBLEM:</p> <ul style="list-style-type: none"> <li>• Replace dispenser motor assembly.</li> </ul>
E10 Motor Comm Interface	Communication Problem Between Main Control and Inverter	<ul style="list-style-type: none"> <li>• Check integrity of wiring and connections between main control and inverter.</li> <li>• Clear error code and run a cycle.</li> <li>• If fault persists and reappears, replace the main control.</li> </ul>
E11 Door Lock E12 Door Unlock E13 Door Open	DOOR LOCK Assembly Problems	<ul style="list-style-type: none"> <li>• Check integrity of wiring and connections between main control and DOOR LOCK mechanism.</li> <li>• Investigate DOOR LOCK mechanism; check door microswitch operation, lock and unlock solenoid continuity and contact integrity; replace DOOR LOCK mechanism if necessary.</li> </ul> <p>IF ABOVE STEPS DO NOT CLEAR THE PROBLEM:</p> <ul style="list-style-type: none"> <li>• Replace the main control.</li> </ul>
E14 Overflow Error	Overflow level was reached	<ul style="list-style-type: none"> <li>• Check valve for any signs of leaks.</li> <li>• Check integrity of Water Level Sensor. Replace if necessary.</li> </ul>

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ERROR CODES (cont.)		
Error Code	Description	Action
E15 Open Circuit	Open circuit in any of three motor phases detected No speed info present and bridge will be turned off immediately Motor will coast down Drive will preserve non-zero speed info during the stop check stage	<ul style="list-style-type: none"> <li>• Check integrity of wire connections between the inverter and the motor.</li> <li>• Clear fault and run cycle. If fault persists and reappears, replace the inverter.</li> </ul>
E16 Over Trip E18 Heatsink Over Temp E19 Motor Over Temp E20 Overload Current E21 Overload Power E27 Exceeded Max Power E28 Exceeded Max Slip	Inverter operation above design limits	<ul style="list-style-type: none"> <li>• Ensure all 4 shipping bolts have been properly removed.</li> <li>• Remove all foreign objects that may be lodged between inner and outer baskets.</li> <li>• Look for signs of seized bearing(s) on basket and drum motor. Replace components as necessary.</li> <li>• Inspect condition and mounting of door gasket. Replace and remount as necessary.</li> <li>• Ensure inner basket (drum) can rotate freely.</li> </ul> <p>IF ABOVE STEPS DO NOT CLEAR THE PROBLEM:</p> <ul style="list-style-type: none"> <li>• Replace inverter or motor.</li> </ul>
E3 Inverter Eeprom Fault Event E17 ADC Fault Event E22 Over volts E23 Under volts E24 Under volts After start E25 Power Up	Inverter Internal Problems	<ul style="list-style-type: none"> <li>• Measure AC outlet voltage; ensure correct range (120V to 132V AC).</li> <li>• Check electrical connections at the inverter.</li> <li>• Check harness integrity between main control and inverter</li> <li>• Unplug the unit, wait 30 seconds and restart the unit.</li> <li>• If the fault persists and reappears, replace the inverter.</li> </ul>
E26 Inv Comm Timeout	There is a problem with the Communication between the the Main Control and the User Interface Control	<ul style="list-style-type: none"> <li>• Check the integrity of the wiring between the main control board and the User Interface.</li> <li>• Clear the fault and run the cycle. If fault persists and reappears, replace the main control.</li> </ul>

### **Demo Mode:**

To enter or exit demo mode, turn the unit off so the screen is blank. Then unplug the unit, wait 10 seconds, and plug the unit back in. Within 30 seconds after plugging in the unit, press the Start/Pause button 4 times within 3 seconds with the door open to enter Demo Mode. To exit Demo Mode, repeat the above sequence.

### MODEL NUMBERS

GFWH2400  
 GFWH2405  
 GFWS3500  
 GFWS3505  
 GFWS3600  
 GFWS3605

## 31-30623-1

11/04/10 GE

Printed in China