GE Consumer & Industrial

# Technical Service Guide

December 2006

## GE WASHER

## WSSH300G

31-9147

GE Appliances
General Electric Company
Louisville, Kentucky 40225

## IMPORTANT SAFETY NOTICE

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

## WARNING

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

## RECONNECT ALL GROUNDING DEVICES

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

***GE Consumer & Industrial***
*Technical Service Guide*

## QUICK REFERENCE SHEET

1. Nomenclature location

On the front panel at the lower left of the washer door opening.

2. Mini-manual location

Under the top cover taped to the dispencer.

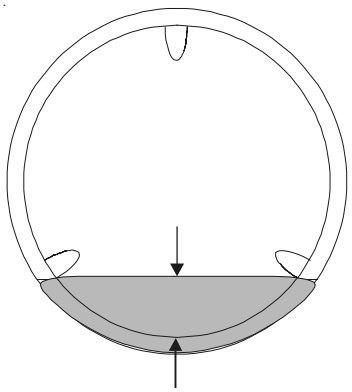
## QUICK REFERENCE SHEET

Component resistance chart.

| Electrical component | | Resistance Ω @ 77°F (25°C) |
|---|---|---|
| Dispenser valve solenoids | | 800 ± 7% |
| Door lock solenoid | | 1325 ± 10% |
| Pump motor | | 12 ± 7% |
| NTC thermistor | | 3K - 163K |
| Motor | M1 TO M2 | 5.3 ± 7% |
| | M2 TO M3 | 5.3 ± 7% |
| | M1 TO M3 | 5.3 ± 7% |
| | M4 TO M5 | 118 ± 7% |

Water level

Water fill height 4 ± .5 “
No load, start position of permanent press cycle.



Electrical requirements.

Circuit - Individual, properly polarized and grounded 15 amp. branch circuit fused with 15 amp. time delay fuse or circuit breaker.

Incoming water pressure.

30 and 120 pounds per square inch (maximum unbalance pressure, hot vs. cold, 10 psi.)

Drain requirements.

Drain capable of eliminating 17 gals (64.3 L) per minute.

A standpipe diameter of 1-1/4 in. (3.18 cm) minimum.

The standpipe height above the floor should be:

Minimum height: 24 in. (61 cm)

Maximum height: 96 in. (244 cm)

Motor.

No load agitate wattage - Max 150

No load spin wattage - Max 550

## Diagnostic Test:

The diagnostic test is performed by using the Cycles knob. To START THE TEST:

- Turn the **Cycles Knob** to **Spin**. This is the start position.
- Press **Pause/Cancel** to turn off the LEDs and clear the control.
- Press **Pause/Cancel** a second time to turn the LEDs back on.
- Within 5 seconds, press and hold the **Option** and **Pause/Cancel** buttons until all LEDS start flashing, then release the buttons.

1. All the LEDs will sequentially light. Pressing any button will light the corresponding LEDs in that cluster at one time to confirm functionality.

2. Turn the cycles knob (1) click clockwise from the start position. The hot water solenoid will activate and hot water should enter through the detergent compartment.

3. Turn the cycles knob (2) clicks from the start position. The bleach solenoid will activate and cold water should enter through the bleach compartment.

4. Turn the cycles knob (3) clicks from the start position. The bleach and wash water solenoids will activate and cold water should enter through the softener compartment.

5. Turn the cycles knob (4) clicks from the start position. The door lock solenoid will activate.

6. Turn the cycles knob (5) clicks from the start position. The door lock solenoid will deactivate and the loading door can be opened.

7. Turn the cycles knob (6) clicks from the start position. The washer will fill and then tumble.

8. Turn the cycles knob (7) clicks from the start position. The washer will fill and then spin (leakage test).

9. Turn the cycles knob (8) clicks from the start position. The drain pump and door lock solenoid will activate and the washer will operate in high spin. **SAFETY WARNING:** If power is removed during this test, the door can be opened. To prevent injury, DO NOT put your hands inside when the tub is rotating.

10. Turn the cycles knob (9) clicks from the start position. The control will signal the last error code. See **Troubleshooting**, for details for properly identifying the error code on non-digital display models.

**Exiting Diagnostic Test Mode**

There are two options for exiting the Diagnostic Test Mode and returning the washer to normal operation:
a) Unplug the power cord, wait 5-8 seconds, then reconnect the power cord OR
b) Turn the cycles knob clockwise 2 or 3 clicks after the Start Position. Press **Options** and **Pause Cancel** button together for a few seconds until wash cycle LEDs appear.

**If a situation arises where you cannot exit the Diagnostic Test Mode as described above and the bank of 5 LEDs on the right end remain ON regardless of Program Knob position, a combination of pushed buttons caused the control to enter a special factory test mode. Disconnect power to reset the control to return the washer to normal operation if this occurs.**

**To clear latest stored error code:**

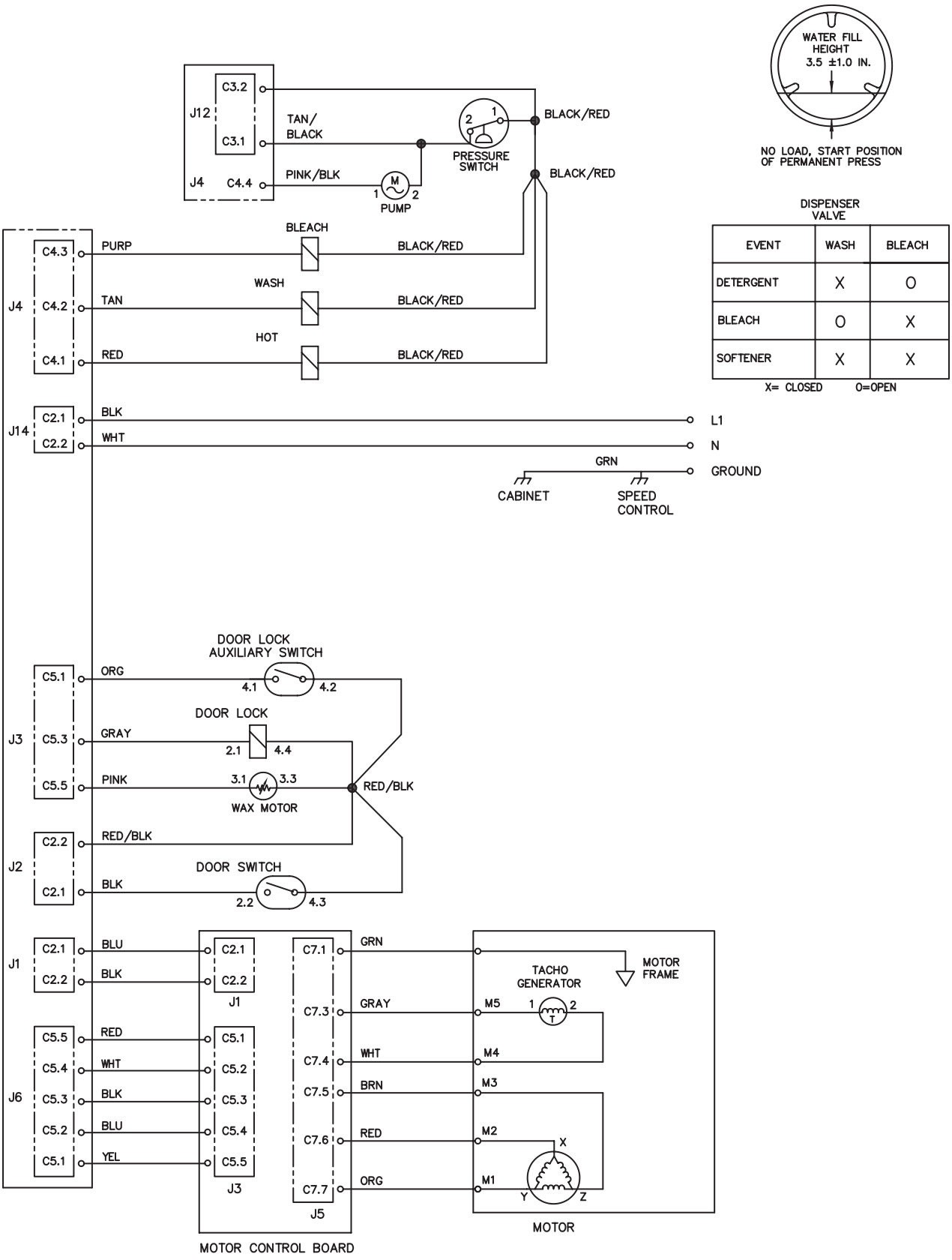
Place the control in Diagnostic Test Mode.

- Turn the cycles knob (9) clicks from the Start Position. The control will signal the last error code.
- Press and hold the **Option** and **Pause/Cancel** buttons for 3 seconds. The code will be cleared.
- Exit Diagnostic Test Mode to return the washer to normal operation.

## Operation speeds:

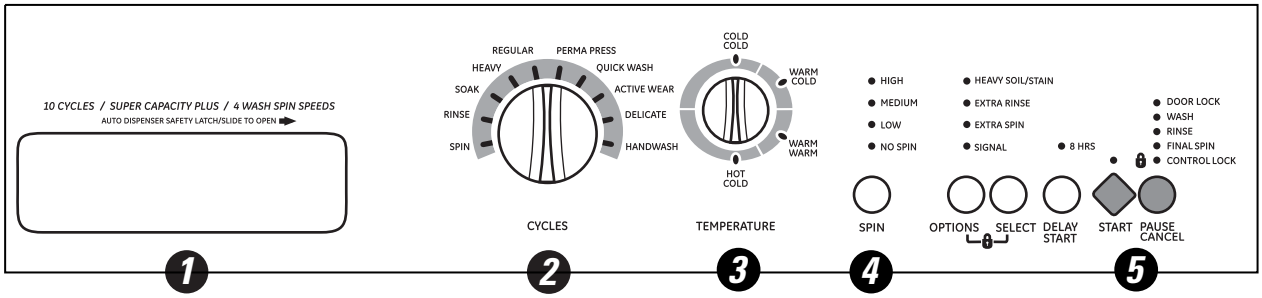
| | |
|---|---|
| Agitate Speed - RPM (Heavy, Regular, Quick, Perma Press, and Soak) | 47 |
| Agitate Speed - RPM (Hand Wash, Active Ware, and Delicate) | 32 |
| **Spin speeds** | |
| **Heavy, Regular & Quick** | |
| Spin Speed R.P.M. (Low) | 850 |
| Spin Speed R.P.M. (Medium) | 900 |
| Spin Speed R.P.M. (Max) | 950 |
| **Perm Press & Active Ware** | |
| Spin Speed R.P.M. (Low) | 800 |
| Spin Speed R.P.M. (Medium) | 850 |
| Spin Speed R.P.M. (Max) | 900 |
| **Delicate & Hand Wash** | |
| Spin Speed R.P.M. (Low) | 350 |
| Spin Speed R.P.M. (Medium) | 400 |
| Spin Speed R.P.M. (Max) | 450 |
| **Soak** | |
| Spin Speed R.P.M. (Low) | 350 |
| Spin Speed R.P.M. (Medium) | 400 |
| Spin Speed R.P.M. (Max) | 450 |
| **Rinse/Spin** | |
| Spin Speed R.P.M. (Low) | 850 |
| Spin Speed R.P.M. (Medium) | 900 |
| Spin Speed R.P.M. (Max) | 950 |

# WIRING DIAGRAM



## About the washer control panel.

*You can locate your model number at the top inside of the door opening.*




## *Control Settings*

### 1 *Automatic Dispenser and Safety Latch*

Safety latch slides to the right to open drawer. (Latch locks to the left on its own.) Add detergent, liquid bleach and fabric softener to this drawer.

### 2 *Wash Cycle*

The wash cycle controls the length of the washing process. The chart below will help you match the wash cycle setting with your loads. Set the desired wash cycle by turning the cycle knob.

| | |
|---|---|
| **HANDWASH** | For items labeled hand-washable with light soils. Provides gentle rocking to mimic the handwashing action. |
| **DELICATE** | For lingerie and special-care fabrics with light to normal soil. Provides gentle tumbling and soak during wash and rinse. |
| **ACTIVE WEAR** | For active sports, exercise and some casual wear clothes. Fabrics include modern technology finishes and fibers such as spandex, stretch and micro-fibers. |
| **QUICK WASH** | For lightly soiled items you need in a hurry. |
| **PERMA PRESS** | For wrinkle-free and permanent press items. |
| **HEAVY** | For heavily soiled cottons, household linens, work and play clothes. |

### 3 *Temperature*

Select the water temperature for the wash and rinse cycles. Always follow garment manufacturer' care label or instructions when laundering.

### 4 *Spin Speed*

The HIGH spin speed is for durable items.

The MEDIUM spin speed is for delicate items like sweaters and lingerie.

When using the MEDIUM spin speed, clothes will be less dry than when using the HIGH spin speed.

### 5 *START/PAUSE CANCEL*

Start the washer by closing the door and pressing the ***START*** button.

To stop the washer, press the ***PAUSE CANCEL*** button. Press the ***START*** button to restart.

*The washer will not operate with the door open.*

*The door will automatically lock during the entire wash cycle.*

## About the washer features.

### *Signal*

When the Signal is ON, it will sound at the end of the cycle.

### *Extra Rinse (available on some cycles)*

Use an extra rinse when additional rinsing is desired to remove excess dirt and detergent from soiled loads.


### *Door Lock Indicator Light*

The indicator light is ON and the door is locked when the ***START*** button is pressed. The light turns OFF at the end of the cycle.

### *Control Lock*

To prevent accidentally starting or stopping the washer, press ***OPTIONS*** and ***SELECT*** at the same time until the Control Lock indicator is lighted. To unlock the controls, press ***OPTIONS*** and ***SELECT*** again.

# OPERATION

## Control

The control is mounted to the back of the console. The control:

1. Provides power to the dispenser solenoids, wax motor, door lock solenoid, drain pump and speed control board.

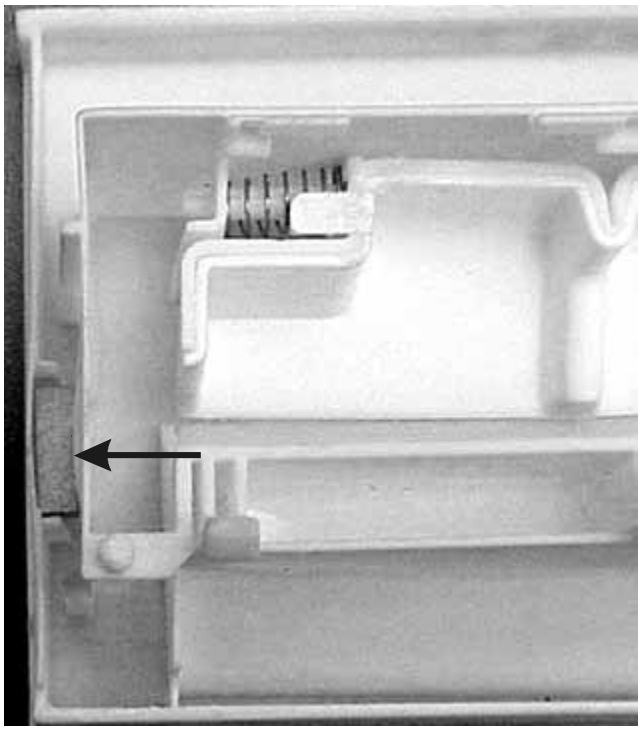
2. Sends signals to the speed control board to tell it what program to run.

4. Checks the status of the reed switch, door switches and the sensor.

## Dispenser Drawer Reed Switch

The dispenser drawer reed switch is a safety switch that prevents the washer from operating when the wash or rinse cycles when the dispenser drawer is open. The switch is located behind the control panel next to the dispenser drawer. The electronic control board sends a signal through the reed switch circuit. When the signal is interrupted by the contacts of the reed switch being open, the board prevents the washer from operating.

The reed switch contacts are controlled by the magnetic field of the magnet located in the front panel of the dispenser drawer.

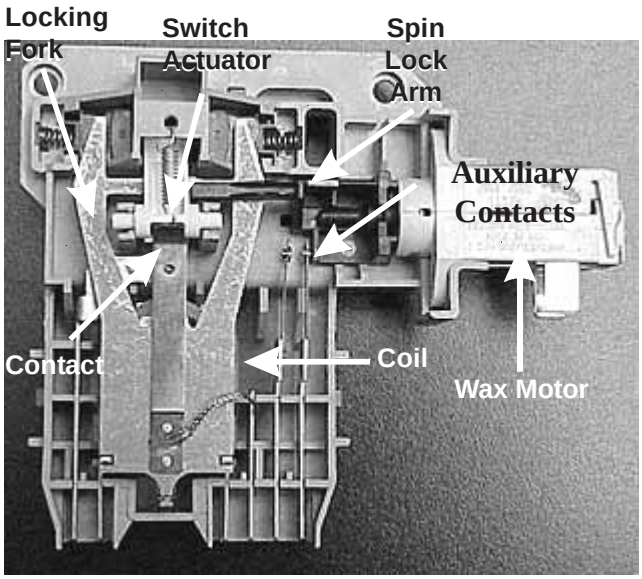


When the drawer is closed, the magnet causes the contacts of the reed switch to close completing a circuit in the control board.

## Door Switch Assembly

The door switch assembly, located behind the front panel, is a safety feature that prevents the washer from operating when the door is open and locks the door in the spin cycle.

The door lock assembly is made up of a coil, door switch, switch actuator, locking fork, wax motor, auxiliary switch and spin lock arm.




When a cycle is selected and the start pad is touched, the control board applies power to the coil. The magnet field of the coil pulls the locking fork down and tries to pull the contacts of the door lock switch closed. If the washer door is open, a tab on the switch actuator prevents the contacts from closing and the locking fork will not allow the door to be closed until the stop pad is touched, removing current from the coil. When the washer door is closed, the door strike pivots the switch actuator out of the way allowing the magnetic field of the coil to close the contacts of the door lock switch and the locking fork locks the door. The wax motor and spin lock arm are used to prevent the door from being opened while the spin basket is still spinning. Power is applied to the wax motor when the washer is in spin. When power is applied to the wax motor, it expands its piston within 30 to 40 seconds driving the spin lock arm between the locking fork and the switch actuator holding the locking fork down. At the same time, the piston closes the door lock auxiliary switch allowing the washer to go into spin. When power is removed from the wax motor, it takes about 90 seconds for the wax motor to cool down and retract the piston, pulling the spin lock arm back away from the locking fork and auxiliary switch. This provides enough time for the spin basket to slow its rotation down to the wash speed before the door could possibly be opened.

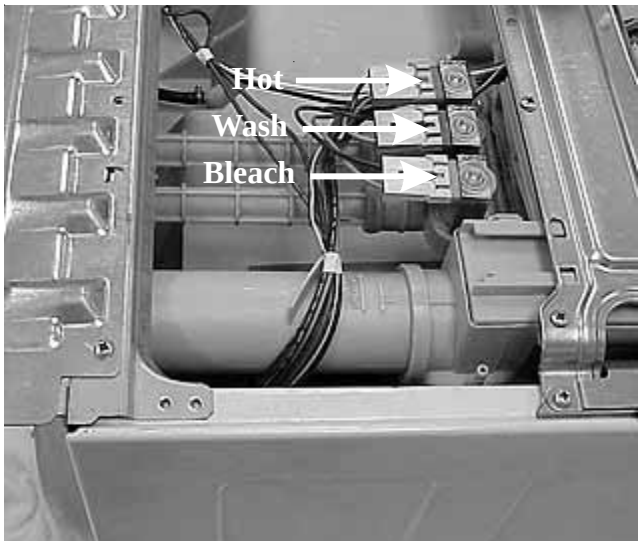
## Pressure Switch

The pressure switch is mounted to the right side panel under the top of the washer and controls the water level in the washer.

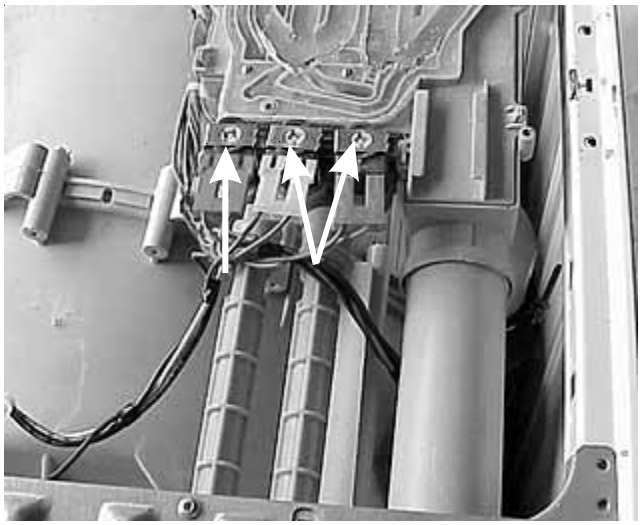
The pressure switch is made up of a single pole, double throw switch, but only contacts 1 and 2 are used. The contacts are controlled by a bellows inside a sealed chamber. The chamber is connected by a hose to the air bell located at the bottom of the washer attached to the drain boot. L 1 is applied to the pressure switch by the control. If the water level is below 1/2 inch from the bottom of the spin basket, contacts 1 to 2 of the pressure switch close applying power to one side of the (3) solenoids of the water valve assembly. The other side of the solenoids are connected to neutral by relay contacts on the control board. When the cycle calls for water, depending on the water temperature selected and the increment of the cycle, the control board connects one or two of three the solenoid coils to neutral, activating the water valve solenoids. When the corrected water level is reached contacts 1 and 2 open, signaling the control to remove neutral from the solenoids.

## Water Inlet Valve Assembly:

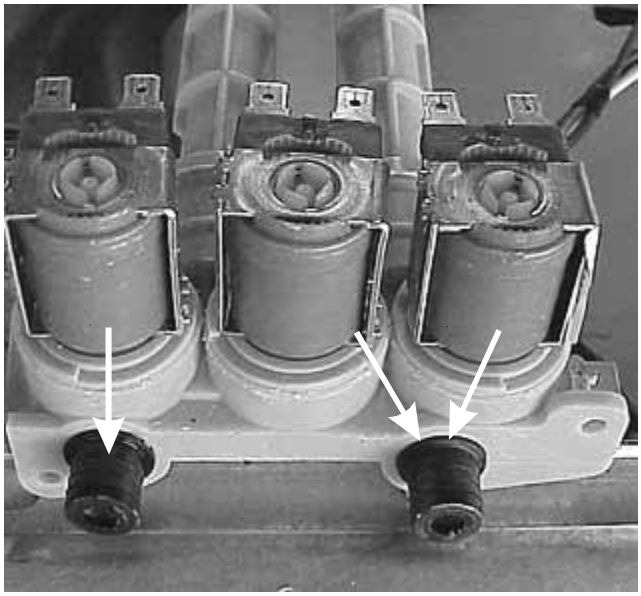
The water inlet valve assembly is made up of a plastic housing and 3 solenoids.




The hot solenoid is connected to the incoming hot water. The wash and bleach solenoids share a common input cavity that is connected to the cold water supply.



The hot and wash solenoids share a common output cavity, with the bleach solenoid having a separate output cavity.



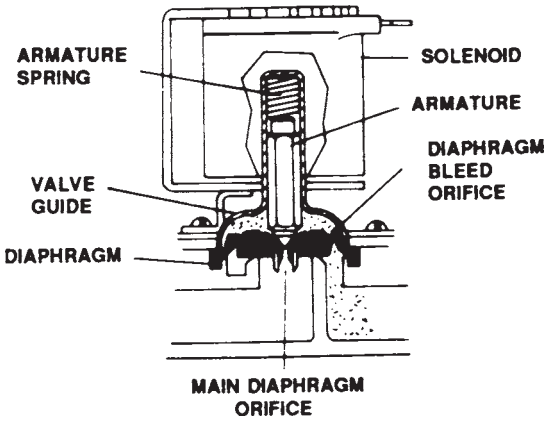
## Valve Operation:

The (3) inlet solenoid valves are identical in construction and operation. The valve body provides an air passage with large orifice and seat where the water can be stopped. The outlet of the valve body empties into the chamber. A moveable rubber diaphragm operates against the valve seat to start and stop the flow of water. The diaphragm is operated by water pressure. It has a small bleed orifice outside the seat contact area, and a large main orifice at its center. The armature of the solenoid serves to open and close the main orifice.

The armature operates within a closed metal tube (valve guide) which is sealed by the outer edge of the diaphragm to the valve body. A coil spring holds the armature down against the diaphragm main orifice when the solenoid is not energized.

The following line drawings and text explain basic valve operation.

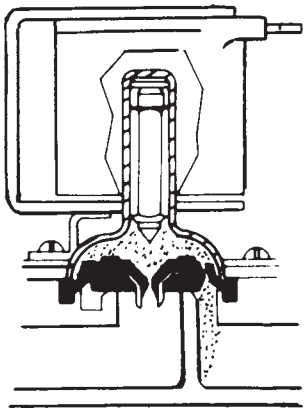
When the valve is in a closed position, the solenoid is not energized. Water has bled through the diaphragm bleed orifice placing incoming line pressure on top of the diaphragm. The bottom of the diaphragm is essentially at atmospheric pressure (open to the outlet) and the pressure differential holds the valve shut.



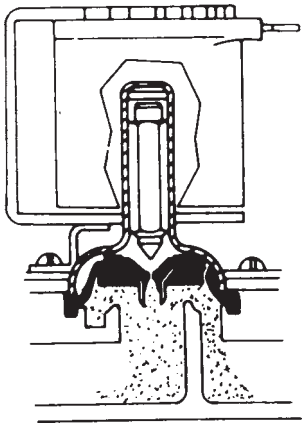

**Water Valve Closed**

When the solenoid is energized, the resulting magnetic field pulls the armature up into the valve guide. The armature spring is compressed by this action. When the armature moves up, it allows the water on the top of the diaphragm to drain through the main orifice.

The diaphragm bleed orifice is much smaller than the main orifice and will not admit enough water to maintain pressure on the top side of the diaphragm. Thus, as the pressure on the top of the diaphragm is reduced to almost zero, the pressure on the bottom lifts the diaphragm off the valve seat, allowing a full flow of water.

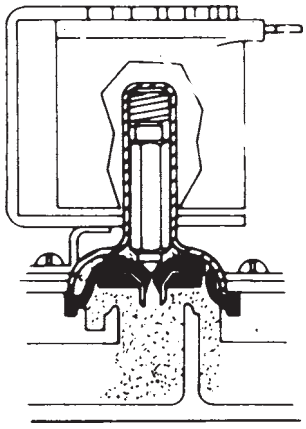


**Solenoid Activated**



**Water Valve Open and Diaphragm Up**

When the solenoid is de-energized, the armature drops down, closing the diaphragm main orifice. Water continues to flow through the diaphragm bleed orifice, equalizing the pressure and allowing the spring to push the diaphragm down against the valve seat.



**Water Valve Closing**

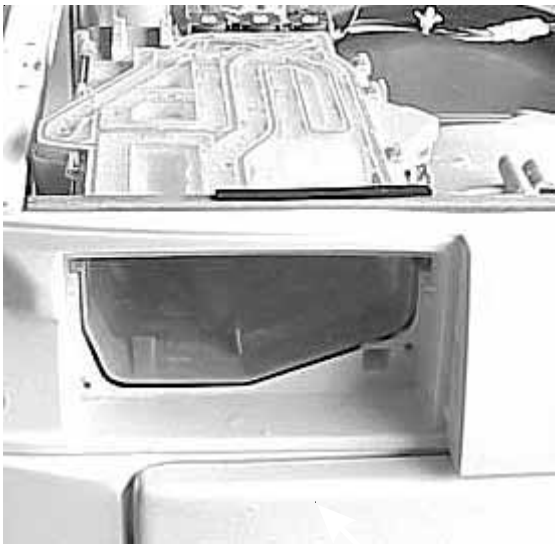
## Water Temperature:

When the **TEMPERATURE** switch is set to **Hot/Cold** in the wash cycle, the hot solenoid is activated and the bleach solenoid is activated, for all except the last fill, in rinse. For the last rinse fill the wash and bleach solenoids are activated. When the **TEMPERATURE** switch is set to **Warm/Cold** in the wash cycle, the hot and wash solenoids are activated and the bleach solenoid is activated, for all except the last fill, in rinse. For the last rinse fill, the wash and bleach solenoids are activated. When the **TEMPERATURE** switch is set to **Warm/Warm** in the wash cycle, the hot and wash solenoids are activated and the bleach solenoid is activated, for all except the last fill, in rinse. For the last rinse fill, the hot and bleach solenoids are activated.

When the **TEMPERATURE** switch is set to **Cold/Cold** in the wash cycle, the wash solenoid is activated and the bleach solenoid is activated, for all except the last fill, in rinse. For the last rinse fill, the wash and bleach solenoids are activated.

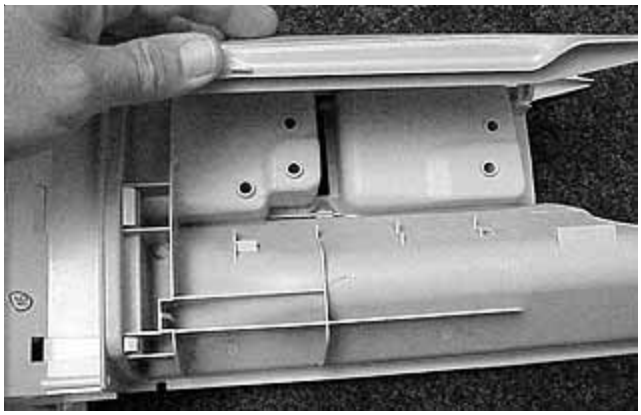
## Automatic Dispenser:

The automatic dispenser for detergent, liquid bleach and fabric softener system is made up of the dispenser cavity,



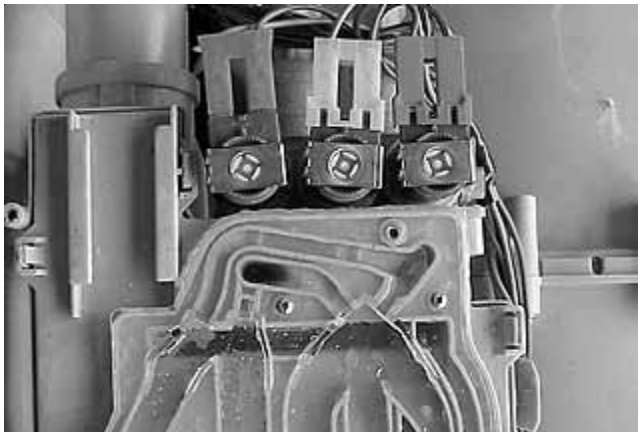
and a removable drawer with three cavities, one for detergent, one for bleach and one for fabric softener.

A plastic conveyer is snapped to the bottom of the drawer to direct the outputs, from the bleach and softener chambers, to the dispenser housing outlet channel. This prevents the mixtures from coming out the front of the drawer.



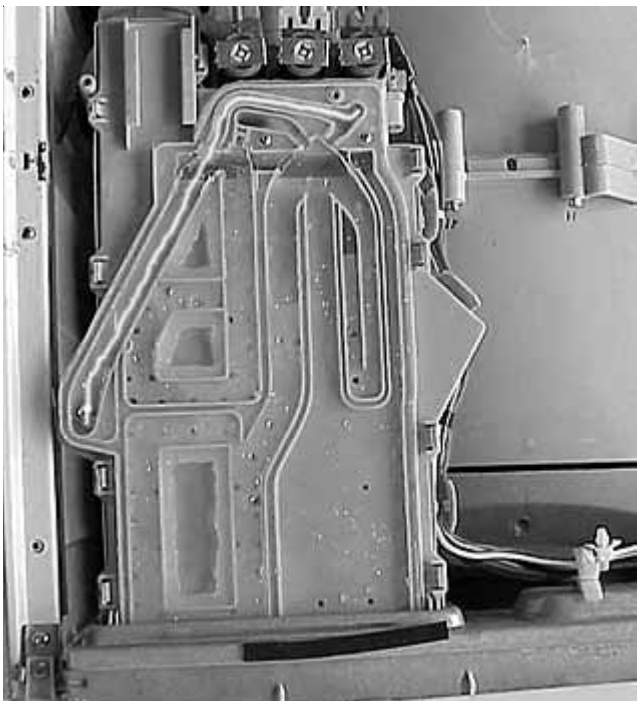
The 2 outlets of the water inlet valve assembly are inserted into the rear of the automatic dispenser. During the fill cycles, water is directed into the top of the cavity through 2 inlets. The inlet on the right, as view from the front of the washer, is connected to the combination output of the hot water solenoid and the center cold water solenoid.

The inlet on the left, as viewed from the front of the washer, is connected to the left-hand cold water solenoid.



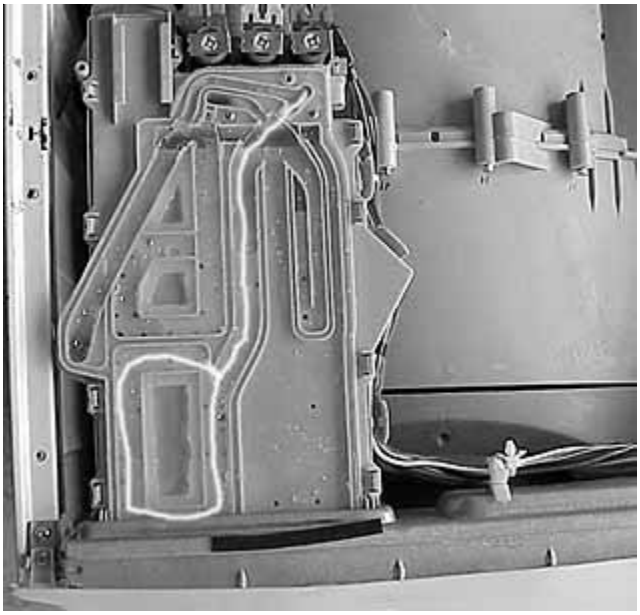
In the fill cycles, water enters into the top of cavity and is directed across the top of the cavity by 4 channels. The dispenser bypass channel, the detergent channel, bleach channel and the fabric softener channel  The channel that receives the water is determined by which inlet supplies the water or if both inlets supply the water.

The dispense advanced rinsing technology channel receives water whenever inlet on the right, as view from the front of the washer, is activated.



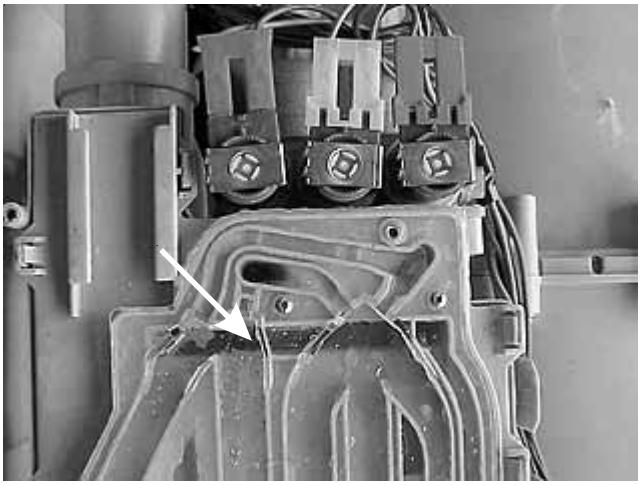
This path allows the water to bypass dispenser the drawer and enter the tub by a advanced rinsing technology hose connected between cavity and the bellows.

The detergent dispenser channel receives water from the right-hand input, as viewed from the front of the washer. The detergent channel forms a loop that allows the water to pass over the detergent section of the drawer.



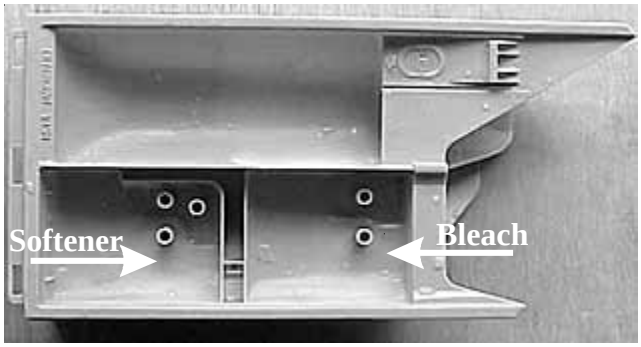
As the water passes over the detergent section, holes in the cavity allow some of the water to enter and flush the detergent cavity.

Since the flow of the incoming water is more than the holes can dispense, the excess water backs up into a channel across the rear of the dispenser.



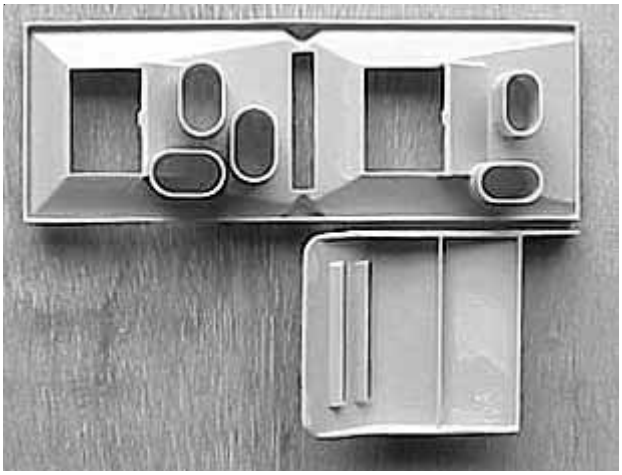
Water in this channel and the mixture from the detergent drawer flow into the tub through the large hose at the rear of the dispenser.

Detergent is dispensed at the start of the cycle, but bleach and fabric softener are not dispensed until later in the cycle. To allow all three items to be added to the washer before the start of the cycle, the bleach and softener cavities in the drawer have tubes molded into the bottom of them.

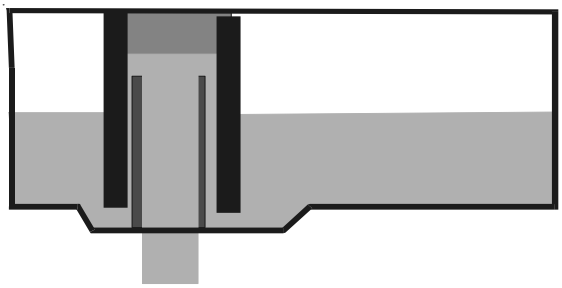



These tubes allow bleach or softener to be added to their cavity without being dispensed as long as the liquid is below the top of the tubes. At the proper time in the cycle, when bleach or fabric softener is to be dispensed water is added to the cavity. This raises the mixture above the top of the tube and the bleach or fabric softener starts flowing into the tub.

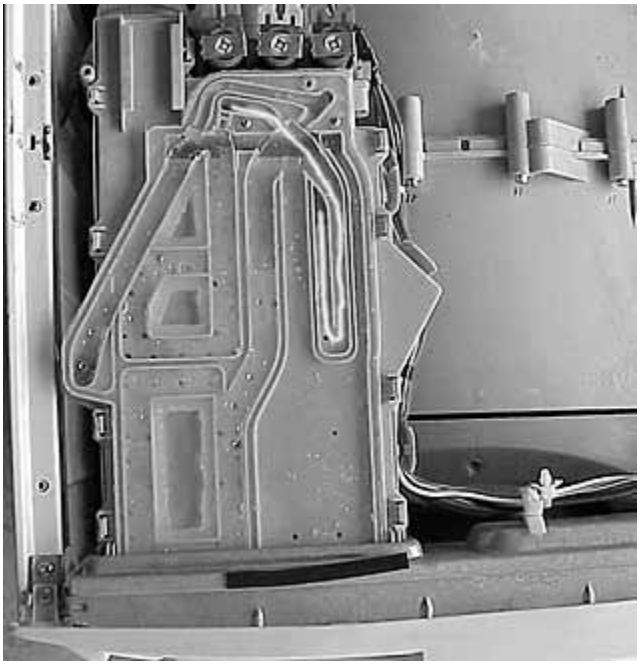
To allow the cavities to empty, the cover of the detergent drawer cover has tubes molded into it. The tubes fit over the tubes in the cavities.



These tubes are larger than the tubes in the cavity and are designed to fit over the tubes, but not touch the bottom of the cavity when the cover is installed. When water is added to either the bleach or fabric softener liquid, the mixture level rises between the tubes above the tubes in the cavity and flows into the washer tub. Since the end of the tube on the insert does not touch the bottom of the cavity, a siphoning action will start when the solenoid activates and allows water into the cavity. The added water creates an “overfill” condition and starts the siphoning. The cavity will empty itself when the water is turned off by the solenoid.



The bleach dispenser channel receives water from the left-hand input, as viewed from the front of the washer. The bleach channel forms a path that allows the water to pass over the bleach cavity section of the cavity.

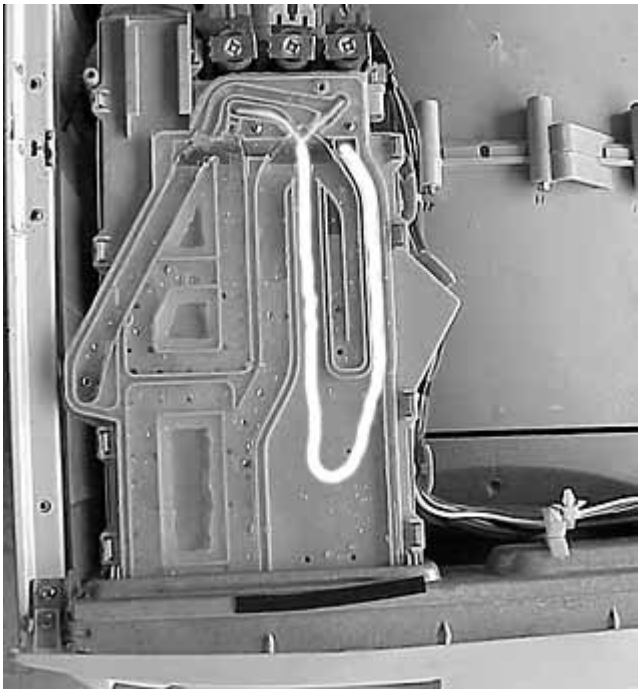


As the water pass over the bleach section, holes in the cavity allow some of the water to enter and mix with the bleach.

This raises the mixture level above the tubes in the drawer bleach cavity allowing the mixture to flow into the tub.

Like the detergent channel, when the flow of the incoming water is more than the holes can dispense, the excess water backs up into the channel across the rear of the dispenser and flows into the tub.

For water to enter the fabric softener channel, both the left and right inlets must be activated. As the water from the left inlet passes over the channel, it collides with the water from the right inlet. This collision changes the water path directing it to the front of the cavity and into the fabric softener channel. The fabric softener channel forms a loop that allows the water to pass over the fabric softener cavity section of the drawer.

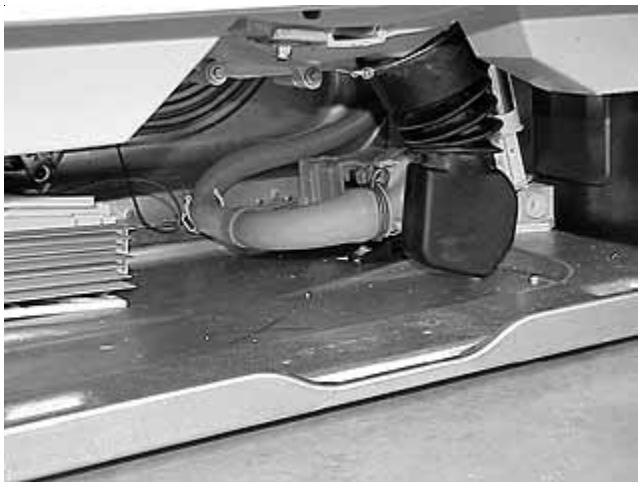


As the water passes over the fabric softener section, holes in the cavity allow some of the water to enter and mix with the fabric softener.

This raises the mixture level above the tubes in the drawer fabric softener cavity allowing the mixture to flow into the tub. Like the detergent channel, when the flow of the incoming water is more than the holes can dispense, the excess water backs up into the channel across the rear of the dispenser and flows into the tub.

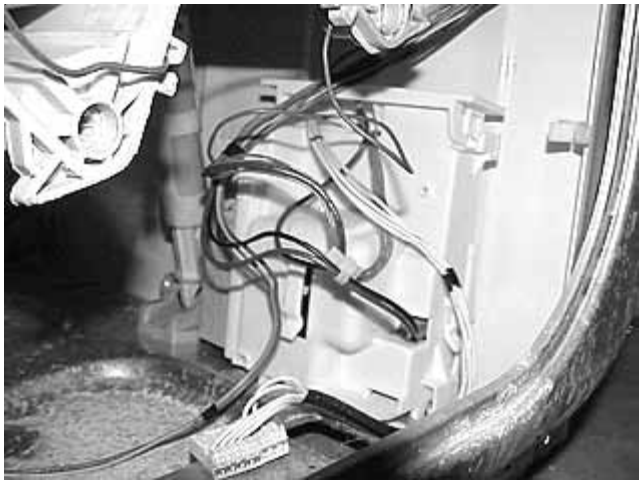
## Drain Pump:

The drain pump is mounted to the bottom plate of the washer behind the access panel. It operates on 120 VAC and is controlled by the control board and pressure switch. The pump out specifications of the drain pump vary from 12 G.P.M with a 3 foot standpipe height to 7 G.P.M. with an 8 foot standpipe height.



## Inverter:

The inverter is mounted to the bottom plate of the washer in the left rear corner of the washer. The inverter controls the following operations:



**Note: The control board assembly is the board that is mounted in the console, and the inverter is in the left rear corner of the washer.**

1. The speed of the drive motor by converting input line to neutral single phase 60 Hertz voltage, to a varying frequency, three phase output voltage from zero to 300 VAC. By varying the amount, frequency, and polarity of the voltage and comparing the input from the tachogenerator on the drive motor, the speed control board can operate the drive motor at a preprogrammed speed and direction.

2. The balance of the load in the washer during the spin cycle by converting the sine wave from the tachogenerator to square waves and comparing the distance between the square waves.

## Motor:

The motor is mounted to the bottom of the outer tub.

The motor is an induction, three phase AC motor that varies speeds when the voltage from the speed control board varies in frequency and amount. The motor has a tachogenerator that inputs the speed of the motor to the speed control board.

# CONSTRUCTION

The front loading, tumble action clothes washer consists of a perforated, cylindrical spin basket suspended horizontally on its axis within a larger solid cylindrical tub. This assembly is suspended by springs within a four piece steel cabinet. A see-through door and a flexible bellows (seal) provides access for loading and unloading clothes.

## Cabinet

The cabinet is made of heavy steel in a four piece design. The sides and rear are Tog-l-loked at the rear corners and base. The rear of the cabinet is galvanized steel with an access panel.

## Front Panel and Door Assembly

The front panel is attached with screws to the side panels and bottom.

## Bellows

The bellows is a rubber sleeve that seals the suspended outer tub to the stationary cabinet front at the tub opening. Its purpose is to provide a water tight opening into the tub that can be sealed by the cabinet door, yet allow flexibility for the oscillation of the tub during the wash and spin cycles.

## Outer Tub Assembly

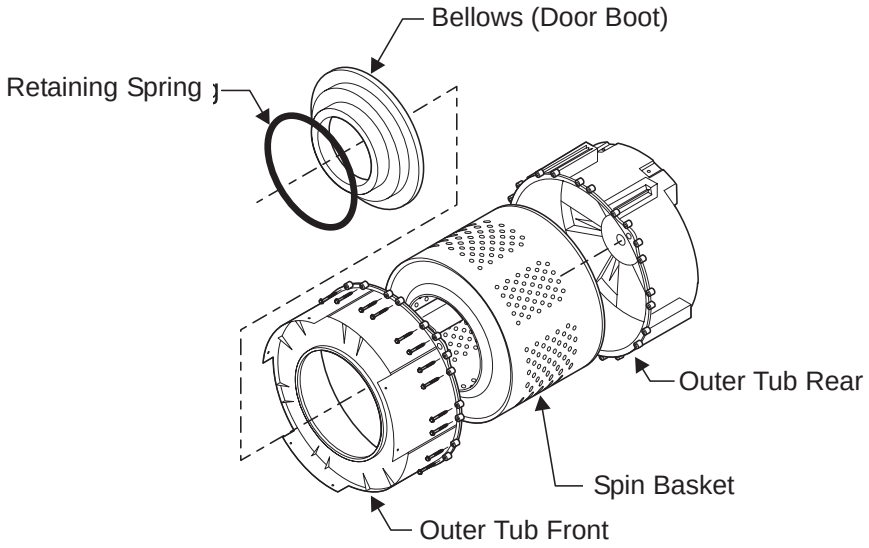
The outer tub assembly is supported by two suspension springs and stabilized by two air shock assemblies. A cement counterweight is mounted to the front of the outer tub. A counterweight is molded into the rear half of the outer tub. These counterweights prevent excessive oscillation of the entire suspended assembly during an unbalanced spin cycle.

## Spin Basket Assembly

The spin basket is constructed of stainless steel. The circumference of the basket is perforated to allow water to flow through it as it revolves. A heavy steel shaft is pressed into the spin basket support, which is then bolted to the basket. The spin basket assembly is entirely supported by two bearings pressed into the rear of the outer tub.

A large drive pulley is mounted to the free end of the shaft that extends through the rear of the outer tub.

There are three plastic vanes mounted to the spin basket to aid in the washing action during the wash cycle. The rotation of the spin basket provides both the washing action during the wash cycle, and water extraction during the spin cycle.



# TROUBLESHOOTING

The electronic control of the 3.0 Cu. Ft. horizontal axis washers have a self diagnostics codes built in that cover most products failures.

Tthe control signals the failure code by flashing the five indicator lights of **Door Lock, Wash, Rinse, Final Spin and Control Lock** for the first number or letter after the E and the **Start** indicator light for the second number or letter after the E. When a failure occurs, the washer stops or pauses and the control beeps and flashes the five indicator lights to tell the customer that a failure has occurred. To stop the flashing and beeping, the customer may touch the **Pause Cancel** button. The error code remains stored in the control but once the problem is corrected, it does not effect the operation of the washer. If the failure is something that the customer can correct (such as the water faucets being turned off), the washer will operate normally the next time it is started.

To recall an error code,

- Wake the machine by pressing any button
- Wait 5 seconds
- Press and hold the **Start** and **Pause Cancel** buttons simultaneously
- All LEDs will go blank and after a few seconds, the control will signal the stored code using audible beeps and blinking LEDs. The control will repeatedly signal the code, as long as the **Start** and **Pause Cancel** buttons are pressed.

A two-second pause between repeats affords the ability to make accurate counts to identify the correct error codes.

The five indicator lights of **Door Lock, Wash, Rinse, Final Spin and Control Lock** will flash the number of times for the first digit of the code and the **Start** indicator light will flash the number of times for the second digit. Take separate counts of each indicator light, then repeat to confirm in order to be accurate in identifying the proper error code. The code is obtained by counting the number of times the lights flash. Example E24: The five indicator lights would flash twice indicating the 2 and the **START** indicator light will flash four times indicating the 4. The five indicator lights and the **START** indicator light start flashing at the same time.

The control will pause for 2 seconds, then repeat the code as long as the two buttons are pressed and held.

**Note: A letter appearing in the code stands for a number higher than nine:**

**A = 10 B = 11 C = 12 D = 13 E = 14 F = 15**

Example Code F1: the first digit would be 15 and the second digit would be 1. The five indicator lights would blink fifteen times and the **START** indicator light would blink once. Troubleshoot problem by using chart on the following pages.

**To clear the latest stored error code:**

Place the control in Diagnostic Test Mode (Page 7).

• Turn the cycles knob (9) clicks from the Start Position. The control will signal the last error code.

• Press and hold the **Option** and **Pause/Cancel** buttons for 3 seconds. The code will be cleared.

• Exit Diagnostic Test Mode to return the washer to normal operation.

**Examples: Identifying Error Codes:**

*The following LED Flashes and Beeps signal E41 (Error code **41**) Door Open*

| | COUNT>>>>>> | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1st Code Digit | 5 Vertical LED Flashes | X | X | X | X | | | | | | | | | | | |
| 2nd Code Digit | Start LED Flashes | X | | | | | | | | | | | | | | |

*The following LED Flashes and Beeps signal E14 (Error code **14**) Reed Switch*

| | COUNT>>>>>> | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1st Code Digit | 5 Vertical LED Flashes | X | | | | | | | | | | | | | | |
| 2nd Code Digit | Start LED Flashes | X | X | X | X | | | | | | | | | | | |

*The following LED Flashes and Beeps signal EF1 (Error code **F1**) Clogged Pump*

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | COUNT>>>>>> | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
| 1st Code Digit | 5 Vertical LED Flashes | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| 2nd Code Digit | Start LED Flashes | X | | | | | | | | | | | | | | |

## Failure code chart

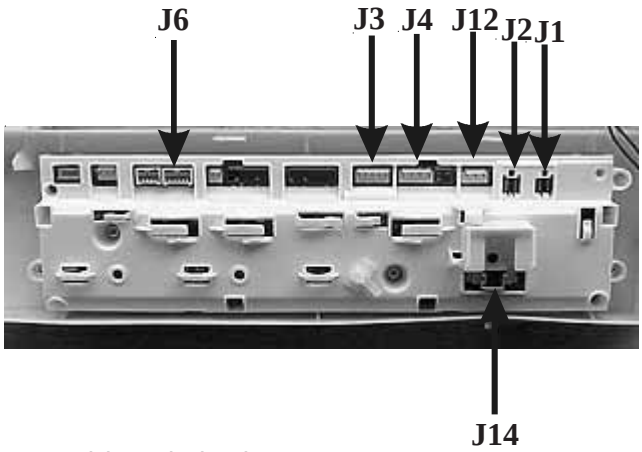
| Failure code | Fault condition | Check |
|---|---|---|
| E11 | Fill time too long. | Refer to test (1). |
| E13 | Water leak in tub or air leak in air bell. | Refer to test (2). |
| E21 | Water not pumping out fast enough. | Refer to test (4). |
| E23 | Drain pump relay on control board failed or wire off pump. | Replace control board or wire. |
| E24 | Drain pump relay on control board failed or wire off pump. | Replace control board or wire. |
| E41 | Control board thinks the door switch is open. | Refer to test (7). |
| E42 | Door remains locked after cycle is completed. | Refer to test (8). |
| E43 | Board communications problem. | Replace the control board. |
| E44 | Board communications problem. | Replace the control board. |
| E45 | Board communications problem. | Replace the control board. |
| E46 | Board communications problem. | Replace the control board. |
| E47 | Board thinks the door PTC circuit is open in spin. | Refer to test (9). |
| E48 | Board thinks the door PTC circuit is closed. | Refer to test (9). |
| E52 | Bad signal from tacho generator. | Refer to test (10). |
| E55 | Motor overheating. | Refer to test (11). |
| E56 | High motor current. | Refer to test (11). |
| E57 | High current on inverter. | Refer to test (11). |
| E58 | High current on motor phase. | Refer to test (11). |
| E59 | No tacho signal for 3 seconds. | Refer to test (12). |
| E5A | High temperature on heat sink. | Replace the speed control board. |
| E5B | High temperature on heat sink. | Replace the speed control board. |
| E5C | High temperature on heat sink. | Replace the speed control board. |
| E5D | Communication problem. | Refer to test (13). |
| E5E | Communication problem. | Refer to test (13). |
| E5F | Communication problem. | Refer to test (13). |
| E67 | Input voltage on microprocessor incorrect. | Replace the control board. |
| E95 | Communication error. | Replace the control board. |
| EB1 | Incoming power frequency out of limits. | Refer to test (15). |
| EB2 | Incoming line voltage above 130 VAC. | Check voltage at the outlet. If below 130 VAC replace the control board. |
| EB3 | Incoming line voltage below 90 VAC. | Check voltage at the outlet. If above 90 VAC replace the control board. |
| EF1 | Clogged drain pump. | Unclog the drain pump. |
| EF2 | Too much soap. | Advise customer to reduce the amount of soap they are using. |

| Test | | |
|---|---|---|
| **Test** | **Steps** | **Correction** |
| Test 1: | 1. Is the incoming water flow normal? | Yes. Go to step (4).<br>No. Go to step (2). |
| | 2. Are the incoming water faucets turned on? | No. Turn water faucets on.<br>Yes. Go to step (3). |
| | 3. Is the incoming water pressure above (30) psi.? | No. Have customer correct pressure problem.<br>Yes. Check for kinked or blocked incoming water hoses, clean the incoming water screens. If problem still remains replace the water inlet valve assembly. |
| | 4. Does the fill water continue enter the washer? | Yes. Go to step (5).<br>No. Go to step (6). |
| | 5. Remove power from the washer. Did the water fill stop? | Yes. Go to step (6).<br>No. Replace the inlet valve assembly. |
| | 6. Check the pressure switch. | Pressure switch checks good. Go to step (7).<br>Pressure switch checks bad. Replace pressure switch. |
| | 7. Replace the control board. | |
| Test 2: | 1. Is the washer leaking water? | Yes. Correct water leak.<br>No. Go to step (2). |
| | 2. Is there an air leak in the air bell system? | Yes. Correct the air leak problem.<br>No. Go to step (3). |
| | 3. Check the pressure switch. | Defective. Replace the pressure switch.<br>Good. Go to step (4).. |
| | 4. Replace the control board. | |
| Test 3: | 1. Check the drain hose for restrictions. | No restriction. Go to step (2). |
| | 2. Start the washer and check for 120 VAC at the drain pump. | Zero. Replace the control board.<br>120 VAC. Remove the pump and check it for blockage. If block remove the restriction, if not replace the pump. |
| Test 4: | 1. Is the water level above 4.5 inches? | Yes. Go to step (2). |
| | 2. Does water enter the washer continuously? | Yes. Go to step (3).<br>No. Replace the control board. |
| | 3. Remove power from washer. Does the water stop coming in? | No. Replace water valve assembly.<br>Yes. Check wiring to valve assembly for shorts. If wiring is good, replace the control board. |
| | 4. Replace the pressure sensor switch. Did this correct the problem? | Yes. Problem solved.<br>No. Replace the control board. |
| Test 5: | 1. Is the loading door closed? | No. Close the door.<br>Yes. Go the step (2). |
| | 2. Disconnect the plug from J2 on the control board and check for continuity between the pins in the plug. | Open. Check the door strike, if good replace the door switch assembly.<br>Closed. Replace the control board. |
| Test 6: | 1. Remove power from the washer. Wait one minute. Can you open the door? | Yes. Replace the control board.<br>No. Replace the door switch assembly.<br>Note: You may have to break the door strike to do this. |
| Test 7: | 1. Remove the door lock assembly and measure the resistance of the PTC. | Shorted or open. Defective door lock assembly.<br>Around 1500 Ohms. Defective control board. |

| Test | | |
|---|---|---|
| **Test** | **Steps** | **Correction** |
| Test 8: | 1. Disconnect the plug from the drive motor and measure the resistance pins 4 & 5 in the motor. | If the resistance is between 105 -130 ohms, replace the speed control board.<br>If the resistance is NOT between 105 -130 ohms, replace the motor. |
| Test 9: | 1. Remove the belt from the motor and spin the motor pulley. Does the motor spin freely? | No. Replace the motor.<br>Yes. Go to step (3) |
| | 2. Spin the tub pulley. Does the tub spin freely? | No. Check the tub bearings.<br>Yes. Go to step (3) |
| | 3. Disconnect the plug from the motor and measure the resistance of the windings (pin 1 to pin 2, pin 1 to pin 3, pin 2 to pin 3.) All reading should be between 4 and 6 ohms. | If the readings are correct replace the speed control board.<br>If the readings are incorrect replace the motor. |
| Test 10: | 1. Remove the belt from the motor and spin the motor pulley. Does the motor spin freely? | No. Replace the motor.<br>Yes. Go to step (3) |
| | 2. Spin the tub pulley. Does the tub spin freely? | No. Check the tub bearings.<br>Yes. Go to step (3) |
| | 3. Disconnect the plug from the drive motor and measure the resistance between pins 4 & 5 in the motor. | If the resistance is NOT between 105 -130 ohms, replace the motor.<br>If the resistance is between 105 -130 ohms, Go to step (4) |
| | 4. Disconnect the plug from the motor and measure the resistance of the windings (pin 1 to pin 2, pin 1 to pin 3, pin 2 to pin 3.) All readings should be between 4 and 6 ohms. | If the readings are correct replace the speed control board.<br>If the readings are incorrect, replace the motor. |
| Test 11: | 1. Communication problem. Check the wiring between the control board and the speed control board. | Wiring bad. Correct wiring problem.<br>Wiring good. Replace the control board. If the problem is not corrected, replace the speed control board. |
| Test 12: | 1. Check the resistance of the NTC. Is it around 50K ohms. | No. Replace the water inlet valve assembly<br>Yes Replace the control board. |
| Test 13: | 1. Have the power company check the frequency of the incoming power. If correct replace the control board. | |

## Jacks and plugs

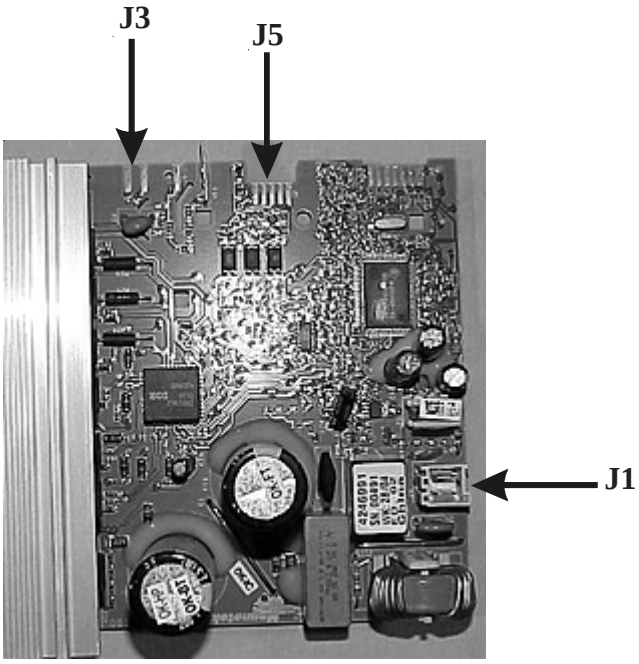
### Control panel




Control board circuits:

| | |
|---|---|
| J1 | Power to the speed control board. |
| J2 & J3 | Door switch assembly circuits. |
| J4 & J12 | Water inlet and drain pump circuits. |
| J6 | Codes to the speed control board. |
| J14 | Incoming power. |

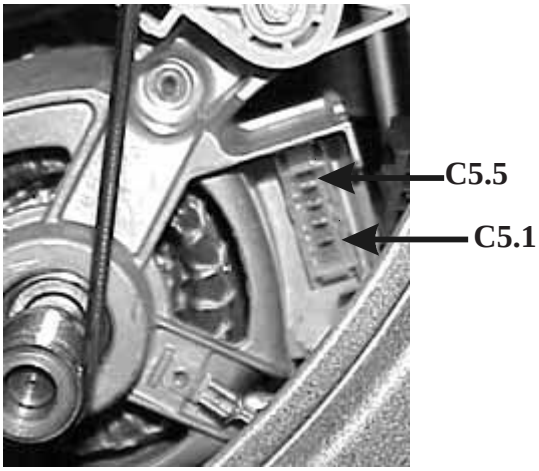
### Speed control board




Speed control board circuits:

| | |
|---|---|
| J1 | Line to neutral voltage from control board. |
| J3 | Code inputs from control board. |
| J5 | Outputs to the motor windings and tacho generator. |

### Motor plug




Motor connections:

| | |
|---|---|
| C5.1, C5.2 & C5.3 | Motor winding connections. |
| C5.4 & C5.5 | Tacho generator connections. |

# TEARDOWN

**⚠ WARNING** Always remove electrical power from the washer when working in an area where electrical power is present.

## Removing the detergent drawer:

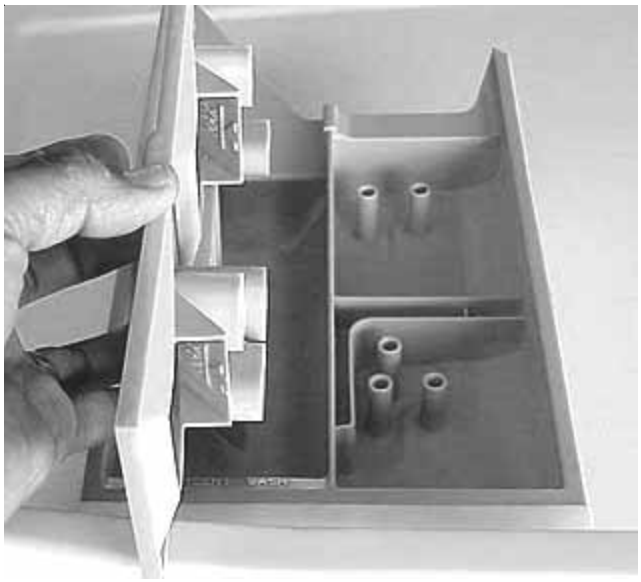
1. Slide the safety latch lever to the right and pull the drawer out until it hits the stop.

2. Push down on the release tab and pull the drawer out.

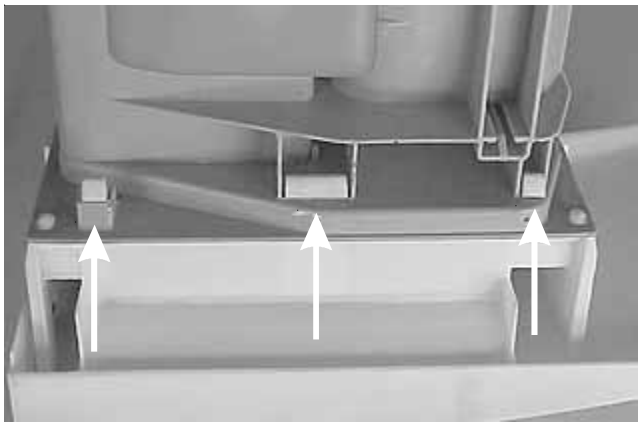

## Detergent drawer disassembly:

1. Remove the drawer from the washer.

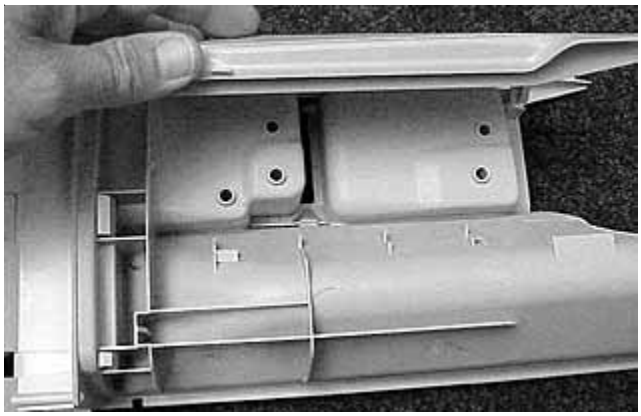
2. The detergent, liquid bleach and fabric softener insert lifts off. When reinstalling be sure to seat it properly.



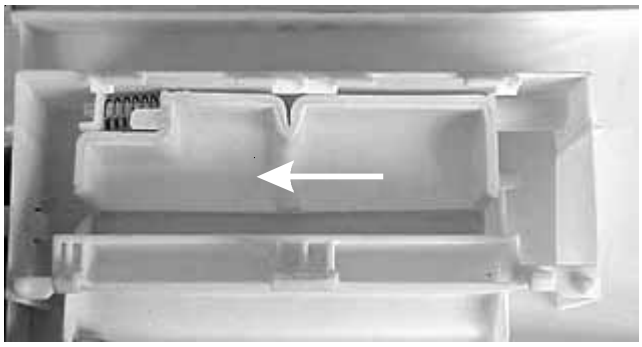
3. To remove the drawer front, release the three tabs and pull the drawer front away from the body.



4. To remove the conveyer, release the conveyer from the tabs and lift it off.

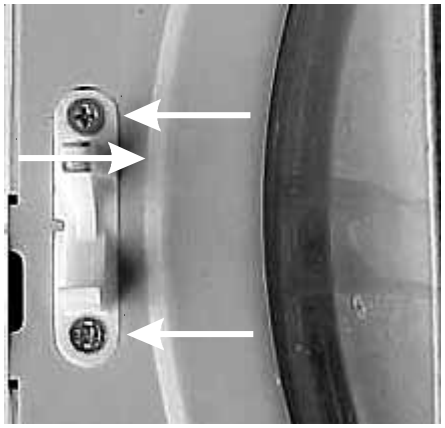


5. To remove the safety latch lever, compress the spring by moving the lever completely to the left and lift the lever out.



## Removing door strike:

1. Open loading door and remove the (2) screws holding the strike to the inner door liner.

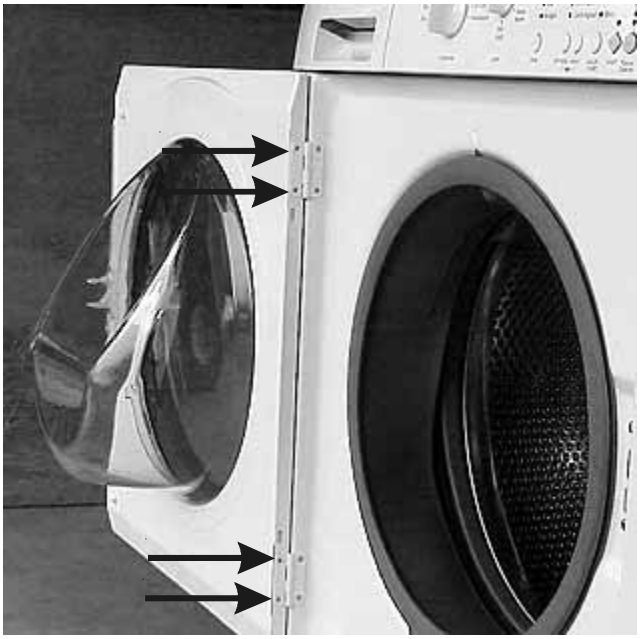


## Removing loading door handle:

1. Remove the (2) screws holding the handle to the inner liner of the door.

## Removing loading door:

1. Remove the door by removing the (4) screws holding the door to the hinges while supporting the door.

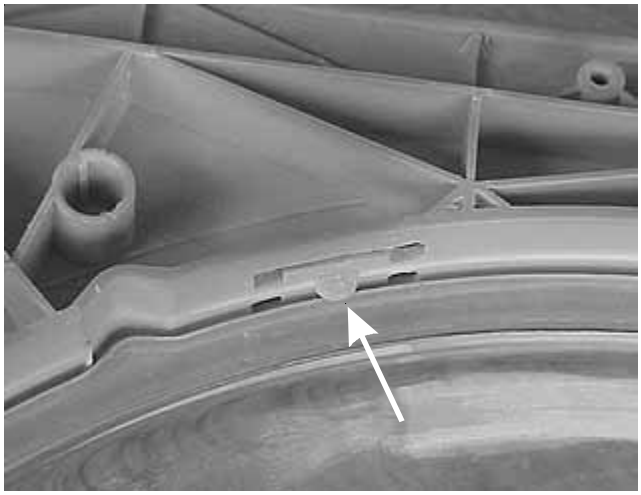


## Disassembling the door:

1. To remove the outer door panel, separate the two panels on the hinge side and slide the outer panel toward the door strike side to disengage the inner panel from the outer panel flange.

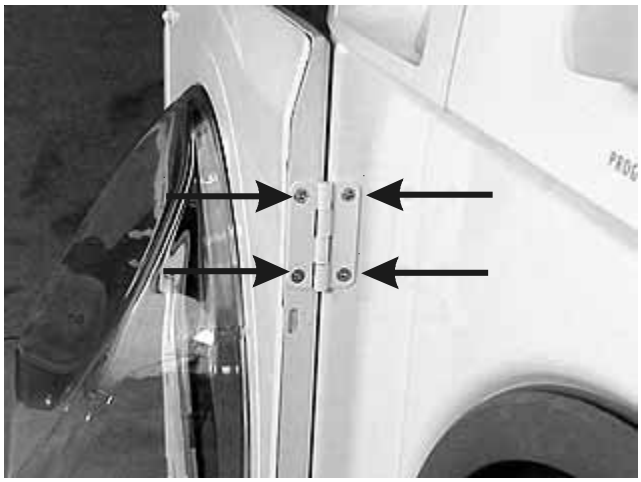
2. Remove the outer glass (some models) by removing the door strike and the (4) screws holding the outer glass to the inner panel and lift the glass off.

3. The inner glass is held in place by (5) molded tabs in the rear door cover. To remove the glass, grab the edge of the cover by the tab and twist it away from the glass.



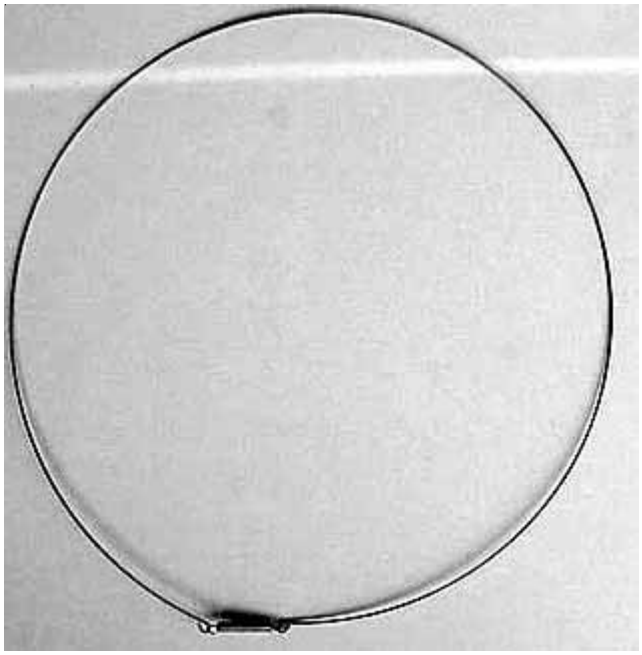
## To remove door hinges:

1. Remove the (4) screws holding the hinge to the door and front panel.



## Releasing the bellows (door boot) from the front panel:

The front of the bellows is installed over the lip of the door opening in the front panel and held in place by a spring loaded wire loop.

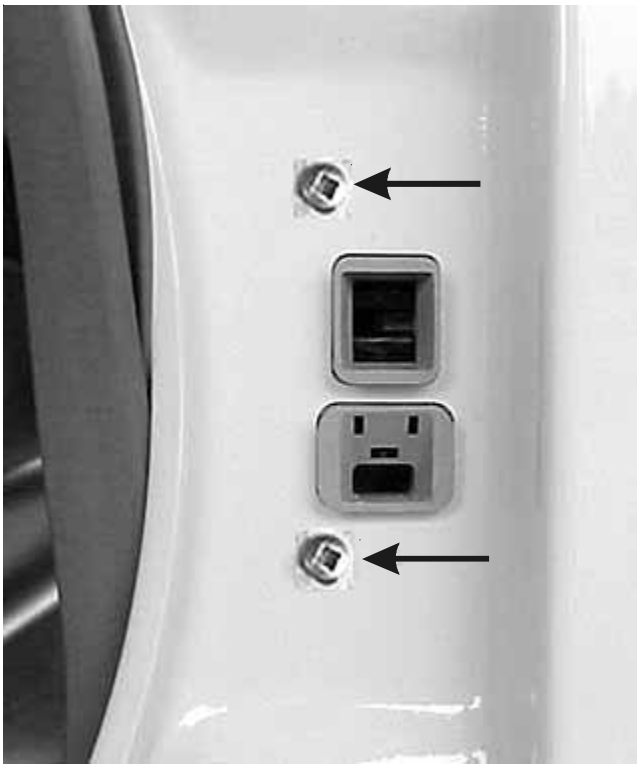


1. Open the loading door.
2. Using needle nose pliers, start where the spring and wire are connected at the bottom of the bellows and pull the wire out of the groove of the bellows.

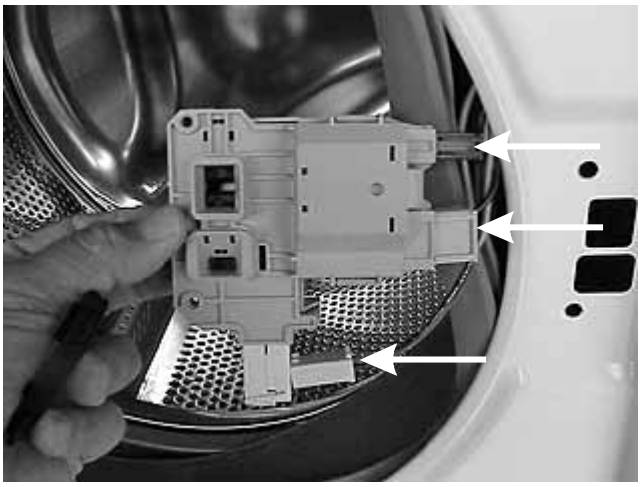
3. Pull the bellows off of the lip of the front panel.


## Removing the door safety switch:

1. Disconnect the washer from the electrical supply.
2. Release the bellows from the front panel.
3. Remove the (2) screws holding the switch assembly to the front panel.



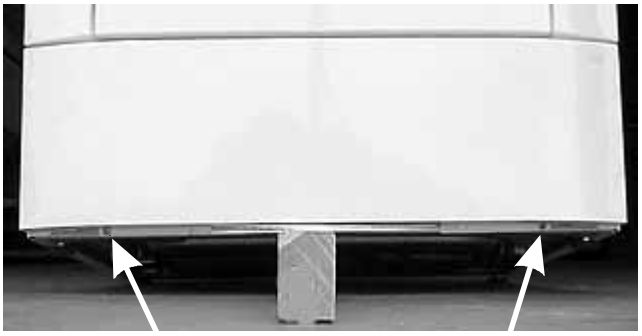
4. Pull the switch assembly into the door opening and unplug the electrical connectors.



## Removing the lower front access panel:

1. Raise the front of the washer and insert a two by four under the front of the washer.

2. Remove the (2) screws holding the panel to the washer base. Pull the panel down and out.

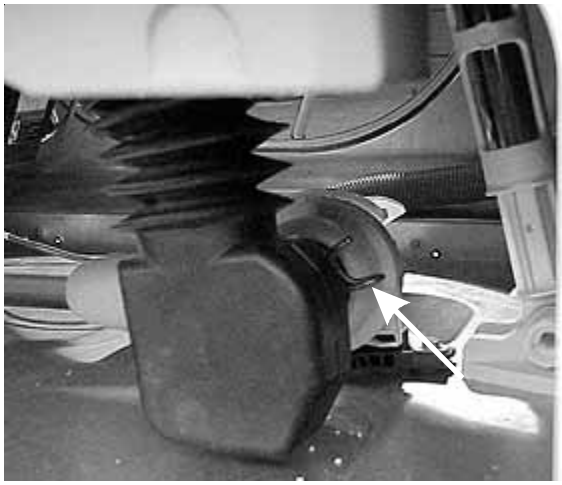


## Removing the drain pump:

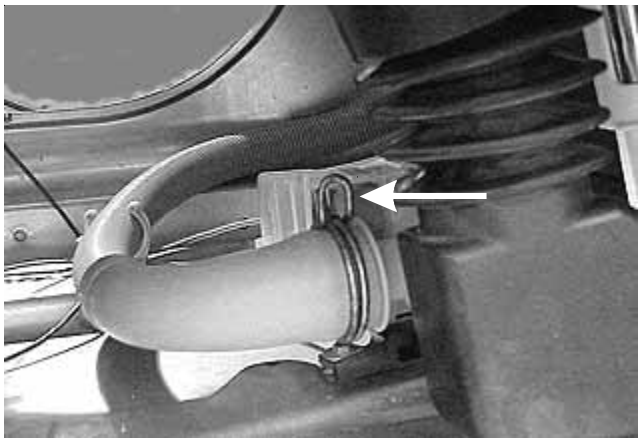
1. Disconnect the washer from the electrical supply, remove the front access panel.

**Note: Some water will be left in the hoses and pump.**

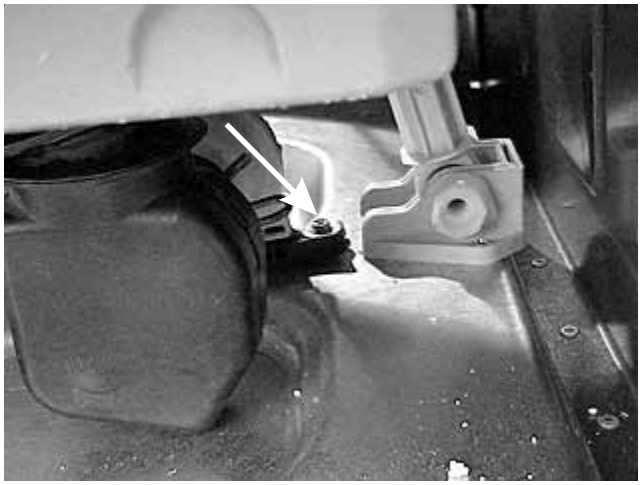
2. Disconnect the inlet sump from the pump.



3. Disconnect the outlet hose from the pump.



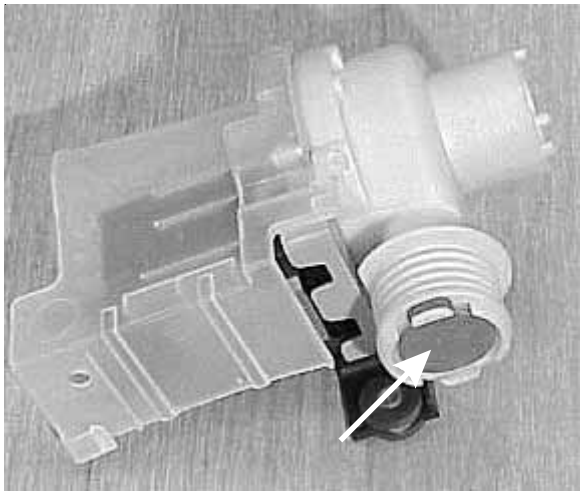
4. Remove the (2) screws, one on each side, holding the pump housing to the washer base.



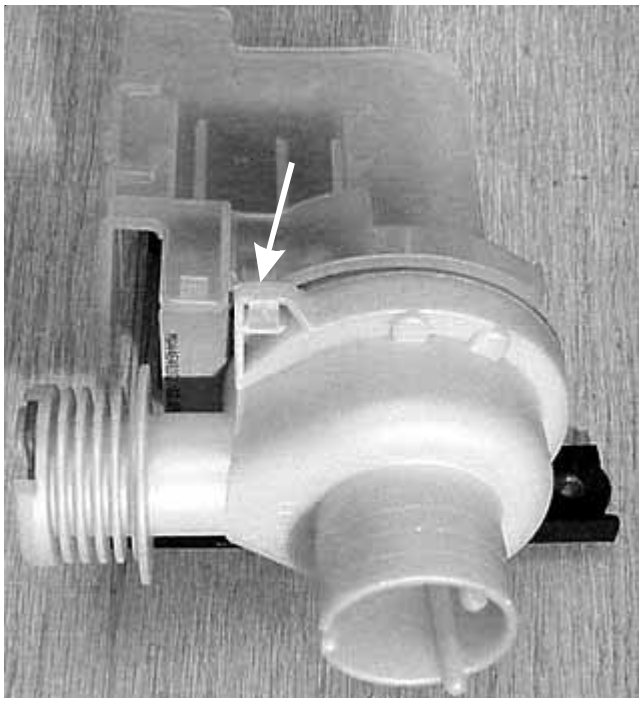
4. Unplug the wires from the pump motor.

## Disassembling the drain pump:

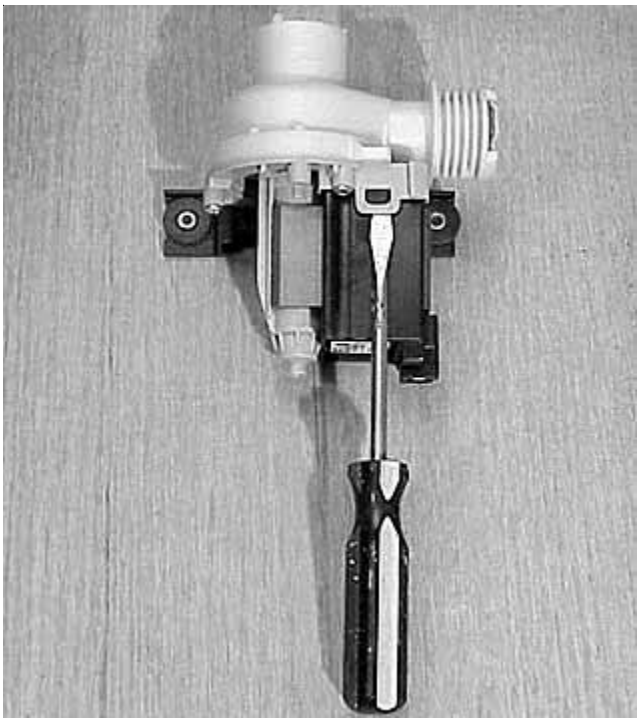
1. The drain pump check valve is located in the outlet of the pump.



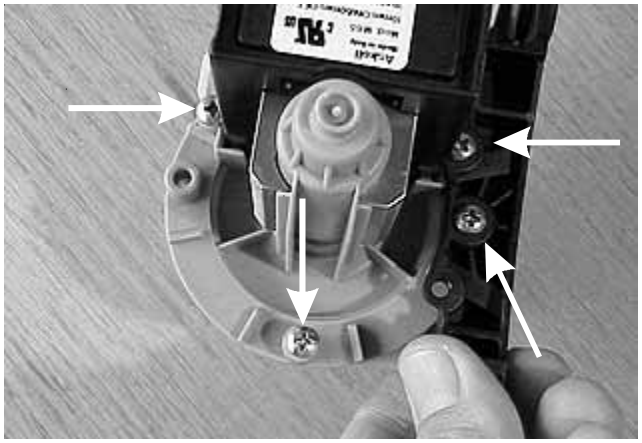
2. Remove the shield by releasing the tab and pulling back on the shield.



3. Release the tab on each side of the motor and pull back to remove the armature.



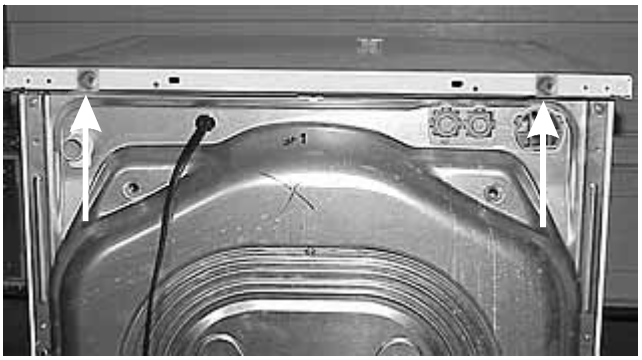
4. Remove (4) screws to release the pump from the housing.



## Removing the top panel:

1. Disconnect the washer from the electrical supply.

2. Remove the (2) screws from the rear of the top, slide the top back and lift it off.

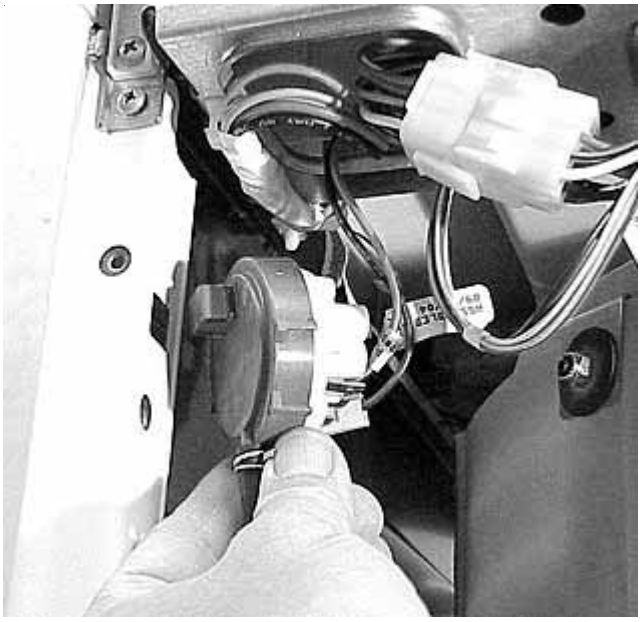


## Removing the pressure switch:

1. Disconnect the washer from the electrical supply and remove the top panel.

2. Unplug the wires from the pressure switch.

3. Turn the pressure switch one quarter turn and pull out to release it from the side panel.



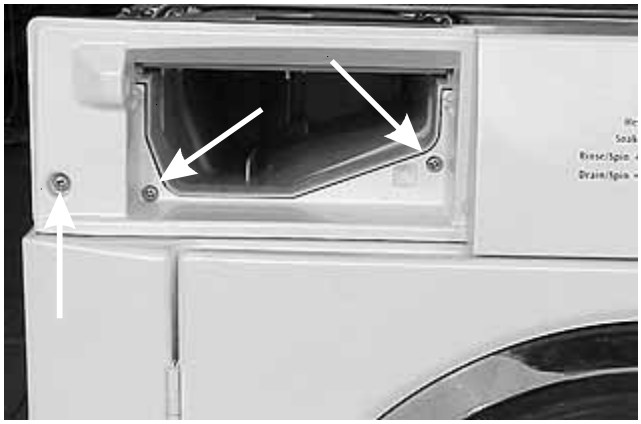
4. Disconnect the hose from the pressure switch.

## Releasing the console:

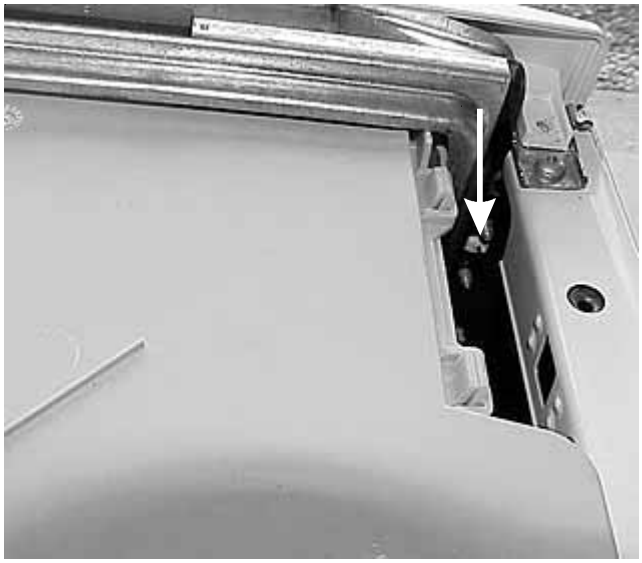
1. Disconnect the washer from the electrical supply, remove the top panel and detergent drawer.

2. Remove the (2) screws, one on each end, holding the console to the top of the side panels.

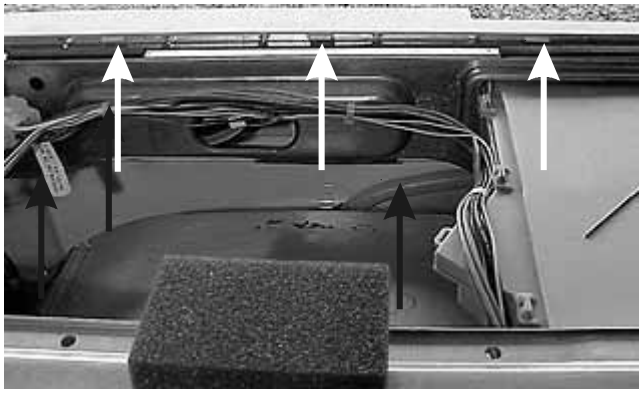
3. Remove the (3) screws behind the detergent drawer panel.



4. Release the tab that is spread open by the left hand screw as viewed from the front.

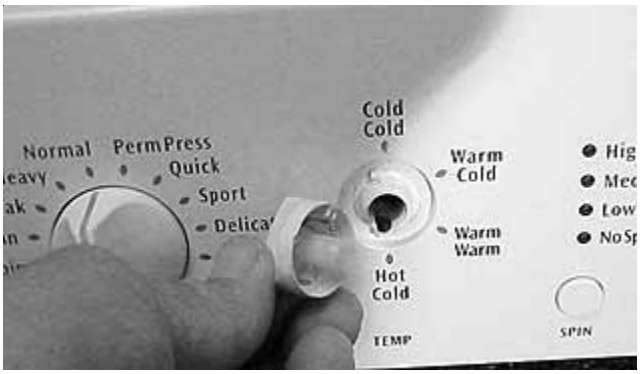


5. Release the (3) locking tabs at top rear edge of the console and roll the console forward.



## Removing the water temperature selector knob:

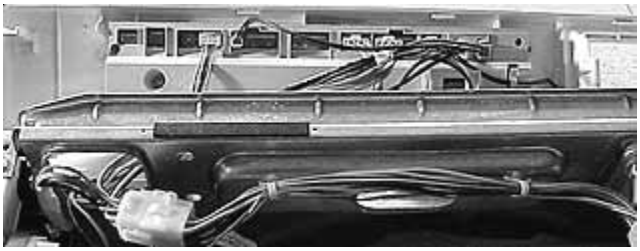
1. To remove the water temperature selector knob, pull the knob straight off.




## Removing the console:

1. Disconnect the washer from the electrical supply and release the console.

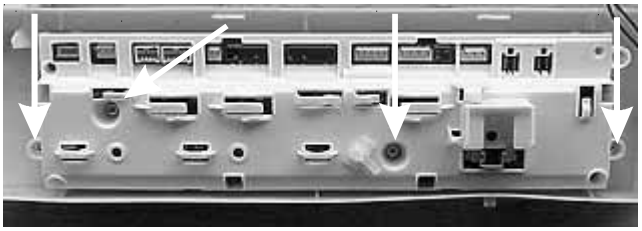
2. Tag each plug with the jack number, then disconnect the electrical harness from the electronic control, release the wire harness rivets from the back of the control and lift the console off .



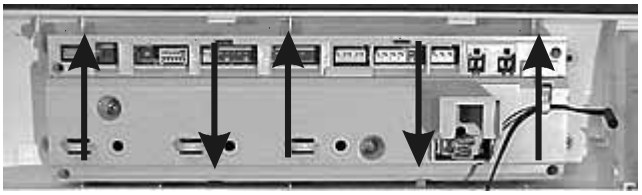
## Removing the electronic control:

1. Disconnect the washer from the electrical supply, remove the water temperature knob and the console.

2. Lay the console on a soft flat surface and remove the (4) screws holding the control to the console.



3. Release the locking tabs and lift the control from the console.



**Note: Be careful not to lose the button springs.**

## Removing the selector knob:

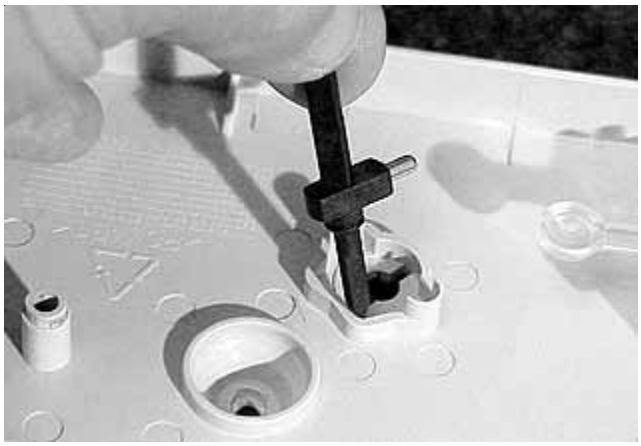
1. Disconnect the washer from the electrical supply and remove the electronic control.

2. Squeeze the rim of the selector knob shaft with pliers and pull the knob out the front.

## Removing the water temperature selector shaft:

1. Disconnect the washer from the electrical supply, set the water temperature selector knob to the Cold/Cold position and remove the electronic control.

2. Lift the shaft out of the control.

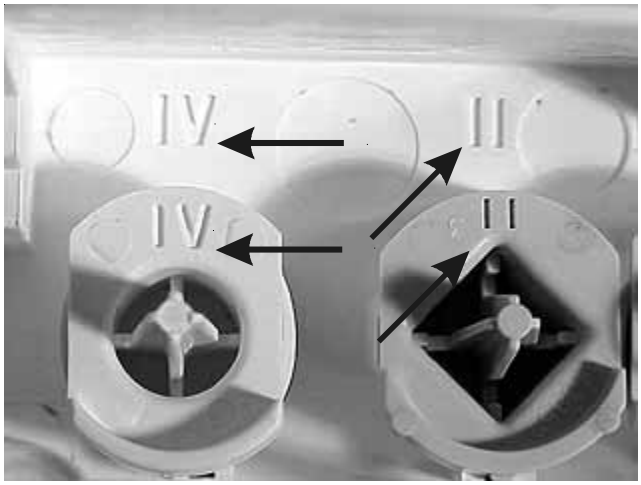


## Removing the programing buttons and springs:

1. Disconnect the washer from the electrical supply and remove the electronic control.

2. Lift the buttons and springs out of the console.

3. The buttons are not all the same. Each button has a Roman numerals stamped into it. The console has Roman numeral above the button slot. Match the number on the button to the number on the slot.

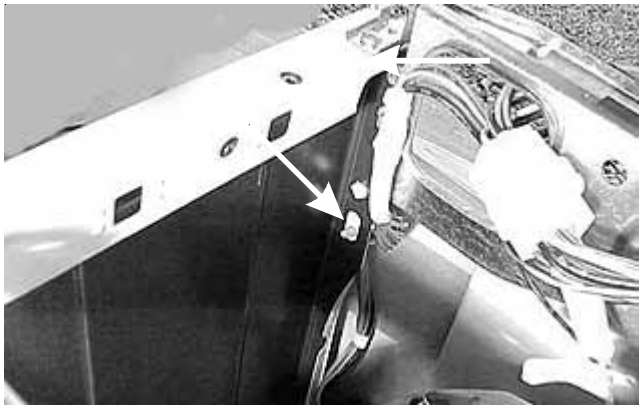


## Removing the front panel:

1. Disconnect the washer from the electrical supply, release the console and remove the front access panel.

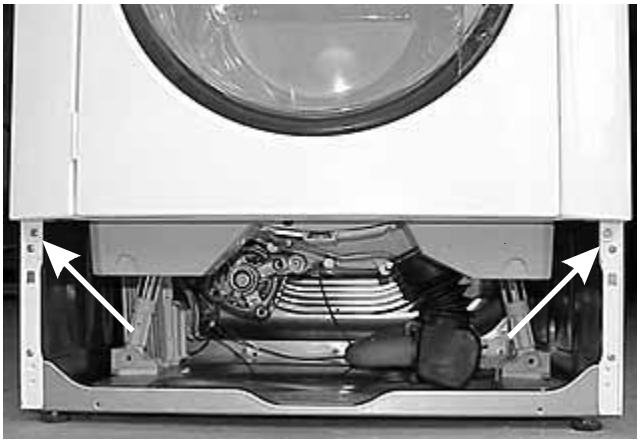
2. Release the bellows from the front panel and remove the (2) screws holding the door safety switch assembly to the front panel.

3 Release the plastic rivet wire tie holding the door switch harness to the front panel.

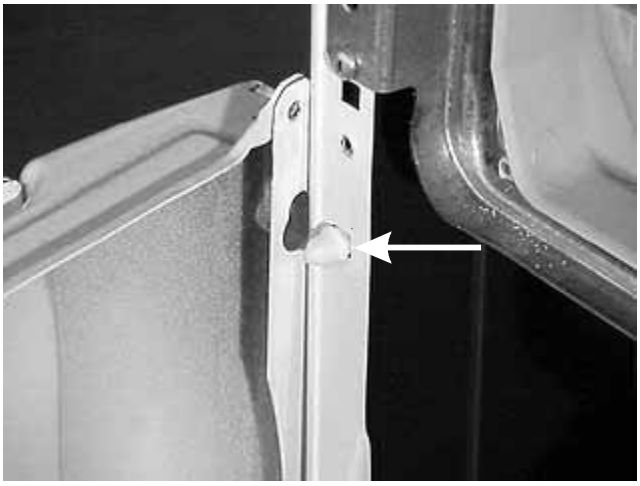


4. Remove the (3) screws holding the front panel to the front console mounting brace and side panels.

5. Remove the (2) 5/16" hex head screws holding the bottom of the front panel to the side panels.



6. Lift up on the front panel to disengage the (2) pins (one in each side panel) the front panel hooks over.



## Removing the console mounting brace:

1. Disconnect the washer from the electrical supply, remove the console and front panel.

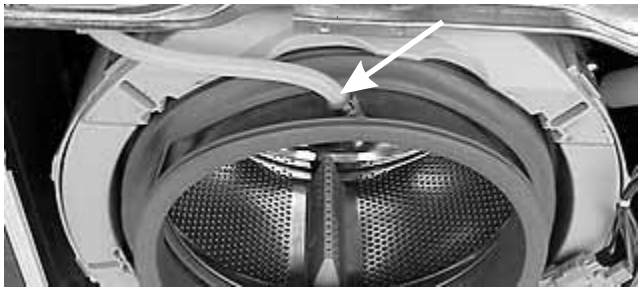
2. Release the wiring harness from the back of the brace. Remove the (6) screws, one at the top and two in the front on each side, holding the brace to the side panels.

3. Release the (2) tabs on the dispenser drawer housing, one on each side, and pull the brace forward.

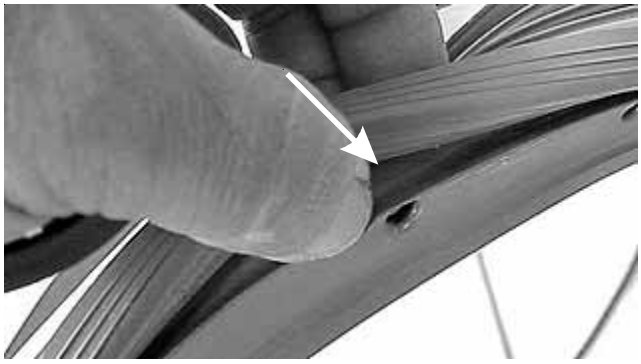
## Removing the bellows (door boot):

1. Disconnect the washer from the electrical supply and remove the front panel.

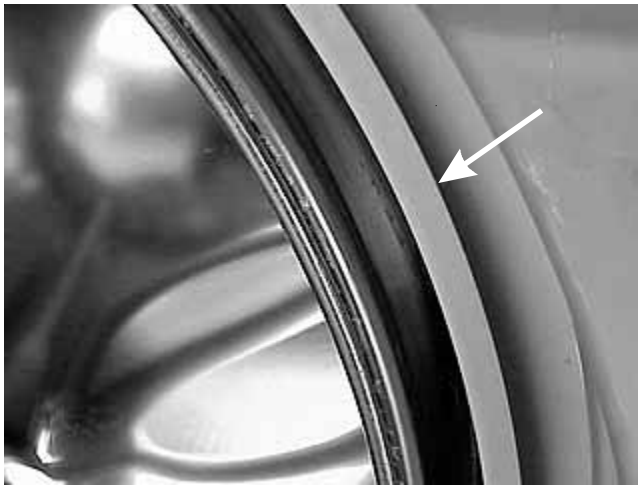
2. Release the hose clamp and remove the hose from the top of the bellows.



3. A groove in the rear of the bellows

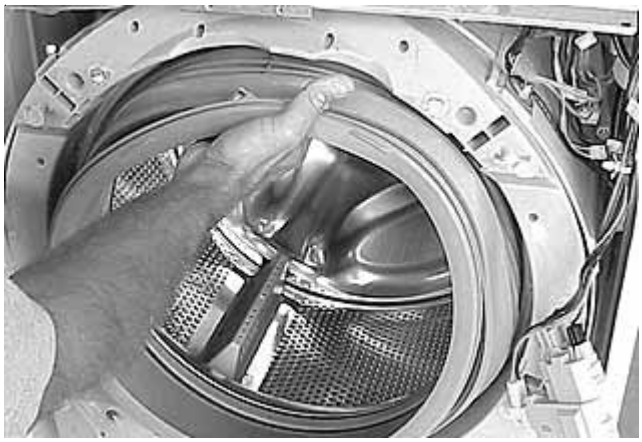


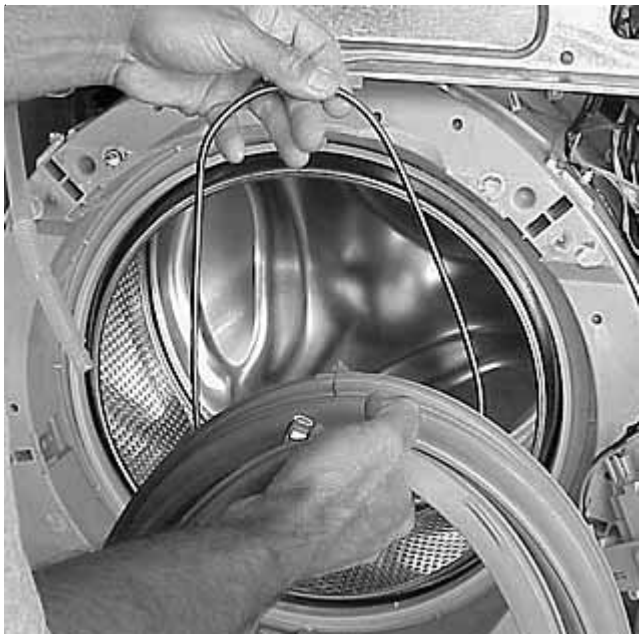
is placed over the lip of the outer tub



and held in place by a spring loop.

4. Remove the bellows by placing your hand under the bellows at the top of the opening and lift up while pulling out.

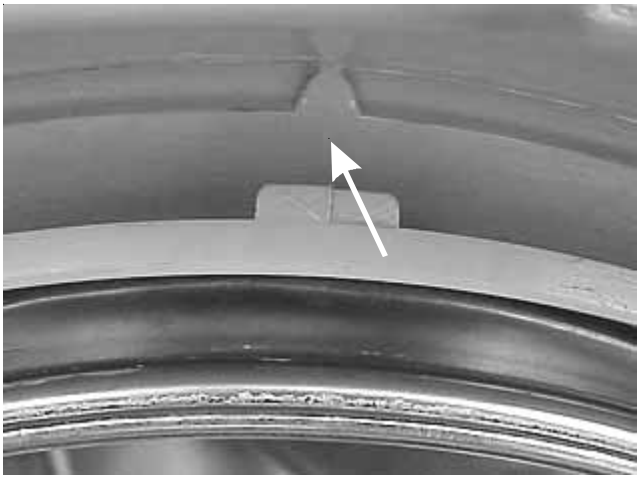




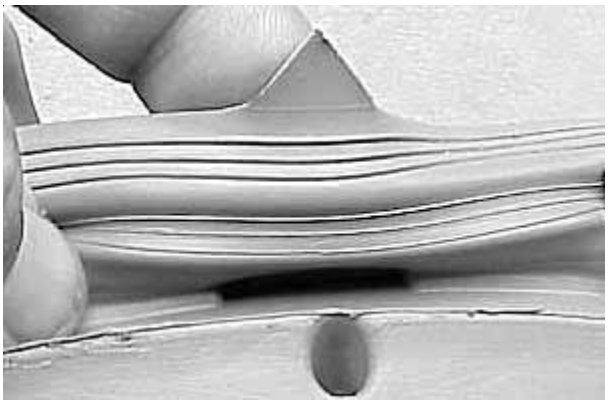
## Reinstalling or replacing the bellows:

1. Use liquid dishwasher soap to lubricate the groove on the bellows to make it easier to slip lip of the bellows onto the lip of the tub.

2. There is a tab and an arrow on the top of the tub lip



and a slot in the groove and an arrow at the top of the bellows.

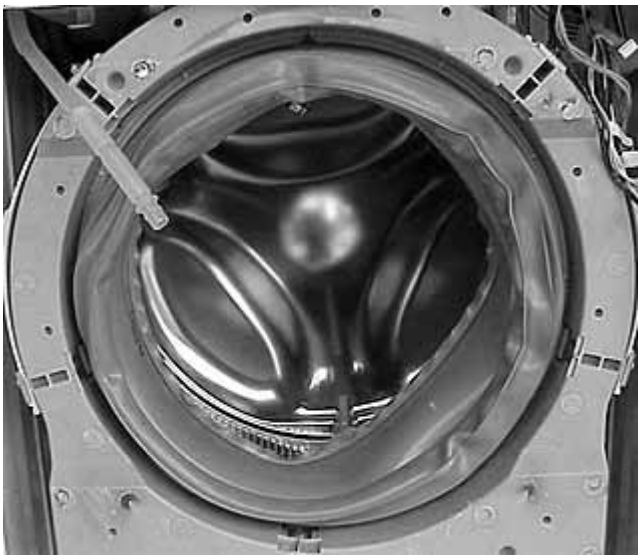


3. Place the slot over the tab and, while holding the bellows in place with one hand, place the other hand inside the bellows and force the groove of the bellows over the lip of the tub with your thumb.

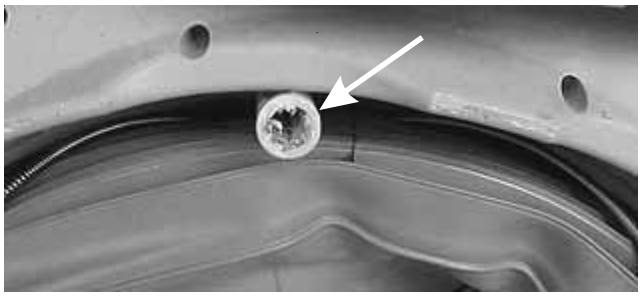
4. Work your way about one third way around the tub then pull in on the inside flap of the bellows to seat the bellows into the lip of the tub.

5. Using your thumb, start on the other side of the top tab and force the bellows on in the other direction. About one third of the way around, stop and seat the bellows onto the tub lip. Then force the remaining bellows on with your thumb and seat it.

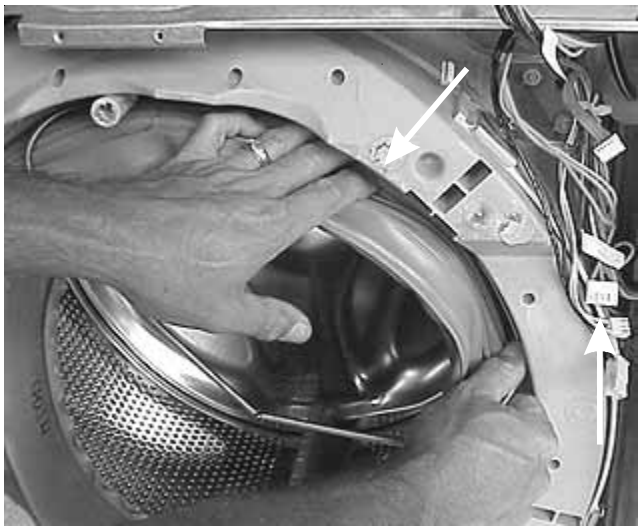
6. To install the spring, fold the front of the bellows back into the tub.



7. Place the spring in the groove at the top of the bellows and wedge a round object, about 3/4 " in diameter, between the weight ring and the bellows to hold the spring in the groove.



8. Pull the spring with one hand while working it into the groove with the other.



9. Remove the wedge, unfold the bellows, and insert the advance rinsing technology hose.

## Removing the weight ring:

1. Disconnect the washer from the electrical supply, remove the front panel and disconnect the advance rinsing technology hose from the bellows.

2. Using a 7/16” socket, remove the (5) bolts holding the weight ring to the outer tub and slide the weight ring off the outer tub front.

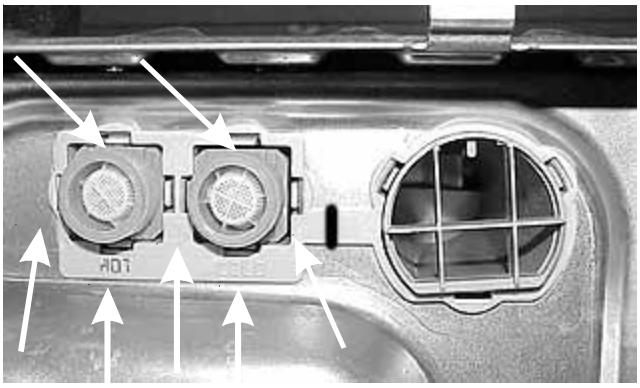
## The water inlet and overflow/vent tube grommet:

**Note: The water inlet and overflow/vent tube grommets are connected for ease of installing during manufacturing and can be separated by cutting the thin wall joint section for removal in the field.**

## Removing the water inlet grommet:

1. Disconnect the washer from the electrical supply, remove the top panel and cut the thin wall joint section between the water inlet and the overflow/ vent tube grommet.

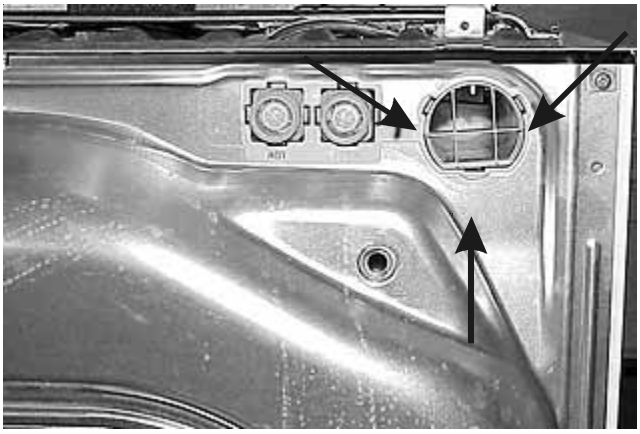
2. Using a small common screw driver release the (8) locking tabs around the water inlet tubes while pushing on the grommet rim from inside the washer.



## Removing the overflow/vent tube grommet:

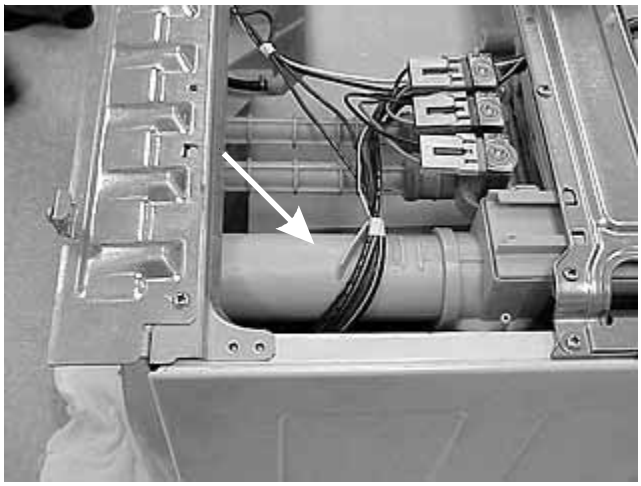
1. Disconnect the washer from the electrical supply, remove the top panel and cut the thin wall joint section between the water inlet and the overflow/ vent tube grommet.

2. Using a small common screw driver release the (3) locking tabs around the overflow/vent tube while pushing on the grommet rim from inside the washer.

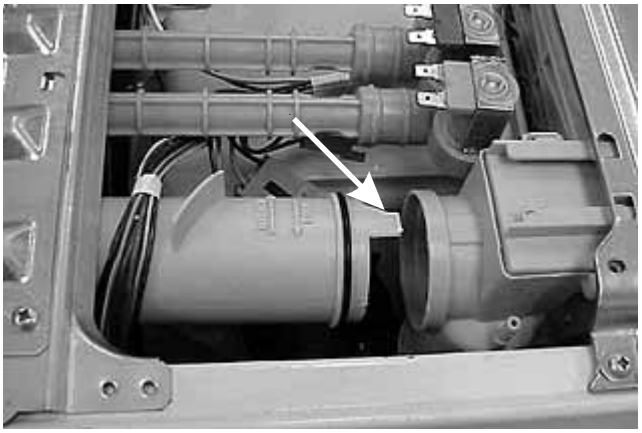


## Removing the overflow/vent tube:

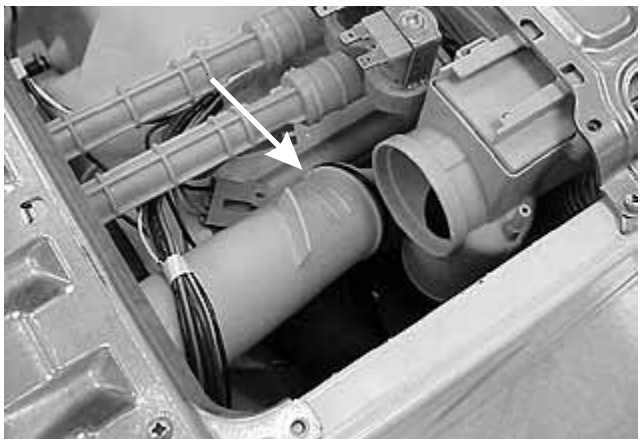
1. Disconnect the washer from the electrical supply remove the top panel and remove the overflow/ vent grommet.



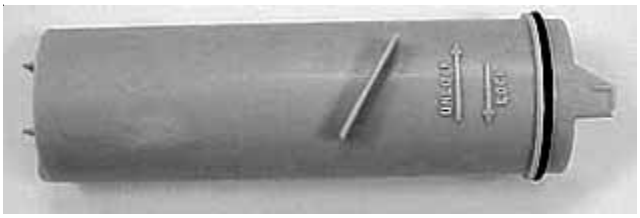
2. Turn the tube counterclockwise about a 1/16 of a turn to unlock the tube. Pull the tube back to disengage it from the detergent dispenser housing.



3. Push the front of the tube down and forward toward the water inlet valve assembly until the tube clears the rear panel.



4. Drop the rear of the tube down, slide the tube back and lift the tube out.



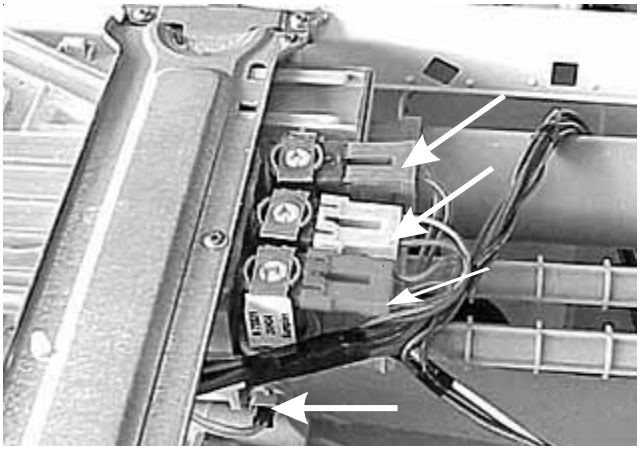
## Removing the water inlet valve assembly:

**Note: The water valves and water valve harness connectors are color coded; red, green and blue. When reconnecting, match the color on the harness connector to the color of the valve.**

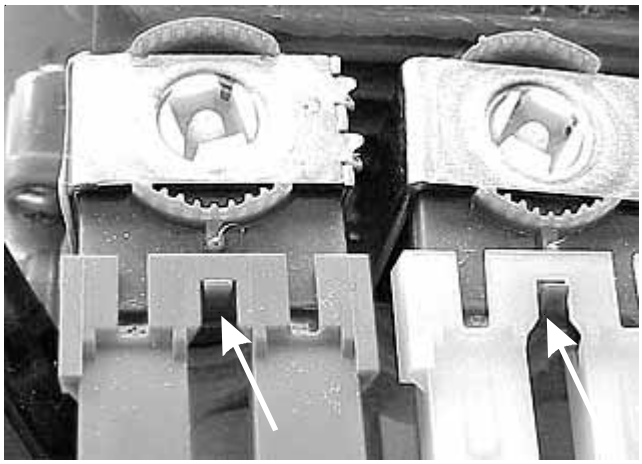
1. Disconnect the washer from the electrical supply and the hot and cold water hoses.

2. Remove the top panel, water valve and overflow/ vent grommet and the overflow/vent tube.

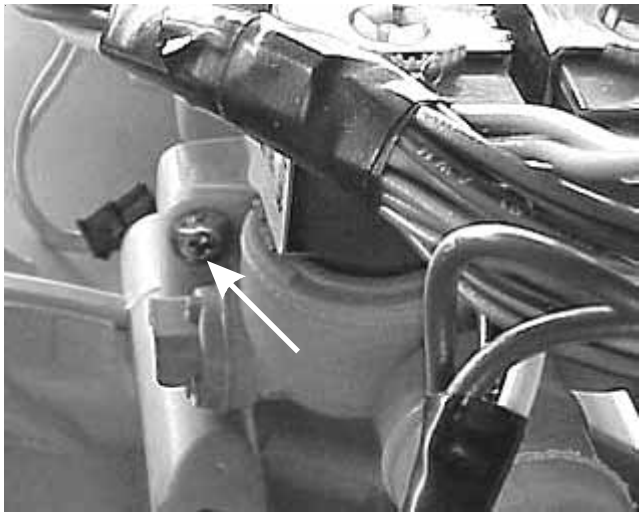
3. Unplug the wiring harness from the valves.



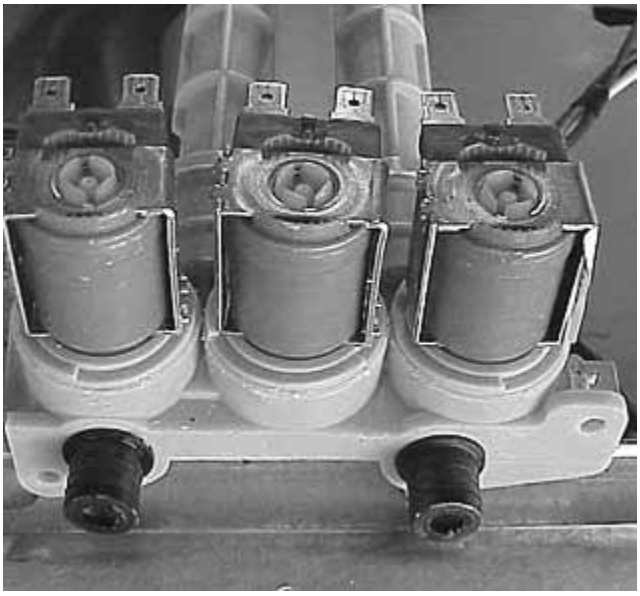
**Note: The water valves harness has locking plugs.**



4. Remove the (2) screws, one on each side, holding the water inlet valve assembly to the detergent dispenser housing.



5. Pull back on the valve assembly to disengage it from the detergent dispenser housing and lift out.

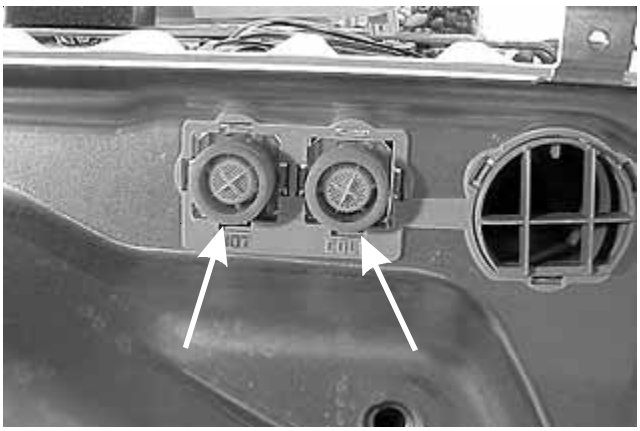


## Removing the water inlet screens:

Water inlet screens are located in the ends of the water inlet tubs to filter the incoming water. These screens can be removed for cleaning.

1. Disconnect the incoming water hoses.

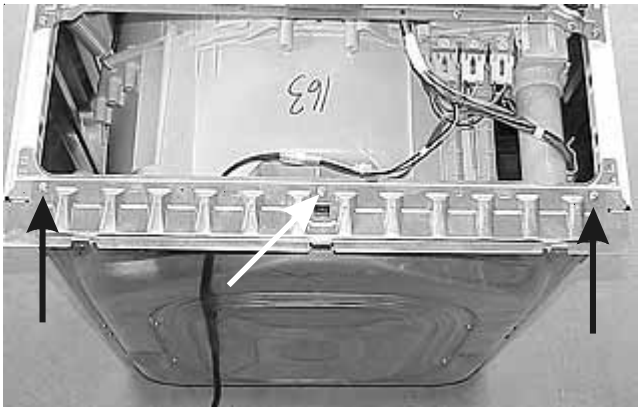
2. The screens have an **X** molded in them. Using pliers, grab one of the legs of the **X** and pull the screen out.



## Removing the top rear brace:

1. Disconnect the washer from the electrical supply and remove the top panel.

2. Remove the (3) screws from the top of the brace.



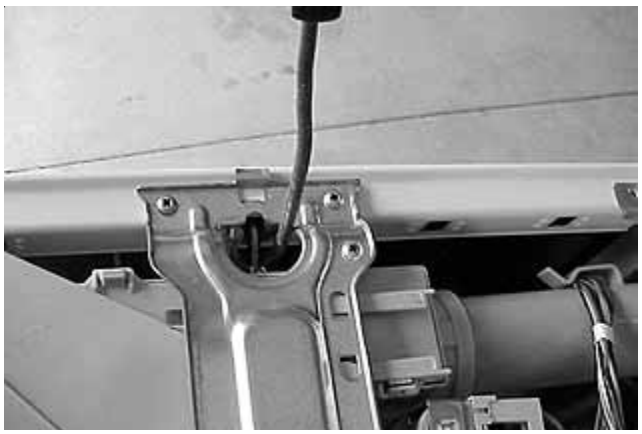
3. Remove the (2) screws from the rear of the brace.

4. Pull back to disengage the (2) tabs and lift the brace off.

## Removing the suspension springs:

1. Disconnect the washer from the electrical supply and remove the top panel.

2. Hook the top of the spring to raise it about 1" to release the top hook from center brace flange. Allow it to drop about 6" to relieve the spring pressure and then unhook the other end of the spring from the tub.

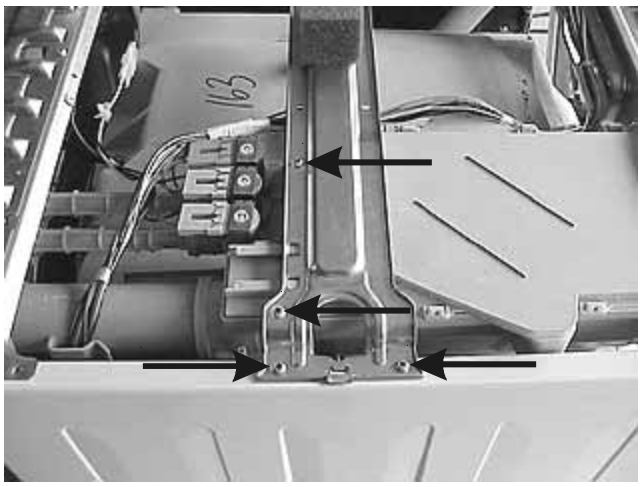


## Removing the top center brace:

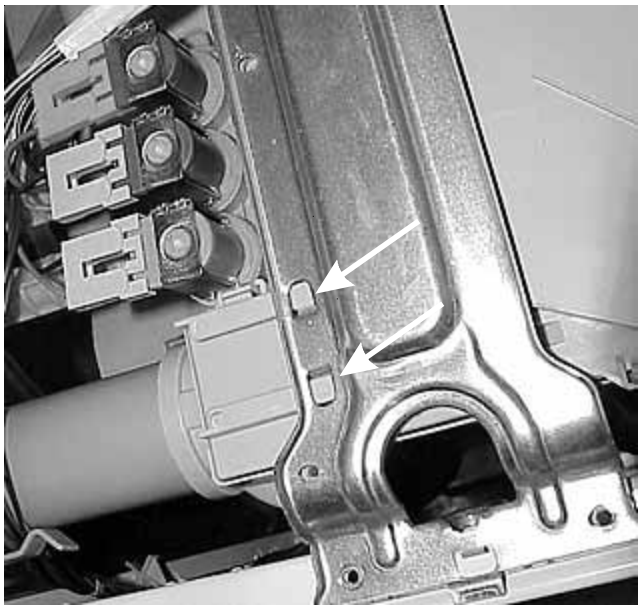
1. Disconnect the washer from the electrical supply and remove the top panel.

2. Release the tub springs and slide the water valve assembly back.

3. Remove the (4) screws, two on each end, and the (2) screws holding the detergent dispenser housing to the brace.



4. Raise the brace to disengage the tabs on the brace from the side panels. Slide the brace backward to release the tabs on the brace from the slot in the detergent dispenser housing.



## Removing the detergent cavity assembly:

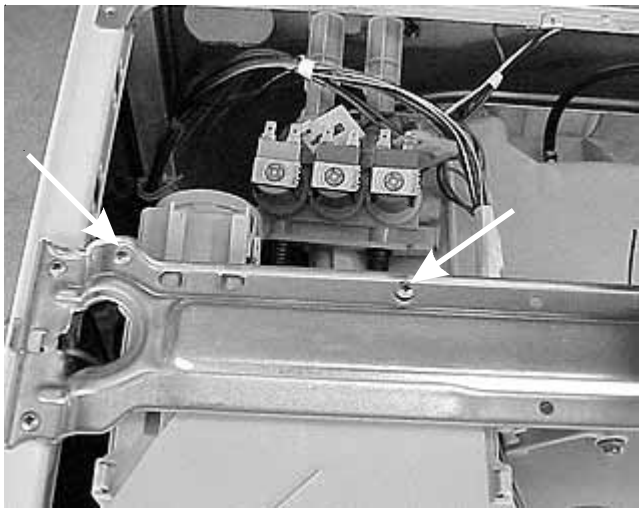
1. Disconnect the washer from the electrical supply, remove the drawer and the top panel.

2. Disconnect the water valve assembly and the overflow/vent tube and slide them back.

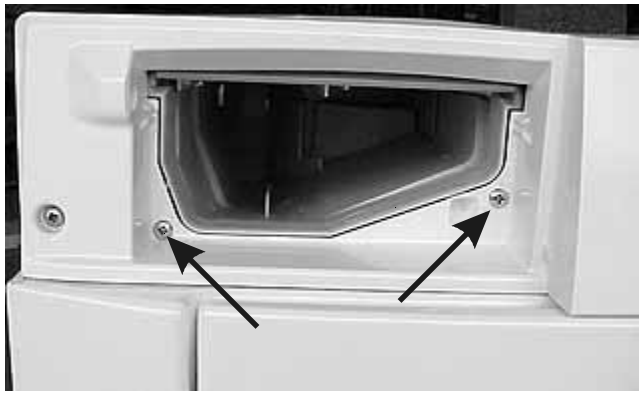
3. Release the wiring harness from the side of the housing.

4. Disconnect the detergent dispenser outlet hose.

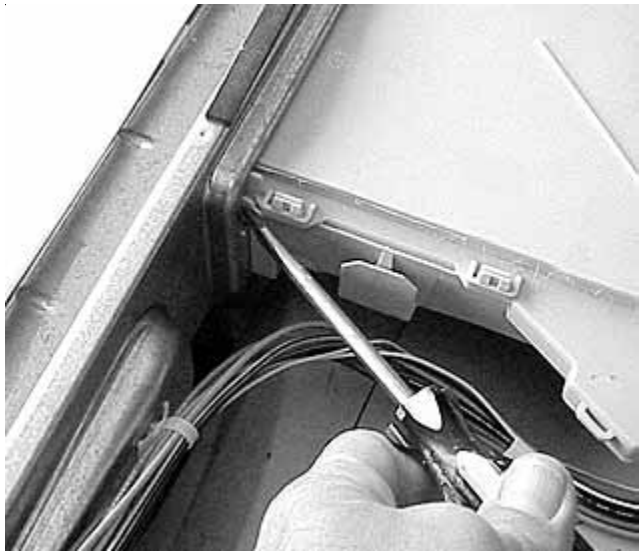
5. Remove the (2) screws holding the housing to the center bar.



6. Remove the (2) screws holding the housing to the console panel.

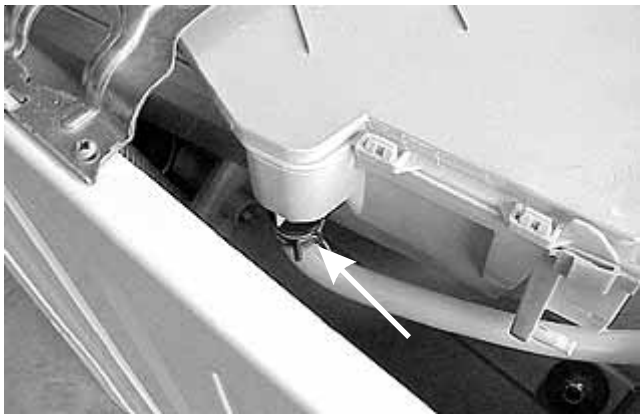


7. Release the (2) tabs, one on each side, locking the housing to the console mounting panel.

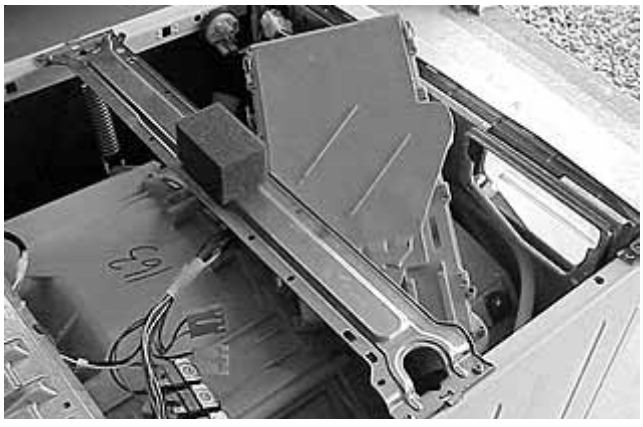


8. Slide the housing back until the tabs of the center cross bar release and the housing drops down.

9. Disconnect the hose.



10. Push down on the tub and swing the front of the housing toward the center of the washer. Work the housing out from under the center brace and lift the housing out.

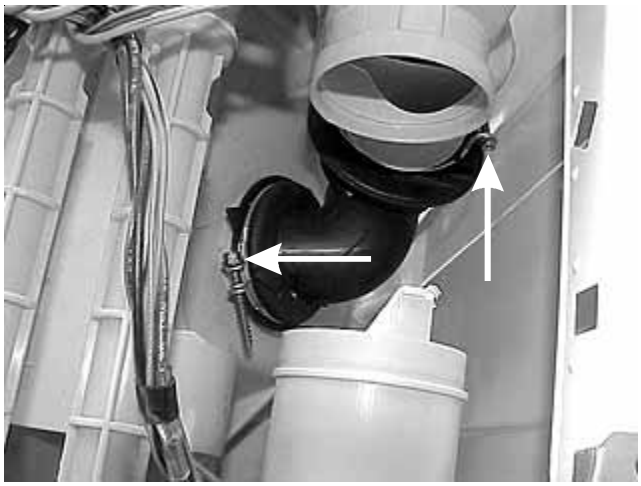


## Removing the detergent dispenser outlet hose:

1. Disconnect the washer from the electrical supply and remove the top panel.

2. Release the overflow/vent tube and slide it back.

3. Loosen the (2) clamps, one on each end, and slide the hose off.



## Removing the siphon break hose:

1. Disconnect the washer from the electrical supply and remove the top panel.

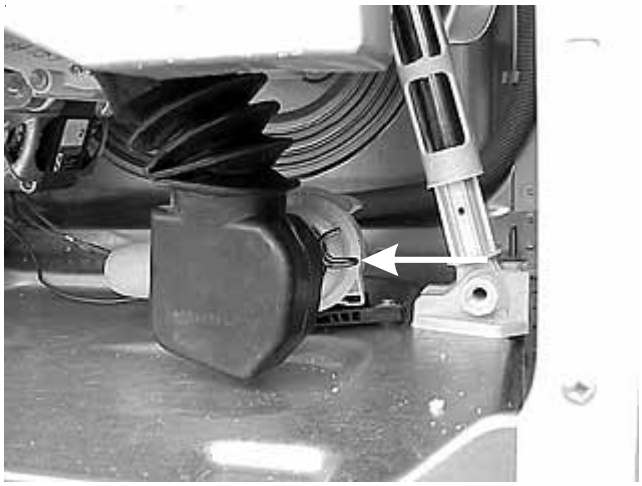
2. Release the (2) clamps, one on each end, and slide the hose off.


## Removing the drain sump:

1. Disconnect the washer from the electrical supply and remove the front access panel.

2. Loosen the clamp at the tub.

3. Release the clamp at the pump.



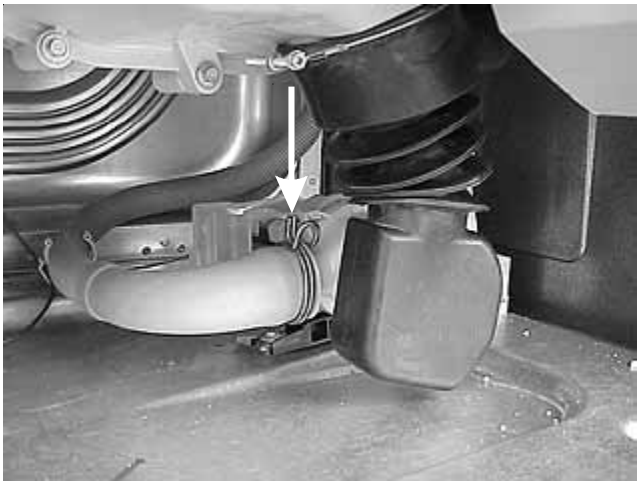
4. Slide the hose off of the tub and pump to remove the sump.

## Removing the hose between the drain pump and the drain hose coupler:

1. Disconnect the washer from the electrical supply, remove the top panel and the front access panel.

**Note: There will be water in the pump and hose.**

2. Release the clamp and slide the hose off the drain pump.

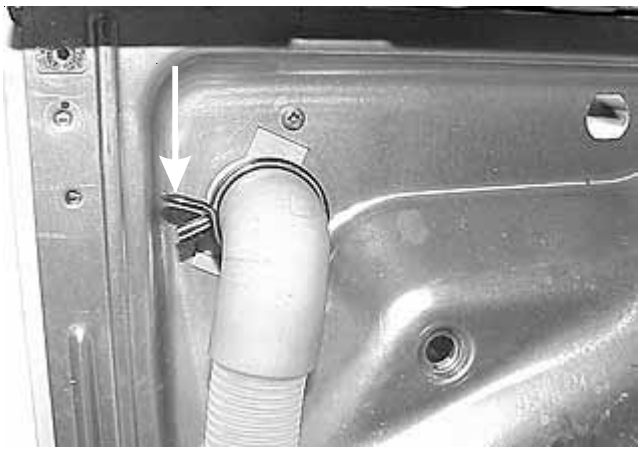


3. Release the clamp and slide the hose off the drain hose coupler.

5. Release the hose from it's guides and pull the hose out.

## Removing the external drain hose:

1. Release the clamp and pull the hose off the coupler.



## Removing the drain hose coupler:

1. Disconnect the washer from the electrical supply and remove the top panel.

2. Disconnect the (2) drain hoses and the siphon break hose.

3. Remove the screw holding the coupler to the rear panel.

## Removing the rear access panel:

1. Disconnect the washer from the electrical supply.

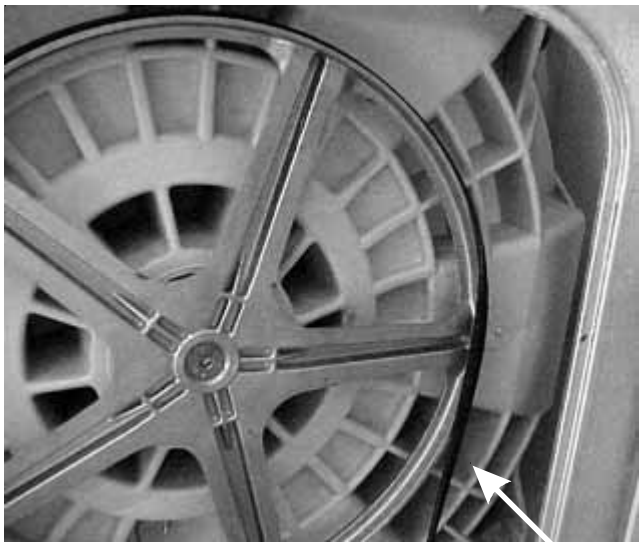
2. Remove the (6) screws holding the rear access panel to the washer's rear panel and lift the access panel off.

## Drive belt:

The drive belt (6 rib flat Poly-V) is used to transmit power from the motor pulley to the tub. The belt is constructed of a material that stretches which makes belt tension adjustments unnecessary.

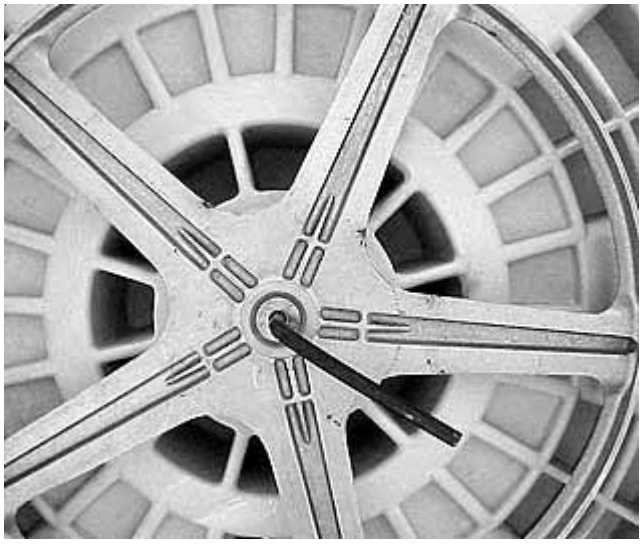
## Removing or replacing the drive belt:

1. Disconnect the washer from the electrical supply and remove the rear access panel.
2. Remove the belt by turning the tub drive pulley and rolling the belt off the pulley. The belt is elastic and is designed to "give" enough to remove and install in this manner.



## Removing the large pulley:

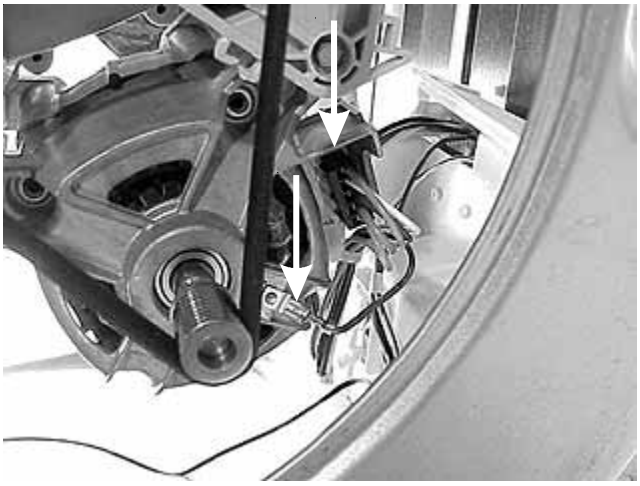
1. Disconnect the washer from the electrical supply.
2. Remove the rear access panel and the belt.
3. Using a #6 mm allen wrench, remove the bolt in the center of the pulley by holding the pulley and turning the wrench counterclockwise.



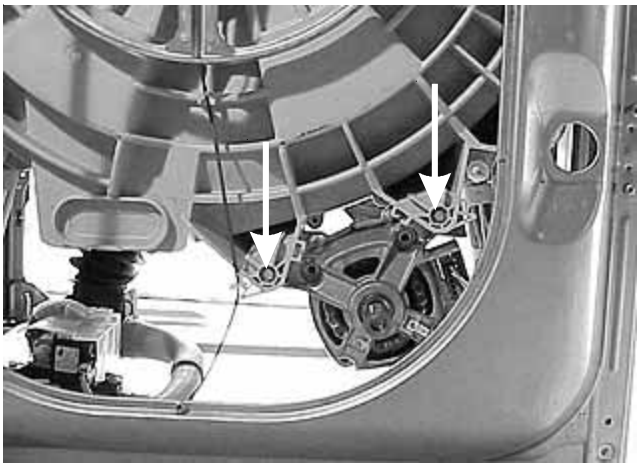
4. Work the pulley back and forth to remove it from the shaft.

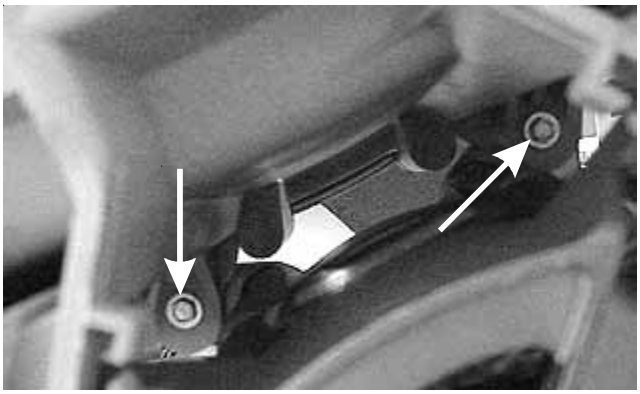
## Removing the drive motor:

1. Disconnect the washer from the electrical supply, remove the rear access panel and the belt.
2. Disconnect the electrical plug and the ground wire from the motor.

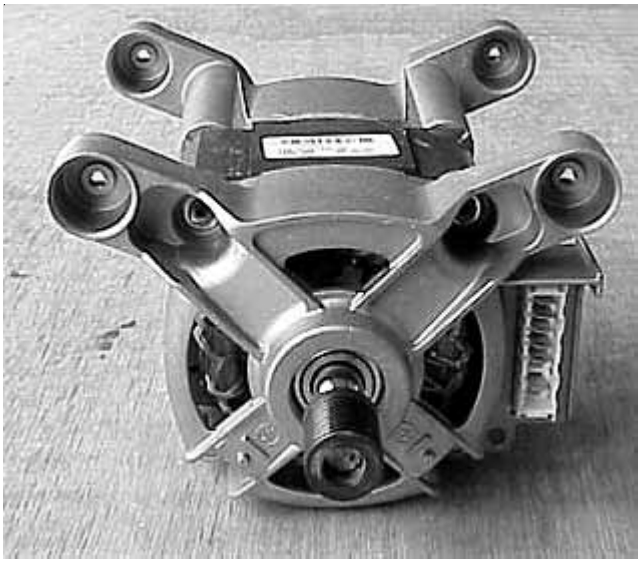


3. Using a 5/16” socket, remove the (4) bolts, two in the front and two in the rear, that secure the motor to the outer tub.





4. Slide the motor forward while supporting to remove.

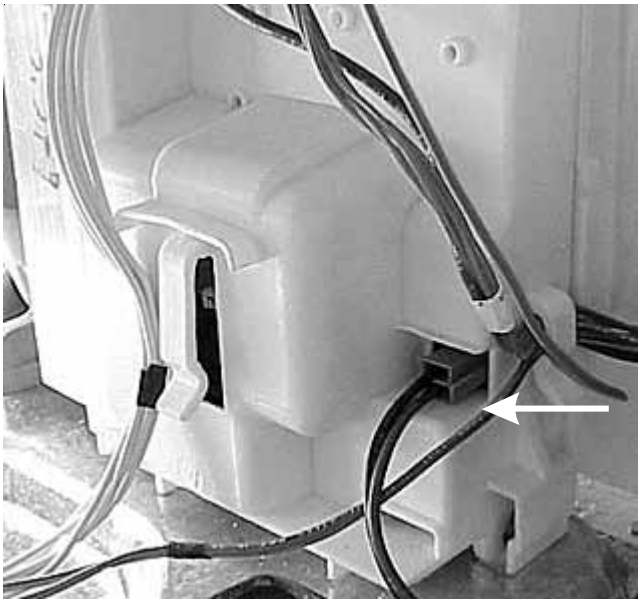


5. Reverse procedure to reinstall, making sure that belt tracks in the center of the large pulley. Adjust by moving belt on motor pulley if required.

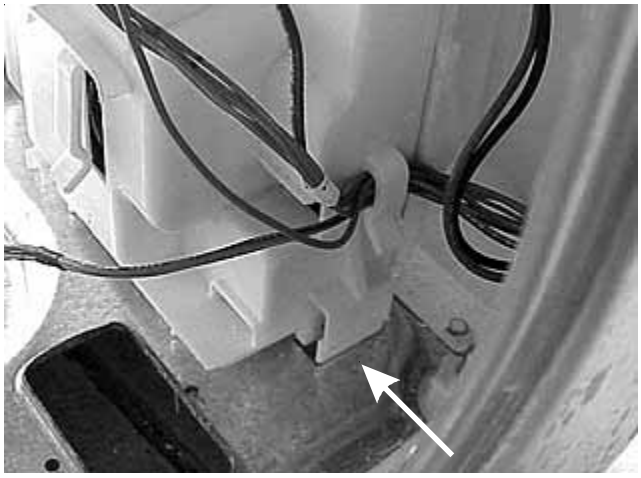
## Removing the speed control board assembly:

1. Disconnect the washer from the electrical supply and remove the front and rear access panels.

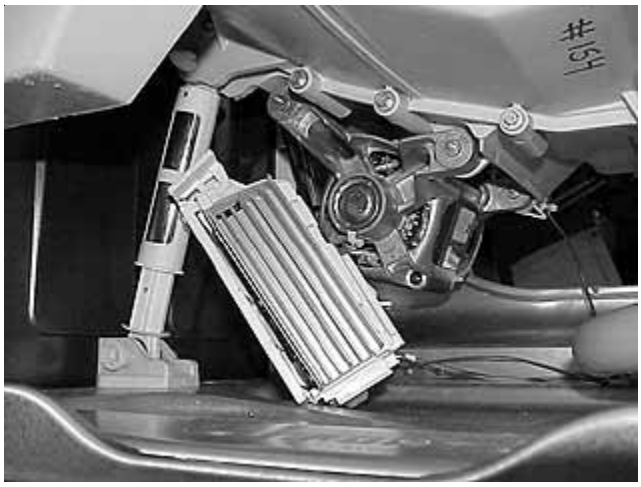
2. Unplug the (2) terminal plugs from the lower front.



3. Disconnect the wire harness and release the spring loaded locking tab on the side of the control board house. Lift the side of the housing up, slide the assembly to the rear to disengage the front tab and lift the assembly away from the washer base.

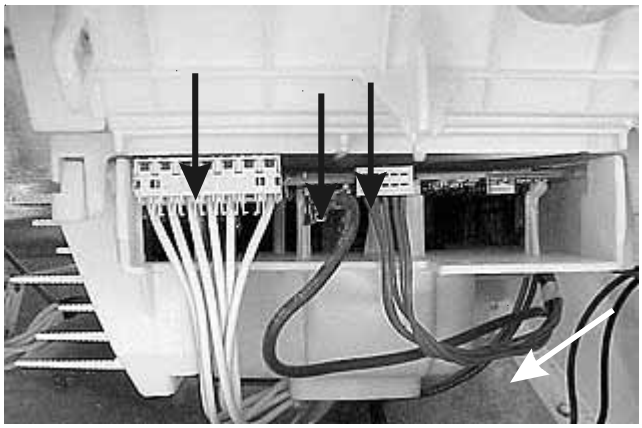


4. From the front of the washer tip the bottom of the assembly toward the motor and slide the assembly out between the shock absorber and the motor.



5. Release the latch on each end of the speed control housing and raise the top flap.

6. Unplug the (2) plugs and the ground wire and remove the speed control assembly from the washer.

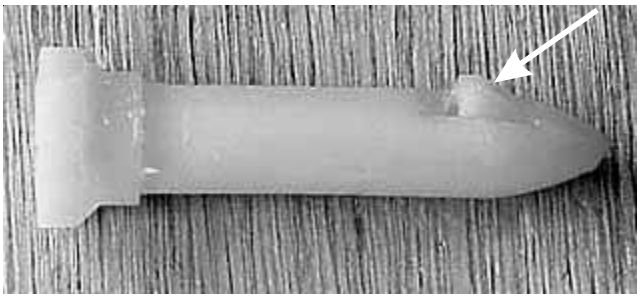


## Removing the right-hand air shock absorber:

1. Disconnect the washer from electrical supply.

2. Remove the front access panel.

3. Remove air shock securement pins by depressing locking tab while pulling pin to remove.



This procedure is much easier if a deep 1/2", 6 point socket (or 13 millimeter, 6 point) is used to compress the locking tab of the plastic pin. Push the socket onto the tapered end of the pin as far as it will go to compress the locking tab.

4. Use pliers to grasp head of pin and pull to remove. As the pin is removed the socket will drop free.

5. When replacing the air shock make sure to position it with the bell end facing downward.

## Removing the left-hand air shock absorber:

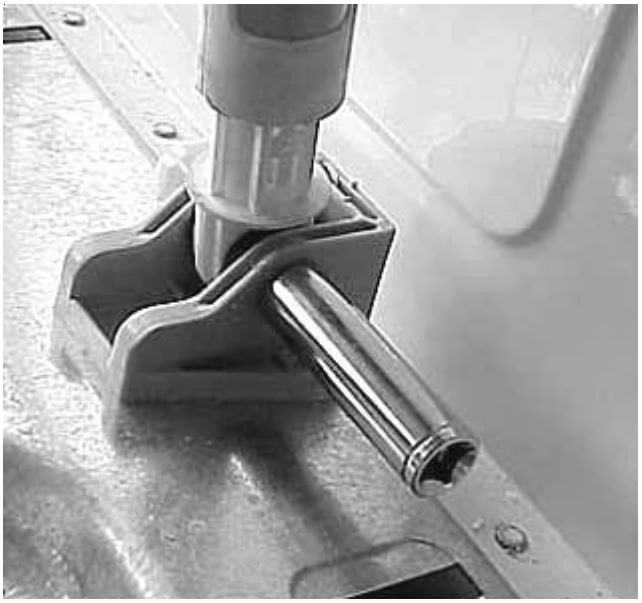
1. Disconnect the washer from electrical supply.

2. Remove the front and rear access panels.

3. Remove the speed control board assembly.

4. Remove air shock securement pins by depressing locking tab while pulling pin to remove.

   This procedure is much easier if a deep 1/2", 6 point socket (or 13 millimeter, 6 point) is used to compress the locking tab of the plastic pin. Push the socket onto the tapered end of the pin as far as it will go to compress the locking tab.

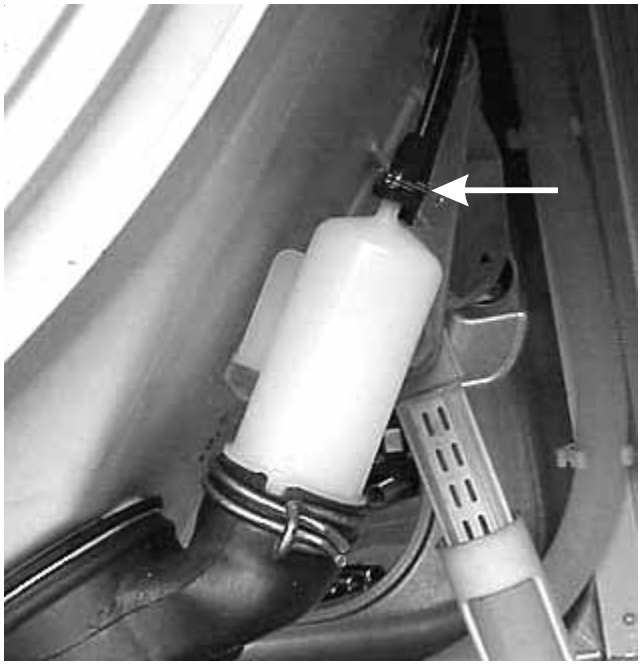


5. Use pliers to grasp head of pin and pull to remove. As the pin is removed the socket will drop free.

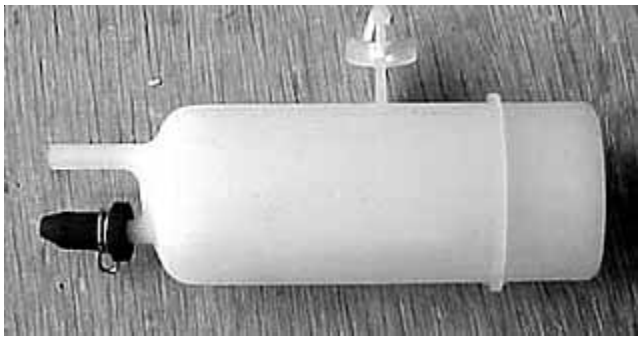
6. When replacing the air shock make sure to position it with the bell end facing downward.

## Removing the air bell:

1. Disconnect the washer from the electrical supply and remove the front access panel.
2. Remove the (2) hoses, one from each end.



3. Release the rivet holding the air bell to the outer tub.



**NOTE: Seal air connecting tube to air bell and air bell to sump hose using waterproof glue. DO NOT plug air connecting tube opening.**

## Removing the tub assembly:

1. Disconnect the washer from the electrical supply and the hot and cold water hoses.

2. Remove the top panel, console, front and rear access panels and the front panel.

3. Disconnect the hose from the bellows, the detergent outlet and siphon break hoses from the outer tub.

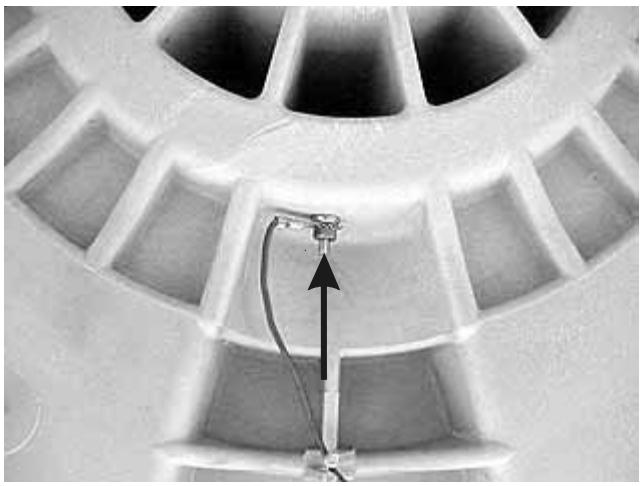
4. Remove the drain pump and disconnect the drain sump from the tub.

5. If you are going to replace the front half of the outer tub remove the bellows and the weight ring.

6. Remove the small hose from the air bell.

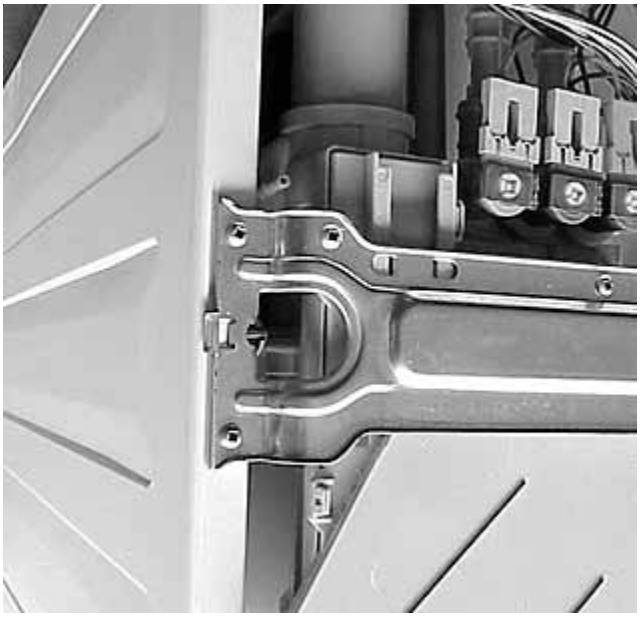
7. Remove the large pulley, drive motor and speed control board assembly.

8. Disconnect the bearing ground wire.

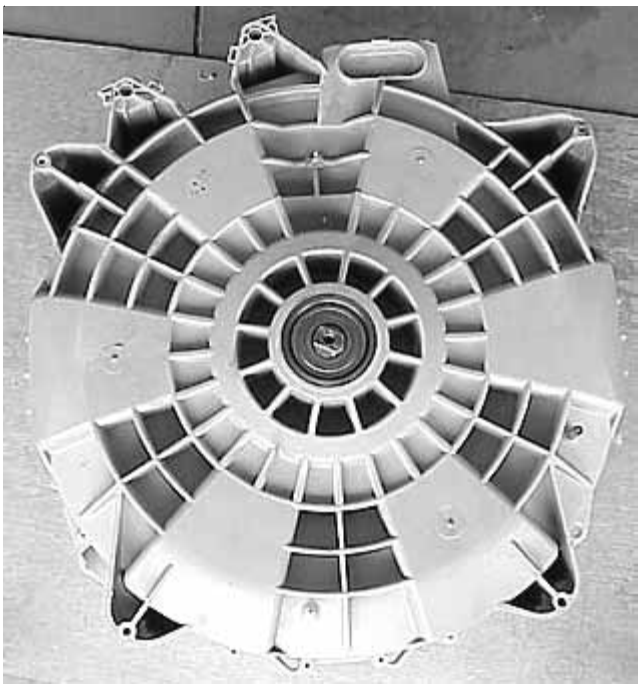


9. Remove the top pins from shock absorbers and push the shock absorbers against the cabinet.

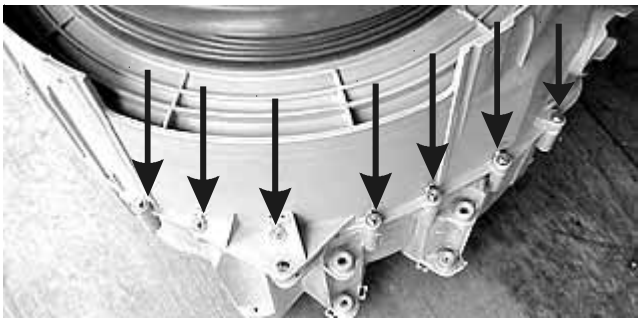
10. Place something down to protect the floor and carefully turn the washer on it's face to release the springs.



11. Lift the cabinet off the tub.



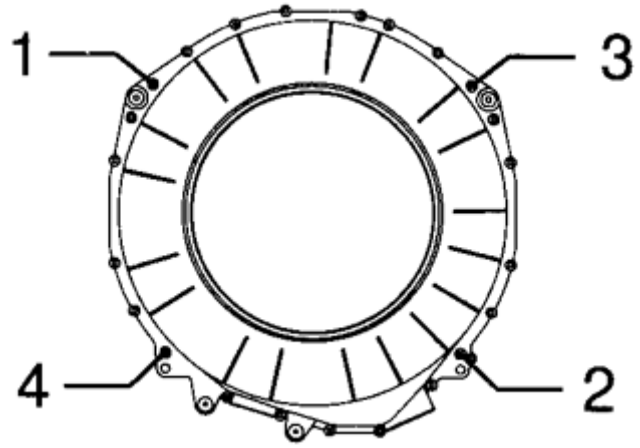
12. Turn the tub over and remove the (23) screws holding the two halves of the tub together.



13. Lift the front half of the tub off the assembly.

**CAUTION: Use caution in handling the spin basket. The outer surface is very sharp!**

14. Reverse procedure to reassemble using illustration below to show outer tub screw tightening sequence.



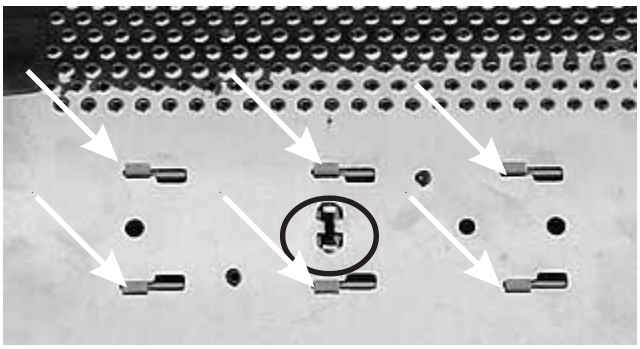

15. The seal between the (2) tub halves is placed in the groove of the rear half and can be lifted out.

16. To remove the spin basket, set the back half of the outer tub on it's side, reinstall the screw that secured the large pulley to the shaft. Tap the inner tub out with a rubber hammer.

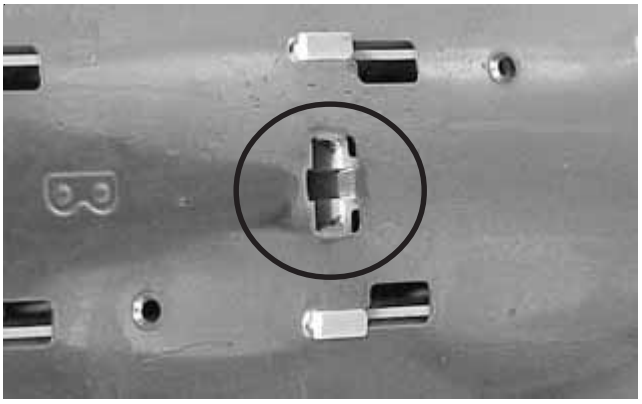
**Note: The bearings, water seal and seal between the two tubs come as part of the rear half of the outer tub. If the water seal or bearings fail, inspect and, if necessary, dress shaft of the spin basket with a file. With some failures it will be necessary to replace the spin basket.**

## Spin basket vanes:

Three plastic vanes are mounted to the spin basket to aid in the washing action during the wash cycle. Each vane has (6) tabs that slide into (6) slots in the spin basket.



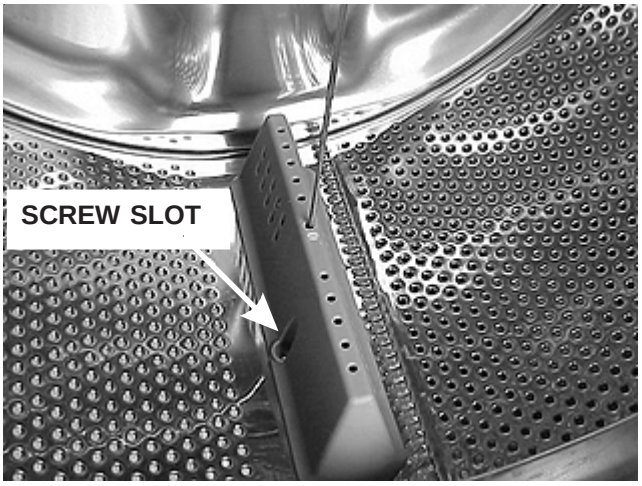
Each vane is locked in place by (4) tabs pressed out of the spin basket.



## Removing the spin basket vanes:

1. Open the washer's loading door.

2. Insert a small shaft common screwdriver into the hole in top of the vane behind the divided space and push the (4) locking tabs open.




3. Slide the vane toward the door opening to release the (6) tabs and push on the side of the vane to remove.

4. When replace or reinstalling, lock the vane in place with a stainless steel screw through the slot in the side of the vane.

## CONSUMER ERROR CODE CHART

If the washer stops and the signal beeps periodically, consult the Error Code Chart below or the "Avoid Service Checklist" in the Owner's Guide for the possible cause and solution. To stop the beeping, press the PAUSE/CANCEL button. If Control Lock is on when an Error Code occurs, the controls will unlock. Make correction, then select a cycle and press START. If the error code flashes again and the beeping continues, please contact service for assistance.

| Beeps | Error | Possible Causes | Solutions |
|---|---|---|---|
| 1 | Water doesn't enter | Water supply to the home is interrupted.<br>Water pressure is too low.<br>Water may not be turned on or faucet may not be fully opened.<br>Hoses are kinked. Drain pipe is below minimum height of 24". | Check to see if water flows adequately from other faucets in the home; wait for service to be restored.<br>Avoid running water in other areas of the home when doing laundry.<br>Fully open supply faucets to washer.<br>Straighten hoses.<br>Raise height of bend in drain hose to a minimum of 24". |
| 1 | Water leaks | Hose connections are loose.<br>Household drain is clo gged.<br>Oversudsing. | Tighten inlet hose connections at faucets and washer.<br>Unclog household drain.<br>Use high efficiency detergent in amount recommended on label. |
| 2 | Water doesn't drain | Drain hose is kinked.<br>Household drain is clogged. | Straighten hoses.<br>Unclog household drain. |
| 3 | Drum Overfilled | Inlet valve, pressure switch or control board failure | Do not open door, select Drain/Spin to remove water.<br>Restart cycle. |
| 4 | Door is open | Washer will not operate if the door is open. | Close washer door. |
| 5 | Motor is overheated | Washer motor stops if overheated. | Wait 30 minutes for motor to cool down. |
| 7 | Cold water doesn't enter washer | Cold water hose is connected to wrong faucet.<br>Cold water faucet is not turned on | Connect hose to cold water faucet and cold water inlet on washer.<br>Be sure cold water faucet is fully opened. |
| 15 | Oversudsing | A high efficienc y deter gent was not used.<br>Too much detergent was added. | Use only a high efficiency detergent. Follow manufacturer's recommendation for dosage.<br>Amount may need to be adjusted for water temperature, water hardness, load size and soil level. |
| 15 | Hot water doesn't enter | Hot water hose is connected to the wrong faucet.<br>Hot water faucet is not turned on | Connect hot water hose to hot water faucet and hot inlet on washer.<br>Be sure hot water faucet is fully opened. |