

IMPORTANT SAFETY NOTICE

The information in this presentation is intended for use by individuals possessing adequate backgrounds of electrical, electronic, & mechanical experience. Any attempt to repair a major appliance may result in personal injury & 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 & properly fastened.

GE Factory Service Employees are required to use safety glasses with side shields, cut resistant (Dyneema®) gloves & steel toe shoes for all repairs.



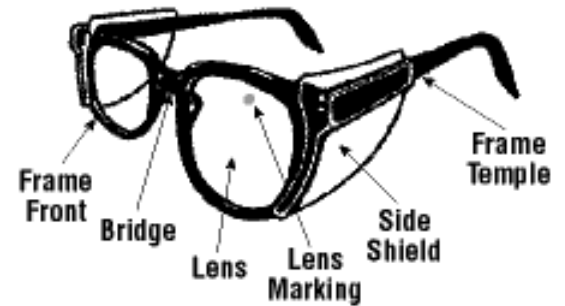
Dyneema® Cut Resistant Glove



Steel Toe Shoes



Plano Safety Glasses



Prescription Safety Glasses

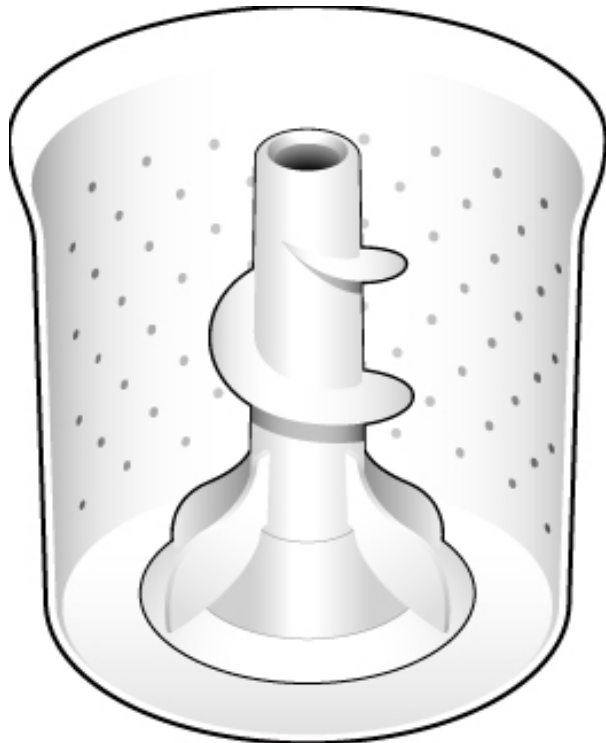
Safety Glasses must be compliant with ANSI Z87.1-2003

HydroWave™ system with Infusor™

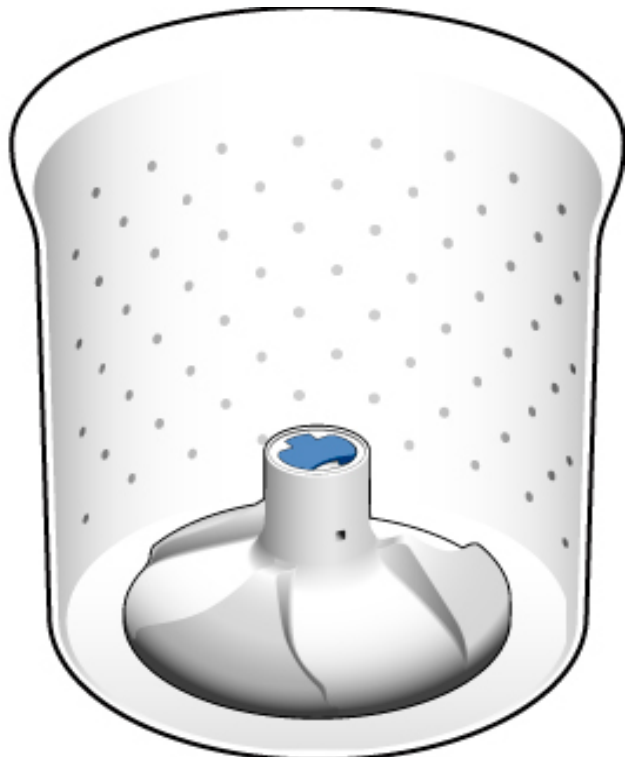
The oscillating action of the Infusor™ gently pulls fabric through the water using a 630 degree motion.

This moves clothes through the water slowly and gently, delivering thorough, yet completely gentle, cleaning performance.

Current Agitator



New Infusor



Clothes Movement – Infusor vs Agitator



Agitator

- Clothes move **down the center and up the sides**.
- Clothes movement requires sufficient water to “float” the clothes.
- Agitator moves the water and the water movement moves the clothes.

* Water Level Range: 11 – 24 gallons per fill.

* Stroke Profile – Cottons Cycle

- Speed = 80 rpm
- Arc Length = ~1.0 revolutions



Infusor

- Clothes move **up the center and down the sides**.
- Clothes movement requires less water than is required to “float” the clothes.
- Infusor moves the clothes directly. Clothes contact with the Infusor moves the clothes through the water without them having to float, in turn requiring less water.

* Water Level Range: 10-15.5 gallons per fill.

* Stroke Profile – Cottons Cycle

- Speed = 135 rpm
- Arc Length = ~ 1.8 revolutions

Lid Graphics

It is important to note that these units require much less water for cleaning performance.

The lid graphics show the consumer specific graphical information on the load size and water levels and clothes loading. Also note that HE detergent is advised due to the lower water levels.

1 OPTIONAL: Lift Infusor™ Cap and ADD Fabric Softener. Completely close Cap.

2 Add suggested amount of (HE) HIGH-EFFICIENCY Detergent BEFORE loading garments. **LOW WATER LEVELS** are NORMAL during wash cycle.

USE CONCENTRATED FABRIC SOFTENER ONLY
DO NOT OVERFILL

For best wash performance
KEEP LID CLOSED while washer is filling with water

DO NOT cover top of Infusor™ with garments

Small Load

Large Load

Super Load

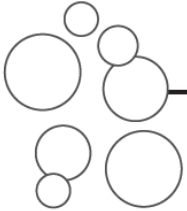
Reference the Use & Care Manual online: www.geappliances.com. Please refer to the Garment Care Label for additional information. GE recommends replacing your washer inlet hoses every 5 years.

HydroWave™
Quiet wash system

The diagram illustrates the lid of a washing machine with two main sections. The left section, labeled '1', shows a detergent compartment being filled with pink detergent from a bottle. Below it is a pink banner with the text 'USE CONCENTRATED FABRIC SOFTENER ONLY DO NOT OVERFILL'. The right section, labeled '2', shows three different load sizes: 'Small Load', 'Large Load', and 'Super Load'. Each load size is accompanied by a small cup of detergent and a red arrow pointing to the water level in the tub. To the right of these is a large circular inset showing the tub filled with colorful clothes and the Infusor cap. Text above the clothes says 'For best wash performance KEEP LID CLOSED while washer is filling with water'. Text below the clothes says 'DO NOT cover top of Infusor™ with garments'. A red circle highlights the text 'Add suggested amount of (HE) HIGH-EFFICIENCY Detergent BEFORE loading garments. LOW WATER LEVELS are NORMAL during wash cycle.' and the 'he ONLY' logo.

Owners Manual


The consumer's use-care manual also covers important information pertaining the the proper operation of this new wash system.



Proper Use of Detergent

Add detergent and fabric softener before adding clothes so that the detergent can work effectively. Using too little or too much detergent is a common cause of laundry problems.

Use less detergent if you have soft water, a smaller load or a lightly soiled load.

GE recommends the use of High Efficiency  detergents in all Energy Star rated washers. HE detergents are formulated to work with low water wash and rinse systems. HE detergents reduce the oversudsing problems commonly associated with regular detergents.




Loading the Washer

Load dry items loosely, no higher than the top row of holes in the washer basket. For best results, load items evenly and loosely around the outside of the basket. To add items after washer has started, lift the lid and submerge additional items around the outside of the basket.

- Do not place large items such as sheets, blankets and towels across the Infusor™. Load them around the outside of the basket.
- Do not wash fabrics containing flammable materials (waxes, cleaning fluids, etc.).
- Agitation will not start with the lid up.



Troubleshooting Tips
Save time and money! Review the charts on the following pages, or visit ge.com. You may not need to call for service.

WATER	Possible Causes	What To Do
 <u>Water level seems low</u>	<u>This is normal</u>	<ul style="list-style-type: none">• Water may not cover the top level of the clothes. This is normal for this high-efficiency washer.

Rain Shower™ and deep rinse options

Just as taking a shower uses far less water than taking a bath, the Rain Shower system gives every load of laundry three “showers,” rinsing clothes clean without filling the washtub full of water. Because it uses less water than traditional top loads, the Rain Shower provides rinse performance similar to a frontload washer rinse system. This rain shower cycle is not a deep rinse.

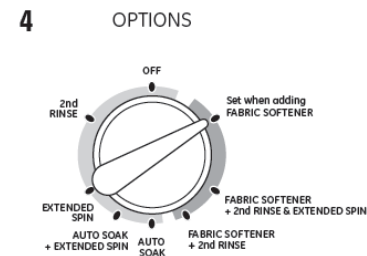
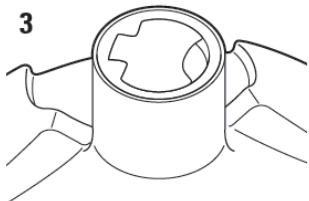
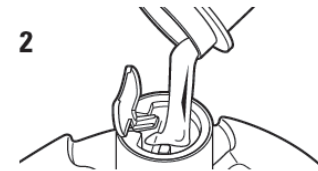
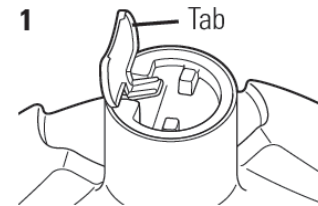


The water inlet funnel has been redesigned to allow for better coverage of the wash loads during fill and rinse cycles. The water is spread over a wider and deeper area. This rain shower cycle is not a deep rinse.



Rain Shower™ and deep rinse options

The deep rinse option, “fill and agitate,” is available if the consumer selects one of the fabric softener options. These options need to be used for proper dispensing and dispersal of the fabric softener into the clothes load.



The Fabric Softener Dispenser (on some models)

The fabric softener dispenser automatically releases liquid fabric softener at the proper time during the cycle.

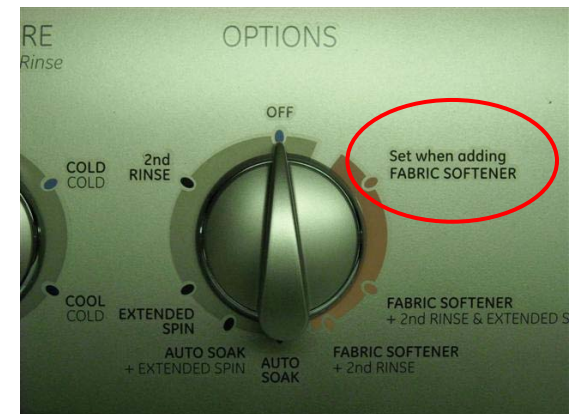
Do not stop the washer during the first spin. This will cause the dispenser to empty too soon.

Never pour fabric softener directly on clothes. This may cause stains on your clothing.

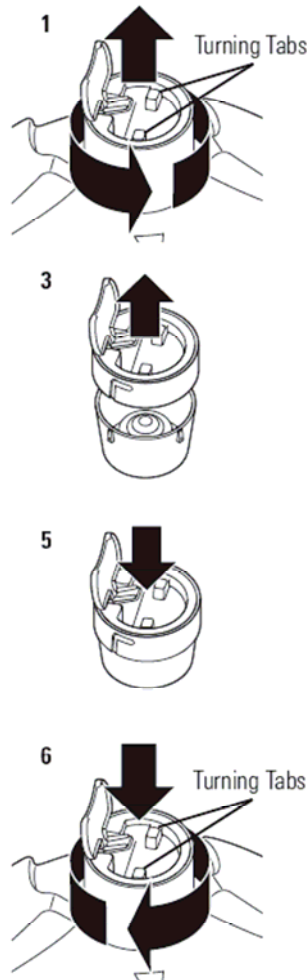
To use, follow these steps:

- 1** Lift the tab on the fabric softener dispenser top.
- 2** Measure out fabric softener into the cap and pour the softener into the dispenser top. The fabric softener will drain into the receiving cup inside the dispenser. Use only “Ultra” or concentrated fabric softeners.
- 3** Push down on the tab to close the dispenser top. Make sure the tab is pushed down fully and snaps shut.
- 4** Select **FABRIC SOFTENER** from **OPTIONS** on the control panel.

NOTE: Overfilling the dispenser will cause fabric softener to drain out of the holes in the side of the infusor when filling. Do not overfill.



Fabric Softener Dispenser



Cleaning the Fabric Softener Dispenser (on some models)

The Fabric Softener Dispenser is self cleaning. This dispenser does not require regular cleaning like standard fabric softener dispensers. Wipe down exterior surfaces of the dispenser as needed. If cleaning of the internal dispenser components is needed, follow these steps after the wash cycle is complete:

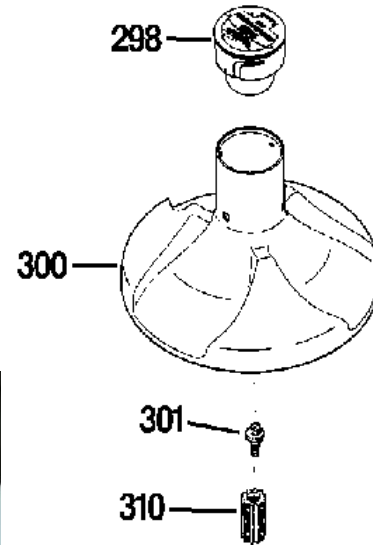
- 1** Lift the dispenser top tab and turn the top counterclockwise using the 2 turning tabs shown. Lift the dispenser out of the Infusor™.
- 2** Clean out any buildup from inside the Infusor™ with a soft cloth or toothbrush. Ensure the three rectangular holes in the bottom which allow the fabric softener to drain are not blocked.
- 3** Gently pull the cap away from the dispenser cup to separate.
- 4** Wipe surfaces with a soft cloth or soak the parts in a solution of 1 gallon warm water, 1/4 cup liquid detergent and 1 cup bleach. Ensure the small hole in the top surface of the cap and associated tube are not obstructed.
- 5** Reassemble the dispenser cup and cap by snapping them together.
- 6** Place the dispenser assembly into the Infusor™. Turn the top clockwise using the 2 turning tabs shown. Push down on the tab to close the dispenser top. Make sure the tab is pushed down fully and snaps shut.

There are two “O” rings on the softener dispenser. These must be intact and not damaged. If either “O” ring is leaking, softener will be dispensed during the wash cycle.



Infusor Removal

After removing the fabric softener dispenser, remove the 7/16" hex head screw and lift the Infusor off of the drive coupling. There are three "O" rings on the bolt, these are needed for proper operation of the fabric softener dispenser. They are not cataloged at this time, they do come with the bolt when ordered. The Infusor uses a new replaceable drive coupling, item 310.



Precise fill – how it works

Profile components vs. GE models

- Fill valve: water flow regulated, more accurate measurement
- Software timing to control fill level
- Pressure switch – senses low water level switch for fill timing

It is important to note that these new machines fill by time and do not rely on the pressure switch. The pressure switch is used to determine load size during auto load sensing, telling the control how long to time fill by the amount of water absorbed by the clothes load during the fill process.

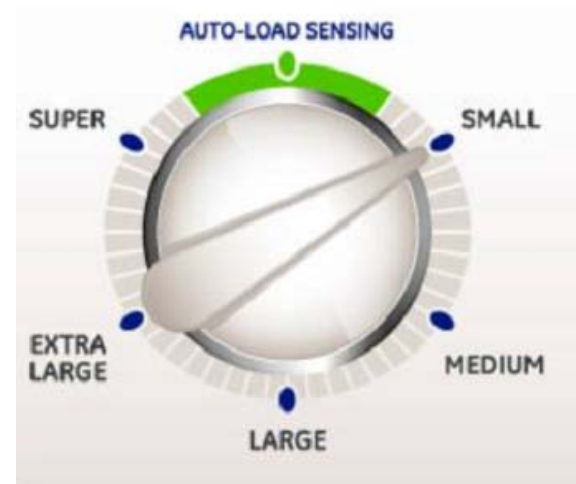
New Water Valve



New Pressure Switch



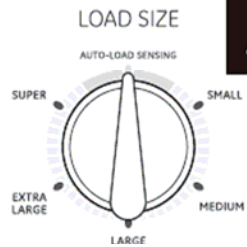
New User Control



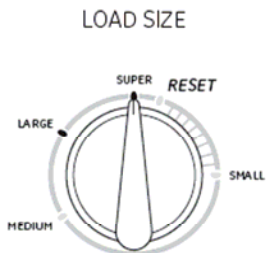
Precise fill – how it works

The manual load size settings selected by the consumer are fixed time fills, the pressure switch does not control fill timing.

When Automatic Load sensing is selected the machine determines how long the fill timing will be by monitoring the lower level pressure switch, the control receives the input from the lower switch and then determines the load size and fill timing for that load .




AUTOMATIC LOAD SENSING equipped models



STANDARD FILL equipped models

A Load Size

- Add  detergent to the bottom of the basket and fabric softener to the dispenser prior to loading clothes.
- Loosely load clothes no higher than the top row of holes in the basket. For optimal performance, load items around the outside of the basket.
- Make the load selection:

For AUTOMATIC LOAD SENSING equipped models

- For convenience, best performance and optimal efficiency, select **AUTOMATIC LOAD SENSING**. This selection automatically provides the correct amount of water suited to the size and type of load placed in the unit.
- If you prefer to manually select the water level, select **SMALL** through **SUPER**. While **AUTOMATIC LOAD SENSING** is best for most loads and general washing, you may want to manually select the load size for specialty items such as bulky, lightweight comforters or pillows, where you want to ensure a larger water level is applied. Manual load size selections should be made for wet items placed in the washer, such as soaked towels or garments.

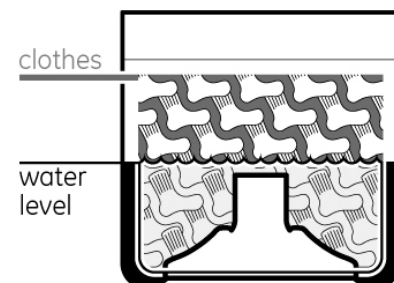
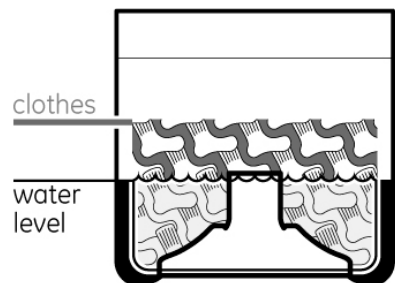
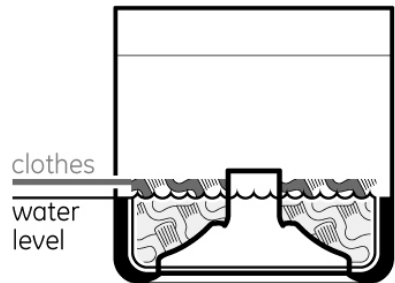
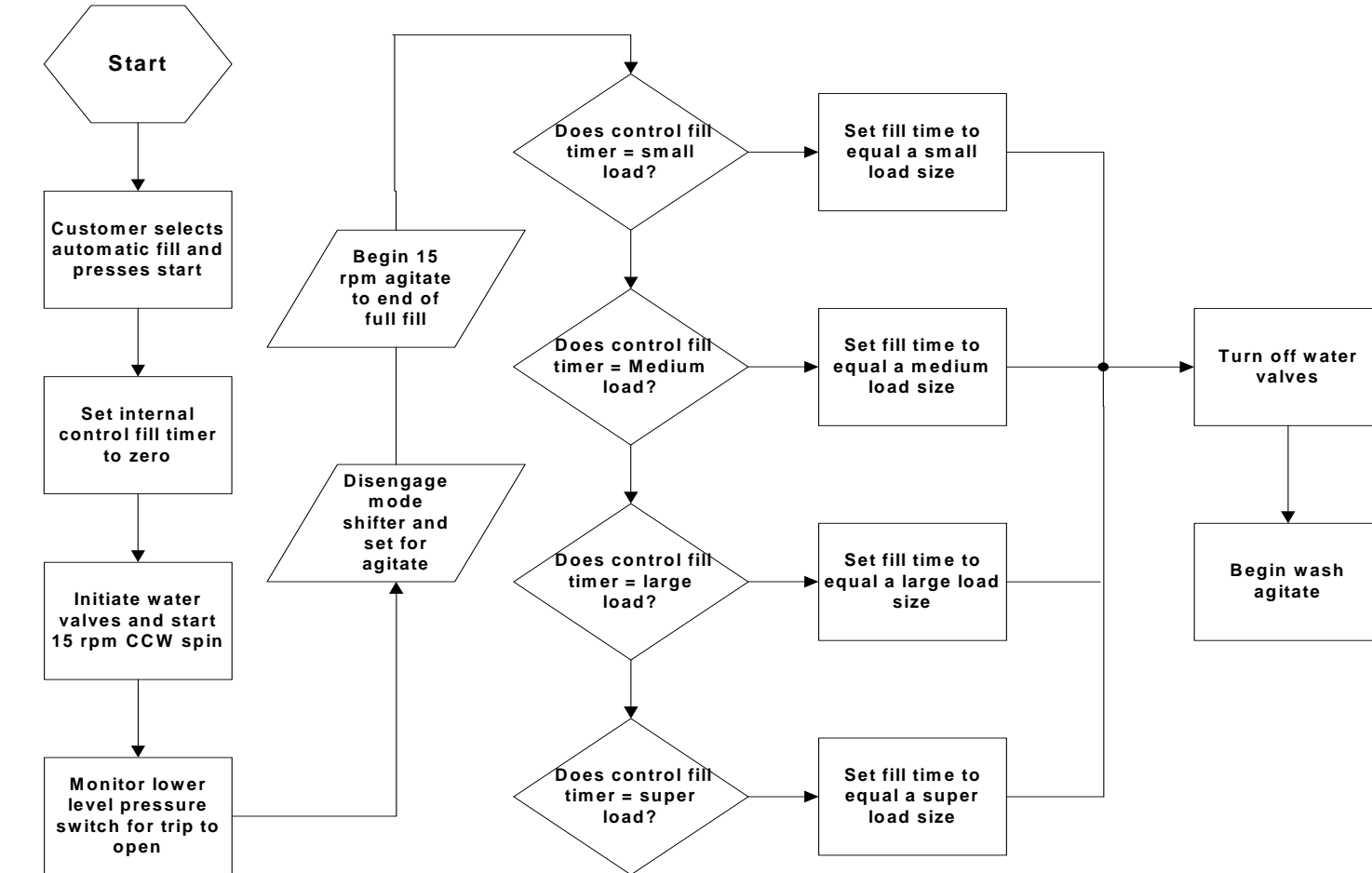
- The washer will not fill with water when automatic load sensing is selected if the lid is opened. When the lid is closed the machine is able to begin filling with water in order to sense the load size.

For standard fill equipped models

- Select the load size that matches the load placed into the washer.
- For changing the water level to a higher level AFTER the unit has filled, turn load size knob to **RESET**, then turn the knob back to your new setting. **DO NOT** leave the knob in the **RESET** position.

NOTE: This is a high-efficiency washing machine with Infusor™ wash action. This system requires less water while providing effective cleaning action. You may notice that the water level is lower than on your previous washer. This is normal for an Infusor™-equipped washer. The water level will be just above the top of the Infusor™ when the **SUPER WASH** size is selected.

Precise fill – how it works



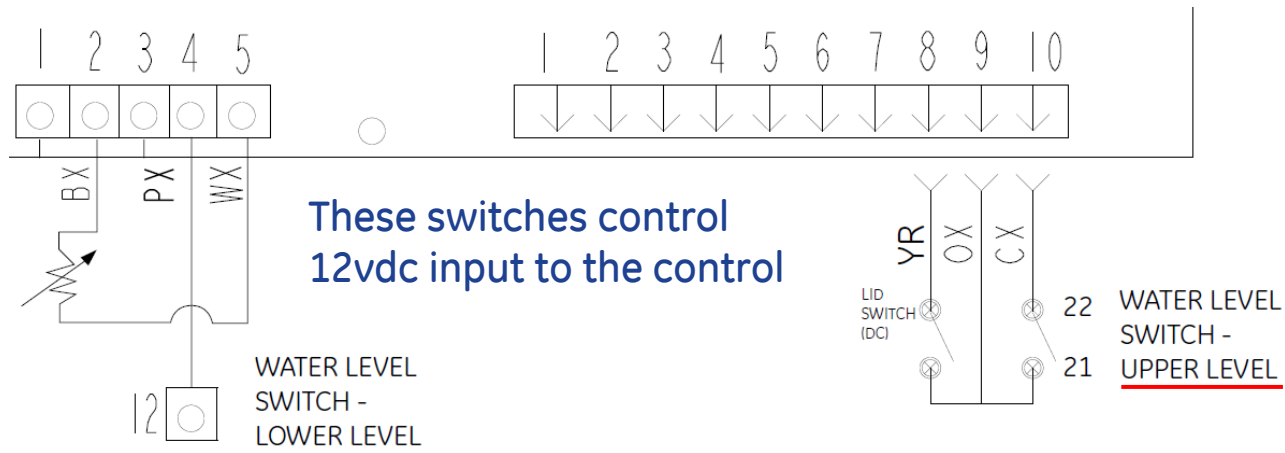
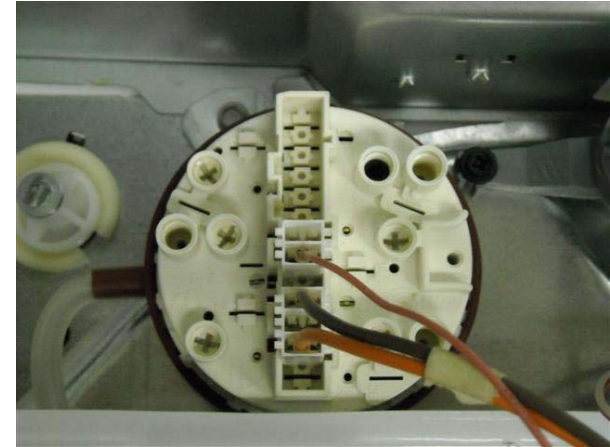
Pressure Switch Operation

The precise fill pressure switch is a two stage switch, there are both upper and lower level switches.

The lower level switch is used to control fill timing through the control software for auto load sensing.

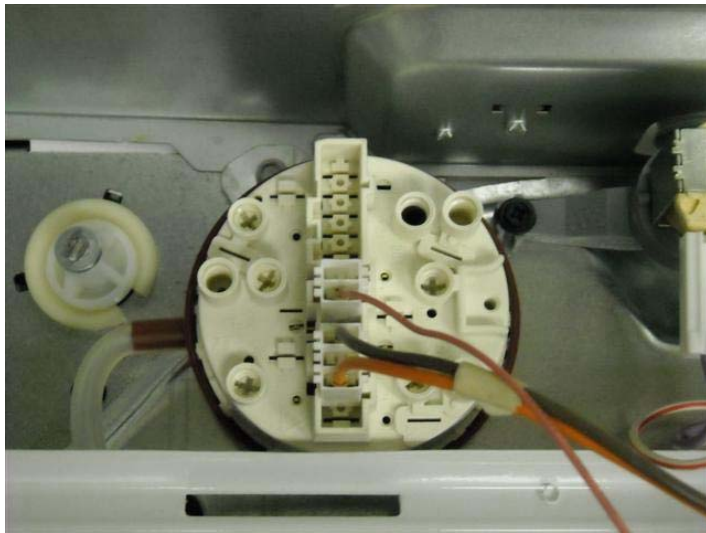
The upper level switch is not used. It is a safety switch which will tell the control to turn off the water valves in case of a lower pressure switch failure.

In case of a siphoning condition or leaking/plugged pressure dome port/hose, the control will turn off the water valves after 40 minutes.



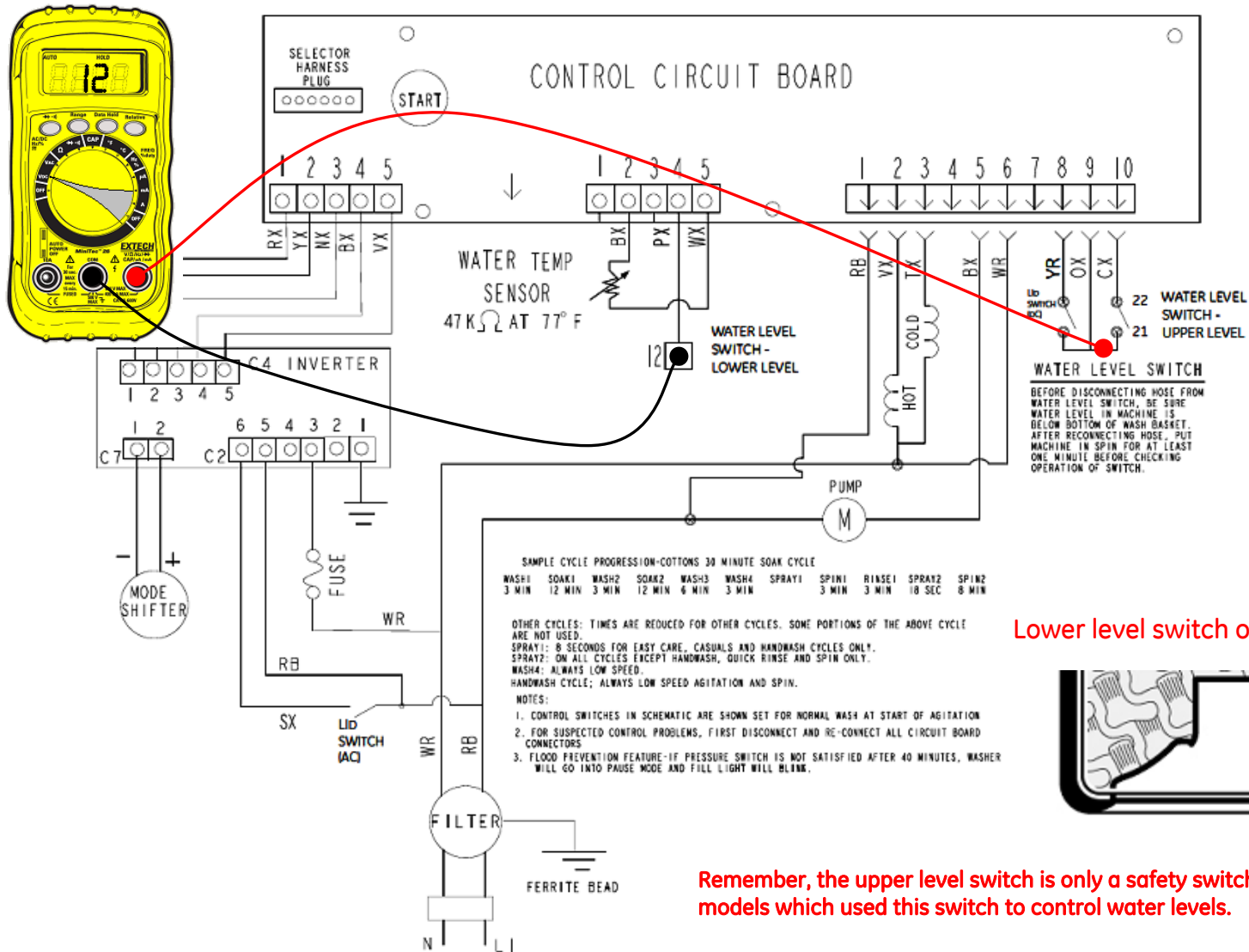
Pressure Switch Operation

The pressure switch is behind the control panel mounted to the left of the water valve on the back frame. It can be removed by compressing the plastic locking tabs on the under side of the frame. There is no physical attachment to the control knob. The customer water level setting control is now part of the cycle selection board and is replaced with the main control.

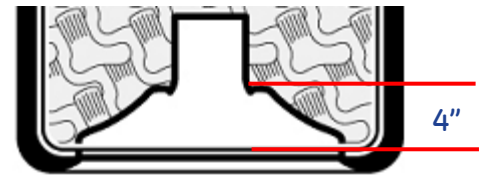


Pressure Switch Operation

The lower level pressure switch is a normally closed contact and will open when there is approximately 4" of water depth in the wash basket. Continuity or dc voltage can be read from pink to orange on the main control or 12 to 21 on the pressure switch.



Lower level switch opens at this depth



Remember, the upper level switch is only a safety switch unlike previous models which used this switch to control water levels.

Fill Levels and Testing

The minimum fill volume on the setting of small is 10 gallons. The water level will measure approximately 6" above the bottom of the basket or just above the fourth row of holes.*

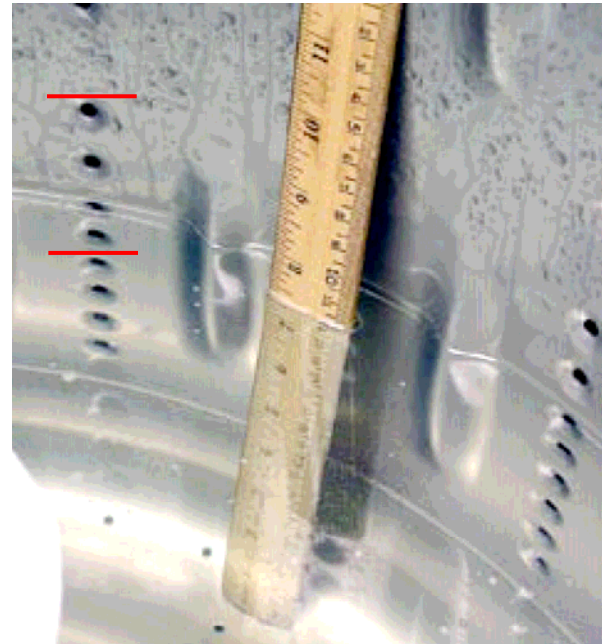
On the Super setting the fill volume is 15.5 gallons. The water level will measure approximately 9" above the bottom of the basket or just above the eighth row of holes.*

Super setting is the only setting where the water will come up to the top of the Infusor.

A quick check of pressure switch operation is to monitor the mode shifter. When the lower pressure switch opens the mode shifter disengages the 15 rpm fill/spin and the shifter resets for wash agitate. It will 15 rpm slow agitate until the fill time is reached.

This opening of the lower switch contact occurs at approximately at 4 inches water depth or just above the bottom section of the Infusor.

Due to fill timing; water pressure is critical. These units will not fill to proper levels with water pressure under 20psi or clogged valve inlet screens.



* Measured water levels are approximate and can vary +/- 1"

HydroWave™ with Infusor Wash™ Inverter Motor

Infusor washers use a specific drive motor due to changes in the cycle software. When in doubt, always check the parts list for the correct replacement part number.



WARNING:

Inverter software must be matched with the correct wash system. This is due to agitate profile as well as spin profiles.

Adaptive Drain

With the introduction of new Energy Star electronic washers last year; a new feature was programmed into the controls.

Adaptive drain consists of the board sampling the drain pump current during pump out. The control will then turn off the drain pump during the spin cycle. The control will periodically turn the pump back on and resample the pump current draw. If the control does not sense the higher sampled current draw, indicating pumped water, the control will turn off the drain pump.

This feature has benefits for suds lock control and less energy consumption.

Do NOT replace the drain pump or control for this symptom!

It is normal operation on some models for the drain pump to turn off in the spin cycle.



Cycle Progression Chart - Example

- Customer starts a cycle.
- Machine starts to fill with the basket rotating at 15rpm – counter clockwise.
- When the lower pressure switch opens, the mode shifter disengages and starts 15rpm agitate.
- When the control fill timing is reached, water valves are turned off and wash cycle begins.
- During wash, the agitation will ramp up to higher speeds, it will drop to a lower speed before drain.
- Unit pumps out and the control monitors drain pump motor current, pump motor can stop.
- Ramp up spin speed, 125rpm, 450rpm, final speed 630rpm or 700rpm depending on model.
- If fabric softener option is not selected, begin shower rinse cycle with 15rpm basket rotation.
- If fabric softener option is selected, deep fill and agitate at 180rpm, 15rpm for hand wash option.
- Drain
- Final spin, ramp up 125rpm, 450rpm, 630rpm or 700rpm depending on model

Timing of each function will vary by model number, cycle selected and options selected.

These units use the standard diagnostic procedures and error codes covered in 31-9145.