



*GE Consumer Service Training*

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# Technician Manual

## **GE Built-in Dishwashers Generation-II Value & Smart Models E4 and E5 Controls**

GSD4230X

GSD4430X

GSD4930X

GSD4220X

GSD4420X

GSD4920X

GSD4210X

GSD4410X

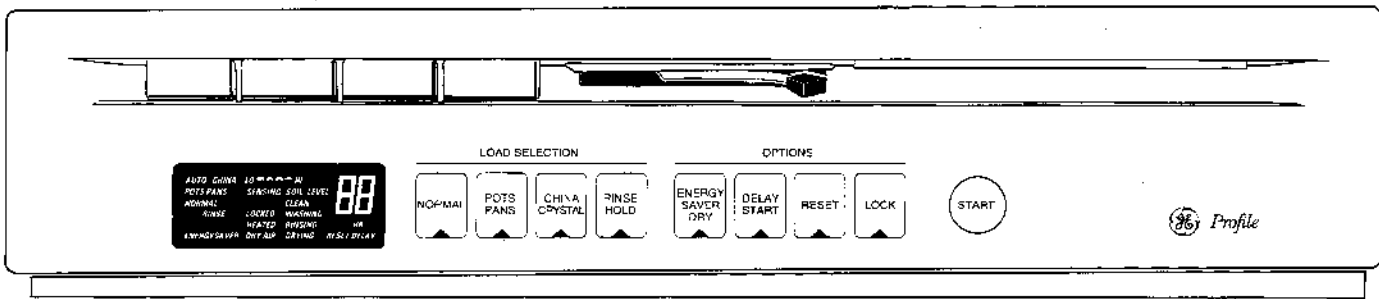
GSD4910X

DWS95

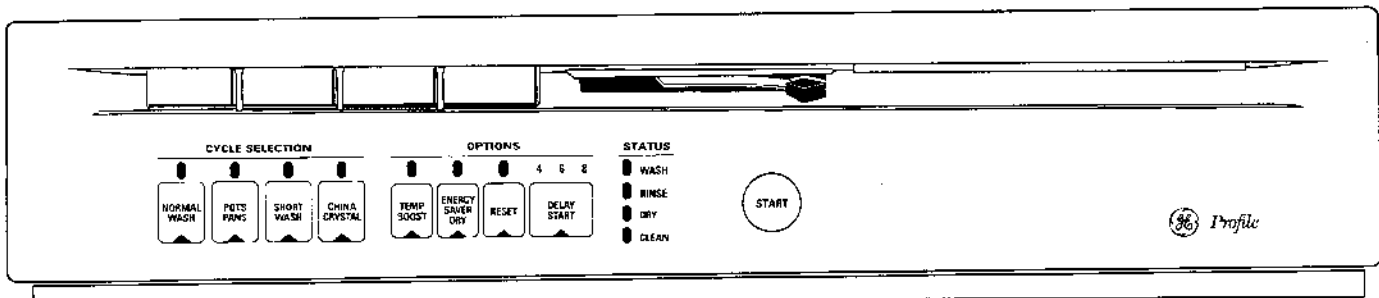
Pub. No. 31-3281

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## CONTROL PANELS AND FEATURES PAGE



GSD4930X, GSD4920X, GSD4910X, GSD4430X, GSD4420X, GSD4410X, Smart Models



GSD4230X, GSD4220X, GSD4210X, Value Models

Features	GSD4930X GSD4920X GSD4910X	GSD4430X GSD4420X GSD4410X	GSD4230X GSD4220X GSD4210X
Cycle Start	Touch Pad	Touch Pad	Touch Pad
Delay Start	14 hours	14 hours	4/6/8 hours
Lock	Yes	Yes	No
Indicator Lights	VF	VF	LED
Calrod Watts	500	500	500
Water Heater Extender	Yes	Yes	Yes
Wash Levels	3	3	3
Mid-level Wash	4 pc. tower	4 pc. tower	4 pc. tower
Lower Wash Arm	Smart Wash	Smart Wash	Smart Wash
Filter System	Yes	Yes	Yes
Quiet Water Valve	Yes	Yes	Yes
Inner Door Extension	Yes	Yes	Yes
Induction Motor and Cap.	Yes	Yes	Yes
Active Vent	Yes	Yes	No
Turbidity Sensor	Yes	Yes	No
Auxiliary Pump	Yes	No	No
Warranty	1/2/5/20	1/2/5/20	1/2/5/20
Wood Panel Trim Kits	GPF45 for 1/4" Insert and GPF46 for 3/4" Insert – All models		

## GEN II DISHWASHERS

Several new dishwasher model lines known as GEN II are being distributed during January 1995. There are two basic model families, Smart and Value. The Smart dishwashers will have an E-4 control and several new and improved components to clean dishes more efficiently and quietly. The Value model line will have the E-5 control and several of the new features that are being introduced with this model line. The main distinction between the two will be the turbidity sensor that is on the Smart models.

### FEATURE DESCRIPTION

### TOUCH PADS

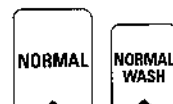
#### POWER UP – LOSS OF POWER

At power up or after a power failure the RESET option pad (Value – E5) will flash.  
On the Smart /E4 models PF-RESET will be in the display.

#### Smart Value

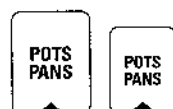
#### NORMAL WASH

This cycle is for most loads of everyday dishes, glasses and cookware with medium soil levels.



#### POTS/PANS

For washing items such as pots, pans and casserole dishes with dried-on or baked-on soils, use this feature. This cycle will get heavily soiled dishes cleaner than the medium cycle. It will *not* remove burned on foods.



#### SHORT WASH

For most loads of everyday dishes, loads consisting mostly of glasses with medium soil levels that have not dried on.



#### RINSE/HOLD

For rinsing partial loads that will be washed later, detergent *is not* used during this cycle.



#### CHINA/CRYSTAL

For washing lightly soiled china and crystal. This wash action is softened by pumping air along with water to protect delicate items.



#### TEMP BOOST

This is an option for heavily soiled dishes. When selected, the wash cycle is extended while the dishwasher heats the water for the best washing and drying.



#### ENERGY SAVER

Putting the energy saver in the **off** position the control will turn the drying heating coil **on** for faster drying.



#### DELAY START

This feature allows the dishwasher to start at a later time, 8 hours on Value models and 14 hours on Smart models.



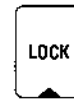
#### RESET

This allows the changing or ending of a cycle. It will pump water out, stop the dishwasher and be ready for reprogramming.  
Also, RESET must be pushed to remove any fault codes.



## LOCK (SMART MODELS ONLY)

Touching the lock pad twice within 3 seconds will disable all pads. The control can be locked after selecting and starting a wash cycle or selecting delay start without affecting the selected cycle. To unlock, touch the lock pad twice within 3 seconds.



## BEST RESULTS – HELPFUL HINTS

### HOT WATER

The dishwasher needs hot water for best results. **Water entering the dishwasher should be at least 120°F.** but the dishwasher performs **better** with **higher** water temperatures not to exceed 150°F.



### WATER HARDNESS

The hardness of the water plays an important part in how well the dishwasher cleans. In areas where water is very hard (12 grains or more), it may be necessary to install a water softener. If you do not know the hardness of the water supply, contact the local water department.



### DETERGENTS

Only use detergents labeled for use in automatic dishwashers. **▲**Never use laundry detergents or liquid soaps...that will cause oversudsing and leaks. The amount of detergent used depends on the water hardness and the amount of soil on the dishes. In most cases, detergent amounts should be increased for hard water and heavy soil.

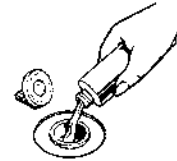


### RINSE AGENT

A rinse agent should always be used:

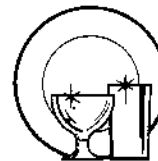
- to reduce water spotting
- to improve drying

Always check and refill the rinse agent when necessary.



### FOR BEST RESULTS

The cycles and the options chosen will have an effect on the results. The following are examples. (Please see the Operating Instructions, Tips for more information.)



### WASH TEMP BOOST OPTION

- use with heavily soiled loads
- extends cycle to heat water for best washing and drying



### POTS/PANS CYCLE

- use with dried or baked-on heavily soiled loads

### HEATED DRY OPTION

- assures faster drying
- be sure to use a rinse agent



## HOW TO CHOOSE AND USE THE RIGHT DETERGENT

Use only powder or liquid detergent specifically made for use in dishwashers. Other types will cause oversudsing.

**How much detergent should be used?** That depends. Is the water "hard" or "soft"? With hard water, you need extra detergent to get dishes clean. With soft water, you need less detergent.

**Your water department can tell you how hard the water is.** So can the county extension agent or the area's water softener company. Just call and ask them how many "grains" of hardness there are in the water. Hard water test strips – WX5X370.

Too much detergent with soft water not only wastes money, it can be harmful. It can cause a permanent cloudiness of glassware, called "etching." An outside layer of glass is etched away! Of course, this takes some time.

**Keep detergent fresh and dry.** Under the sink isn't a good place to store detergent because there is too much moisture. Don't put powder detergent into the dispenser until you're ready to wash dishes either. (It won't be fresh OR dry.)

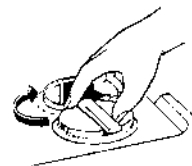
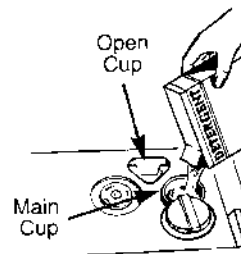
**If the powder detergent gets old or lumpy, throw it away.** Old detergent often won't dissolve. When using a liquid dishwasher detergent, these precautions are not necessary because liquid detergents don't "lump" as they age or come in contact with moisture, but can separate. Shake container. Follow manufacturer's instructions.

## DETERGENT DISPENSERS

There are two detergent dispensers on the inside door of your dishwasher. Two, because some cycles use two washes. See "Detergent Usage Guide" below.

Always close the main cup tightly. When it is firmly latched there is a clicking sound. It is not necessary to overtighten.

**NOTE:** To open the detergent cup after it has been closed, close and latch the door and touch the RESET pad three times within 3 seconds. The display will show dE RESET. When the display is blank, unlatch the door. (Smart models only)



Grasp handle, rotate and close tightly

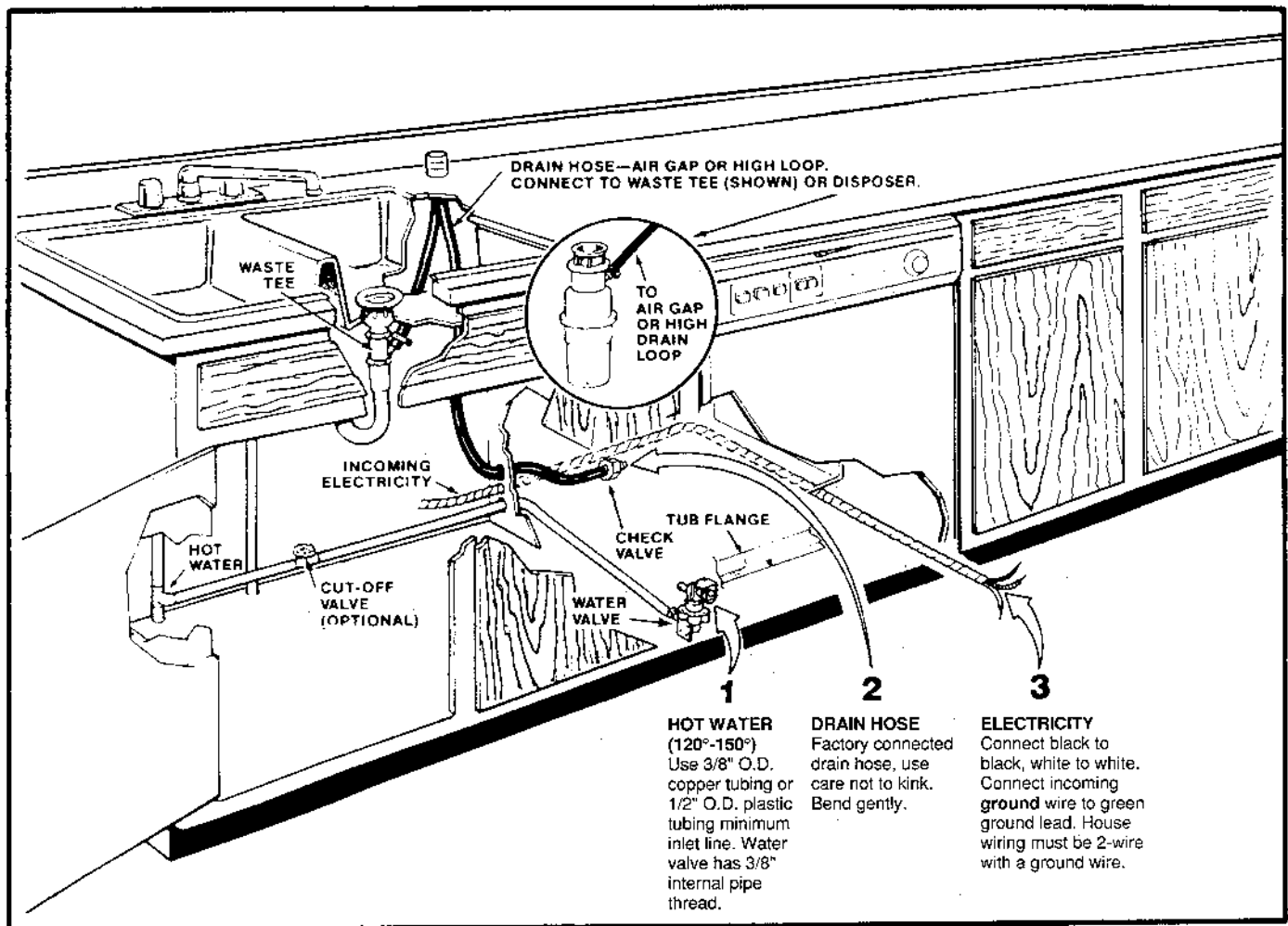
## DETERGENT USAGE GUIDE (powder or liquid)

	Soft Water (0-3 grains hardness)		Medium Water (3-7 grains)		Hard Water (7-12 grains*)	
CYCLES	Main Cup	Open Cup	Main Cup	Open Cup	Main Cup†	Open Cup†
NORMAL POTS/PANS	Half Full	+ Half Full	Completely Full	+ Half Full	Completely Full	+ Completely Full
CHINA/CRYSTAL	Half Full	None		None	Completely Full	None
RINSE/HOLD	Use no detergent		Use no detergent		Use no detergent	

\*12 grains and up is extremely hard water. A water softener is recommended. Without it, lime can build up in the water valve. The water valve may stick while open and cause flooding.

†Filled Main Cup holds 3 tablespoons; filled Open Cup holds 2 tablespoons.

## THREE INSTALLATION REQUIREMENTS



1. Water must be at least 120°F. Union to connect house hot water line to dishwasher water valve (not supplied) is usually 3/8" x 3/8" 90° elbow. Some local codes require a 1/2" water line.
  2. Drain hose must be routed to disposer or have a high loop to drain.
  3. 120 volts must be supplied through house wiring at dishwasher junction box (lower right side). Power (line) cords may be attached if used in accordance with electrical codes.
- NOTE: Ground is critical for proper control board operation (microprocessor).

## CYCLE SELECTION CHART – VALUE MODELS

Wash Cycles	Water Use Gallons (approx.)	Wash Cycle Time Minutes (approx.)	Cycle Sequence						
NORMAL WASH	9.1	53*		Rinse	Rinse	Main Wash	Rinse	Rinse	Rinse
POTS/PANS	10.6	68*	Rinse	Rinse	Rinse	Main Wash	Rinse	Rinse	Rinse
SHORT WASH	7.4	45*			Rinse	Main Wash	Rinse	Rinse	Rinse
CHINA/CRYSTAL	7.5	53*	Rinse	Rinse	Main Wash	Rinse	Rinse	Rinse	

\*Unextended times. These cycle times will be increased approximately 15 minutes if Temp Boost option is selected. ENERGY SAVER DRY off. Available on all wash cycles. Add 38 minutes to wash cycle time. ENERGY SAVER DRY on. Drying heater is turned off. Dishes dry naturally.

## CYCLE SELECTION CHART – SMART MODELS

Cycle	Soil Level	Cycle Sequences							Water Usage Gallons	Total Time Minutes	
NORMAL	Heavy LO- - - HI	PreWash/ PreRinse	PreRinse			Main Wash 22-37 min.	Rinse	Rinse	Rinse	9.3	58-73
NORMAL	Medium LO- - HI	PreWash/ PreRinse				Main Wash 15-30 min.	Rinse	Rinse	Rinse	7.6	44-59
NORMAL	Light LO- HI	PreWash/ PreRinse				Main Wash 12-27 min.		Rinse	Rinse	6.5	36-51
POTS/PANS	Extra Heavy LO- - - - HI	PreWash/ PreRinse	PreRinse	PreRinse	PreRinse	Main Wash 22-37 min.	Rinse	Rinse	Rinse	12.2	67-82
POTS/PANS	Heavy LO- - - HI	PreWash/ PreRinse	PreRinse	PreRinse		Main Wash 22-37 min.	Rinse	Rinse	Rinse	10.8	62-77
POTS/PANS	Medium LO- - HI	PreWash/ PreRinse	PreRinse			Main Wash 22-37 min.	Rinse	Rinse	Rinse	9.3	58-73
POTS/PANS	Light LO- HI	PreWash/ PreRinse				Main Wash 15-30 min.	Rinse	Rinse	Rinse	7.6	43-58
CHINA/ CRYSTAL	Medium LO- - - HI	PreWash/ PreRinse				Main Wash 15-30 min.	Rinse	Rinse	Rinse	7.4	42-57
CHINA/ CRYSTAL	Light LO- HI	PreWash/ PreRinse				Main Wash 9 min.		Rinse	Rinse	5.9	29
RINSE/ HOLD		PreWash/ PreRinse								1.5	7





### Drying Cycle Options:

ENERGY SAVER DRY off (HEATED DRY). Available on all wash cycles except RINSE HOLD. Add 38 minutes to wash cycle time. ENERGY SAVER DRY on. Drying heater is turned off. Dishes dry naturally.



This information about the Systems Monitor is in the consumer's Use and Care.

This chart is for the Value Line (GSD4230X, 4220X, and 4210X).

Display	What it Means	What to Do
 <p>Reset Light Flashing</p>	<p>Electrical power to the dishwasher has been interrupted but is now back on.</p>	<p><b>IF DISHWASHER WAS IN USE WHEN THE POWER FAILURE OCCURRED:</b></p> <ol style="list-style-type: none"> <li>1. Press the RESET pad and wait approximately 30 seconds.</li> <li>2. Unlatch and open the door.               <ol style="list-style-type: none"> <li>A) If the detergent cup is open and empty, close the door and rerun the cycle with detergent in the closed cup only.</li> <li>B) If the detergent cup is closed reset the dishwasher for the wash cycle you want.</li> </ol> </li> </ol> <p><b>IF THE DISHWASHER WAS NOT IN USE</b> when power failure occurred, use dishwasher as you normally would.</p>
 <p>Wash Light Flashing</p>	<p>Drain is blocked. This indicates that the drain is so clogged that the dishwasher cannot continue to operate in a satisfactory manner. Dishwasher will stop.</p>	<p>Locate and remove the blockage in the drain system.</p> <ol style="list-style-type: none"> <li>1. Check the air gap (see the Air Gap section).</li> <li>2. Check for a kink in the drain hose.</li> <li>3. Check for stopped-up drains. (<b>NOTE:</b> Warranty service does not cover household drain problems.)</li> </ol> <p>To pump any remaining water out of the machine:</p> <ol style="list-style-type: none"> <li>1. Latch door.</li> <li>2. Touch "RESET". Select desired cycles and then touch START and RESET again.</li> </ol>
 <p>Dry Light Flashing</p>	<p>There is too much water in the dishwasher.</p>	<p>The dishwasher is designed to automatically pump out extra water as long as the door is latched. When you hear the motor stop running:</p> <ol style="list-style-type: none"> <li>1. Unlatch the door and see if all the water is gone. (It is normal for a small amount of water to remain in the bottom of tub to keep the water seal lubricated.)</li> <li>2. If you see water entering the dishwasher, close and latch the door. Shut off the water supply to the dishwasher.</li> <li>3. Press the RESET pad.</li> <li>4. If water is gone and no water is entering the dishwasher, restart cycle.</li> <li>5. If the DRY light starts to flash again, shut off the water supply to the dishwasher. Call for service.</li> </ol>
 <p>Rinse Light Flashing</p>	<p>Not enough water is entering the dishwasher.</p>	<p>Unlatch the door. If there is no water in the bottom of the dishwasher, check the water supply to the dishwasher.</p> <ul style="list-style-type: none"> <li>• Is the dishwasher water supply turned on? (Valve usually located under the sink.)</li> <li>• Is the household water supply turned on?</li> <li>• If you use well or cistern water, is the supply adequate (volume and pressure)?</li> </ul> <p>Press the RESET pad. If the water supply is adequate, try the cycle again. If the RINSE light flashes again, call for service.</p>

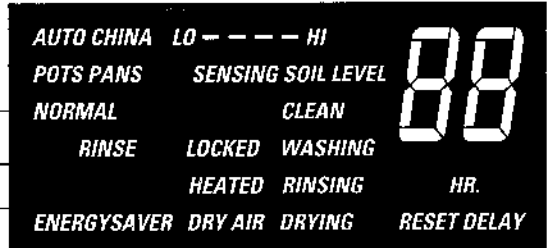
This systems monitor chart is for the Smart Line (GSD4900 and 4400 series).

Display	What it Means	What to Do
<p><b>PF</b> and Reset</p>	<p>Electrical power to the dishwasher has been interrupted but is now back on.</p>	<p><b>IF DISHWASHER WAS IN USE WHEN THE POWER FAILURE OCCURRED:</b></p> <ol style="list-style-type: none"> <li>1. Press the <b>RESET</b> pad and wait approximately 30 seconds.</li> <li>2. Unlatch and open the door.               <ol style="list-style-type: none"> <li>A) If the detergent cup is open and empty and the dishwasher was set for the <b>NORMAL, POTS/PANS</b> or <b>CHINA CRYSTAL</b> cycle, close door and put the load through a <b>RINSE HOLD</b> cycle. After the <b>RINSE HOLD</b> cycle is completed, add detergent and reset the load for the washing cycle you want.</li> <li>B) If the detergent cup is closed and the dishwasher was set for the <b>NORMAL, POTS/PANS</b> or <b>CHINA CRYSTAL</b> cycle, reset the dishwasher for the wash cycle you want.</li> <li>C) If the dishwasher was set for the <b>RINSE HOLD</b> cycle, reset the dishwasher for <b>RINSE HOLD</b>.</li> </ol> </li> </ol> <p><b>IF THE DISHWASHER WAS NOT IN USE</b> when power failure occurred, use dishwasher as you normally would.</p>
<p><b>[1]</b></p>	<p>Slow draining. The dishwasher is taking longer than normal to drain the water out. This is usually caused by a blockage in the drain air gap (see Air Gap section), a kink in the drain hose, or a stopped-up pipe.</p>	<p>This dishwasher is designed to automatically compensate for longer than normal drain times, but cycle time will be extended. If this code continues to appear frequently:</p> <ol style="list-style-type: none"> <li>1. Clean the air gap (See Air Gap section).</li> <li>2. Check for a kink in the drain hose.</li> <li>3. Check plumbing for slow or stopped-up drains. (<b>NOTE:</b> Warranty service does not cover household drain problems.)</li> </ol>
<p><b>[2]</b> Reset</p>	<p>Drain is blocked. Similar to slow drain. This indicates that the drain is so clogged that the dishwasher cannot continue to operate in a satisfactory manner. Dishwasher will stop.</p>	<p>Press the <b>RESET</b> pad to stop the beep. Locate and remove the blockage in the drain system. To pump any remaining water out of the machine:</p> <ol style="list-style-type: none"> <li>1. Latch door.</li> <li>2. Select any cycle.</li> <li>3. Touch <b>"START"</b> and then immediately touch <b>RESET</b>. (<b>NOTE:</b> Warranty service does not cover household drain problems.)</li> </ol>
<p><b>[3]</b></p>	<p>Drain sensor is not functioning. Dishwasher will continue cycle along with a fixed drain period.</p>	<p>If <b>[3]</b> repeats for the next cycle, call for service.</p>

Smart Line Systems Monitor Chart, continued

Display	What it Means	What to Do
<p><b>E4</b> Reset</p>	<p>There is too much water in the dishwasher.</p>	<p>Press the RESET pad to stop the beep. The dishwasher is designed to automatically pump out extra water as long as the door is latched. When you hear the motor stop running:</p> <ol style="list-style-type: none"> <li>1. Unlatch the door and see if all the water is gone.</li> <li>2. If you see water entering the dishwasher, close and latch the door. Shut off the water supply to the dishwasher.</li> <li>3. If water is gone and no water is entering the dishwasher, restart cycle.</li> <li>4. If <b>E4</b> repeats, shut off the water supply to the dishwasher. Call for service.</li> </ol>
<p><b>E5</b></p>	<p>This can be caused by either of these reasons: Not enough water is entering the dishwasher.</p> <p style="text-align: center;">or</p>	<p>Unlatch the door. If there is no water in the bottom of the dishwasher, check the water supply to the dishwasher.</p> <ul style="list-style-type: none"> <li>• Is the dishwasher water supply turned on? (Valve usually located under the sink.)</li> <li>• Is the household water supply turned on?</li> <li>• If you use well or cistern water, is the supply adequate (volume and supply)?</li> </ul> <p>If the water supply is adequate, try the cycle again. If <b>E5</b> repeats, call for service.</p>
	<p>The drain pump could be temporarily blocked (usually caused by food particles such as cereal).</p>	<p>Unlatch the door. If there is standing water in the bottom of the dishwasher, relatch the door, touch START, then immediately touch RESET to start the pump. If <b>E5</b> continues to appear, you may need to do this several times to break up the blockage.</p>
<p><b>E6</b></p>	<p>The water temperature in the dishwasher did not reach the proper wash temperature. This is usually caused by lack of hot water coming from the household water heater.</p>	<p>Avoid showers or laundry just prior to running the dishwasher. (Use the DELAY START feature to start dishwasher when the water heater is up to normal temperature.) Adjust household water heater thermostat to 120°F. minimum.</p> <p>If <b>E6</b> appears nearly every cycle and you know the water from the household water heater is hot (120°F. or more), call for service.</p>
<p><b>E7</b></p>	<p>The temperature sensor in the dishwasher is not functioning properly. Dishwasher may continue to be used, but it will not heat water automatically.</p>	<p>The temperature sensor needs to be replaced. Call for service.</p> <p><b>NOTE:</b> You may continue to use your dishwasher. For best results adjust your household water heater thermostat to 140°F.</p>

# SMART DISHWASHER DISPLAY



Display	What it Means
Auto Normal	NORMAL cycle has been selected.
Auto Pots Pans	POTS PANS cycle has been selected.
Auto China	CHINA CRYSTAL cycle has been selected.
Rinse	RINSE HOLD cycle has been selected.
Heated Dry	Displayed when ENERGY SAVER DRY is not selected.
Energy Saver Dry	Displayed when ENERGY SAVER DRY is selected.
Sensing Soil Level	Displayed when the dishwasher is determining the amount of soil in the load and calculating the amount of wash time needed.
LO- - - -HI Soil Level	Shows the amount of soil in the load from LO (one bar lighted) to HI (all four bars lighted).
Numerals from 1 to 99 minutes	Number of minutes left in the cycle.
Washing	Displayed during Pre-wash, Pre-rinse and Main Wash periods.
Rinsing	Displayed during Rinse periods following the Main Wash.
Drying	Displayed during heated drying.
Clean	Indicates completed cycle. Remains on until door is unlatched.
Locked	Indicates controls are locked to prevent unauthorized use.
Numerals from 1 to 14 Hrs. Delay	Number of hours delay until start of cycle.
Reset	The RESET pad was touched.
PF Reset	Indicates a power failure occurred.

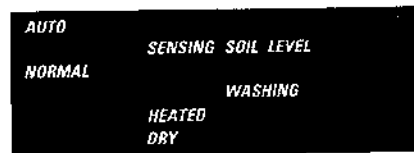
Example of what will be displayed when a Normal Cycle with Energy Saver Dry off (Heated Dry) is selected



Cycle selected



Rinse cycle and minutes remaining in the cycle



Cycle started and the soil level is being sensed



Drying



Soil level determined



Dishes clean and dry



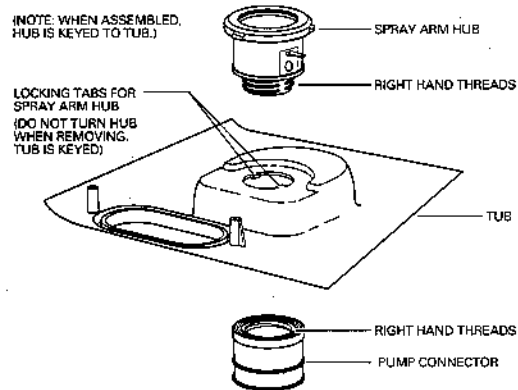
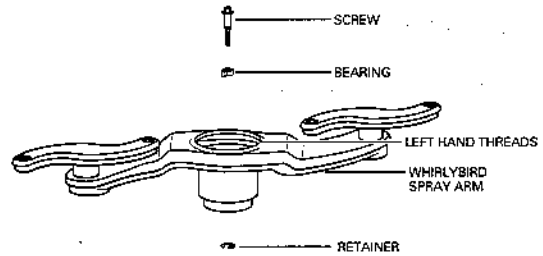
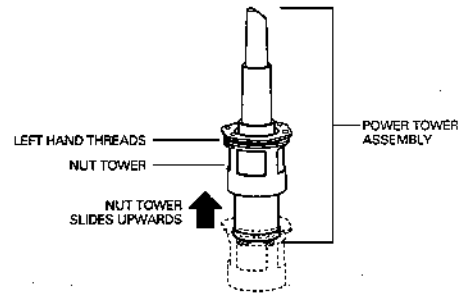
Main Wash and minutes remaining in the cycle

## WASH SYSTEM

The "SmartWash" system is used on these models. Whenever servicing the spray arm always check spray arm holes for bits of foreign matter. It can and will affect cleaning performance.

To Remove:

1. Hold spray arm from turning and turn nut tower clockwise (see illustration) because it has a left hand thread.
2. Remove nut tower then lift out power tower assembly.
3. Unscrew and remove 1/4" hex head screw from the center of the wash arm. Remove spray arm.
4. Unscrew spray arm hub.



## HEATING COIL - CALROD (500 WATT)

The heating coil adds supplemental heat to the water during the circulate portion of the cycle and provides heat for the drying portion of the cycle. The entry/display module controls the on time of the heater.

The heating coil is a standard Calrod type element with an inner heating element and outer sheath.

**CAUTION: The sheath and heating element are not grounded.**

Test the heating coil by making a continuity check across the terminals with the wires removed. Also, check for grounded coil by making a continuity check across each terminal and sheath.

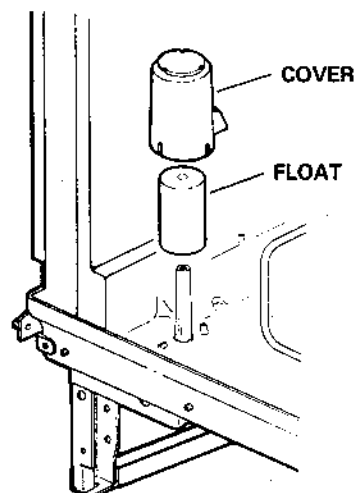
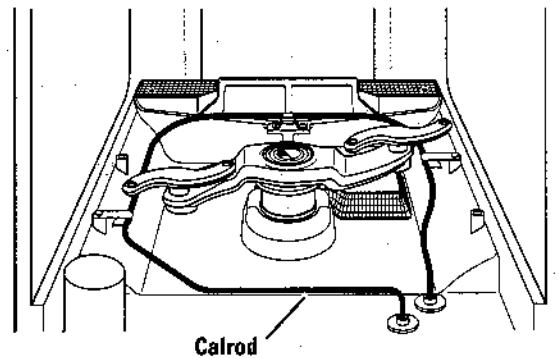
**WARNING: The connectors on these wires are lock connectors. Squeeze the connector before pulling on the wires.**

To Remove:

1. Squeeze tabs on heating coil receptacle cover and remove.
2. After checking for positive lock connectors, disconnect the wires from the coil.
3. Unscrew and remove serrated washer/nuts.
4. Unscrew and remove Calrod supports in tub.
5. Remove heating coil (Calrod).

## FLOAT DOME

The flood float switch cover is held in place by a single 1/4" hex head screw. This cover eliminates "wave action" that could negatively affect the flood float that is under the dome. The float should be unrestricted and free floating so the weight of the float can hold down the float stem. This will keep the float switch closed. Check this area for soil residue build-up and clean when necessary.



## FILTER, COLLECTION CHAMBER AND CHECK VALVE

During the wash and rinse modes of the cycle, soiled water falls down the back of the tub and into the filter area. The water comes through the filter and back into the tub. During the various washes and rinse periods, all the water will pass through the filter. The soil will settle into the collection chamber and is held there. When the dishwasher goes into a pump out mode the water in the sump is pumped through the collection chamber. This closes the piston valve to the inside of the tub. The pump flushes the collection chamber of all the food soil and pumps it down the drain.

A check valve is located in the drain line. This valve allows the water to flow in the drain direction only and prevents the water from coming back into the tub. The drain line check valve must close in the back flow direction or the piston valve in the collection chamber may not reopen into the tub after pump out is complete. A water head pressure against the piston valve can hold it in the drain mode position. If the piston valve is held in the drain mode no soil can settle into the collection chamber rendering the filter ineffective.

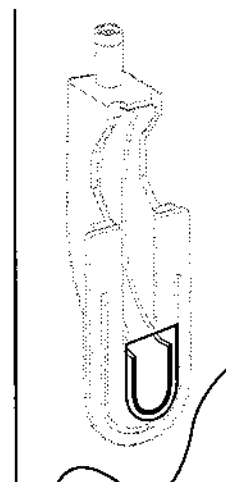
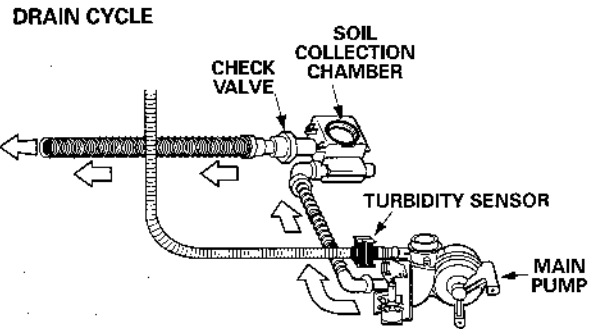
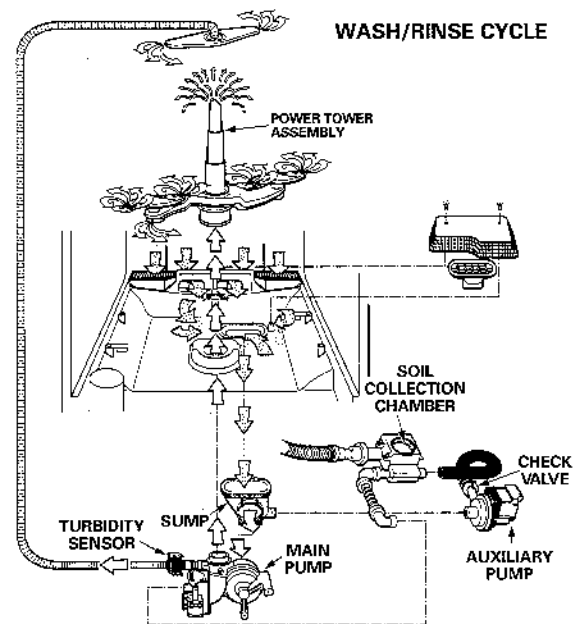
When the tub has been voided of water, the drain line check valve closes and the spring on the piston valve returns the valve to the wash mode position. Many washability complaints are because of a partially blocked drain line. On these units washability complaints or no pump out can also be caused by a piston valve jammed open to the tub. Remember that the check valve allows water to flow in the drain direction only. It would not be possible to clear the drain line by blowing back through it or pushing a probe through from the air gap end, unless disconnecting the drain from the check valve first.

## FILL FUNNEL

The fill funnel, located on the lower left side, is vibration welded to the tub. A curved hose on the outside of the tub goes to the water valve under the tub.

The top portion of the inlet should be free of any "flash" material. If not, a leak from the fill funnel area could occur.

**NOTE:** Refer to service bulletin DD9-94.



## SUMP COVER

The sump cover at the right rear is held down by 2 long screws. The sump cap or lid pulls up and out of the tub. At this point you are able to reach into the sump boot and feel the soft food cutter and grader screen at the pump inlet. Remove any foreign objects that are blocking this area. Be careful of broken glass and other sharp objects.

## RACKS

The lower rack has 6 wheels that snap onto the wire frame of the rack.

Two stops molded into the inner door liner keeps the lower rack from rolling all the way out. Remove the rack by lifting up and over the stops.

Plastic retainer caps secure the upper racks to the slides. Remove the retainer caps to change the upper rack. Bend the back portion of the retainer to the rear, then twist the retainer to the open side of the slide to remove.

The rollers for the upper rack will fit into the slide. The assembly consists of two pieces that will attach to the rack. The rollers snap onto the rack and will unsnap for removal.

## CORNER Baffles

Two black molded removable baffles are pressed into place in each front corner of the tub. Before replacing baffles because of leaking check the leveling of the dishwasher (front to back and side to side).

## OUTER DOOR PANEL – TOE KICK ASSEMBLY

The outer door panel is a one piece curved panel. It does not have any trim attached to it. A styrofoam panel separates the outer and inner door panel. The access panel and toekick assembly is made up of three pieces. The outer panel attaches to the inner panel. Then those two pieces hold the toekick to the frame.

To Remove access panel and toekick:

- Unscrew four 1/4" hex head screws, two between the panels and two under kick panel.

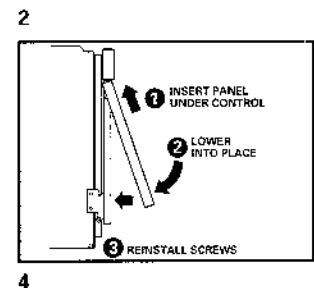
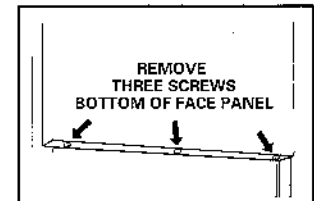
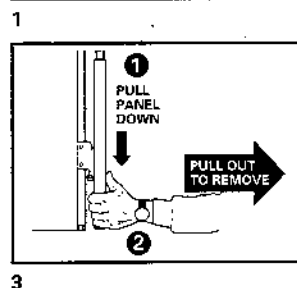
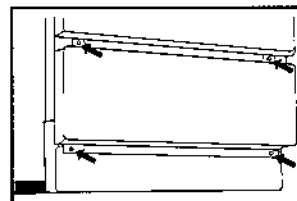
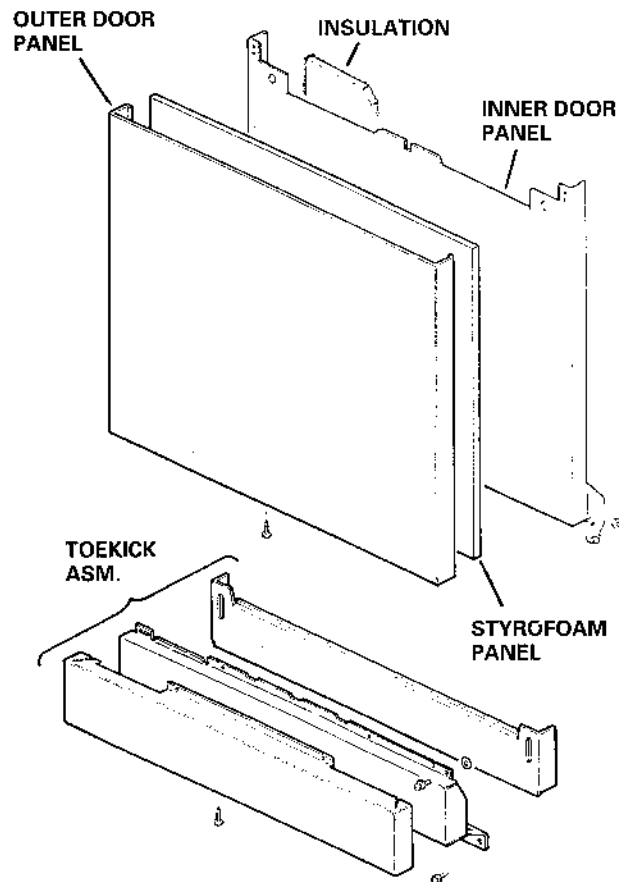
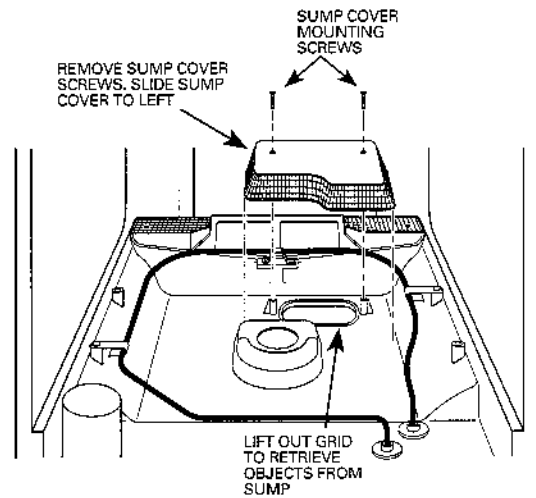
To Remove outer door panel:

1. Remove access panel and toekick.
2. Remove screws along the bottom of the outer door panel.
3. Slide panel down.
4. Grasp the portion of the panel below the door and rotate the panel towards you. It will release.

To Reinstall panel:

1. Work the top portion of the panel with styrofoam panel under escutcheon.
2. Snap panel in place and reinstall bottom screws.
3. Reattach access panel and toekick.

**NOTE:** When reinstalling access panel and toekick make sure that hex head screws are screwed all the way in, otherwise the heads of the screws could dimple the outer door panel when the door is opened.



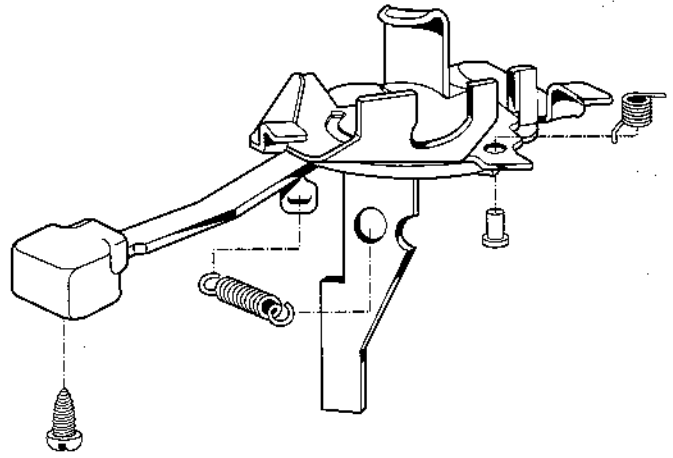
## LATCH

The door latch fits into place in the inner door panel. It has a knob at the end that is held in place by a Phillips head screw.

The knob must be removed to separate the inner and outer door.

The latch cannot be closed and the interlock switch cannot be actuated unless the door is fully closed. When the door is not closed a catch on the latch prevents the latch arm from being moved from its open position. A latch strike that protrudes from the upper part of the tub moves the catch out of the way. The latch arm can be moved and the interlock switch can be actuated when the door is fully closed.

- Machine will not run – Check to see if “tang” on latch is actually closing interlock switch. Bend to adjust if it does not close switch.
- Door leaks – Adjust strike to pull door in tighter.
- Latch hard to operate – Lubricate with light grease. On new dishwashers or after installing a new door gasket this will be normal until gasket “seats” itself.
- Dishwasher runs with door open – Check operation of latch interlock switch, mechanically and electrically.



## DOOR GASKET

The door gasket has a serrated lip that fits into a slot all the way around the inner door panel except for 3 inches in the middle bottom of the door. That's where the gasket insert belongs. It's the same material as the gasket but with slots cut into it to allow flushing action.

To Replace:

Starting at the bottom middle (next to the gasket insert) pull the gasket from the slot. Reverse the procedure when reinstalling the gasket.

## INNER DOOR PANEL

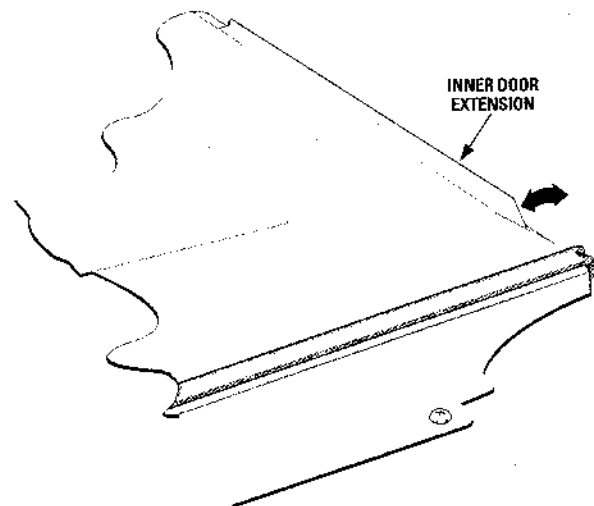
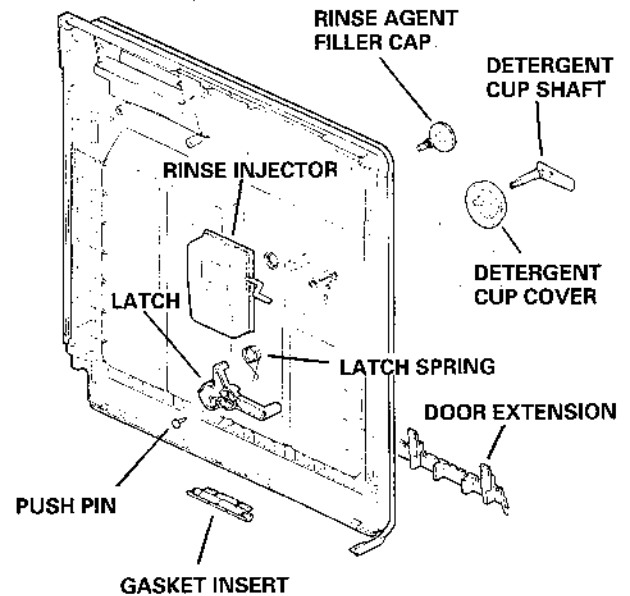
To service the dispensers, control boards, interlock switch and other components the inner and outer door panels must be separated.

With the door in the open position, remove the 7 Phillips head screws and the door latch knob.

The inner door panel can now be lifted out or it can be held in place in the closed position with the door latch.

## INNER DOOR EXTENSION

On the bottom of the inner door panel there is an extension. This part snaps into place on the bottom of the door. It can be removed by depressing 4 tabs and pulling the extension out at the same time. The purpose of the extension is to help block water noise to make the dishwasher run quieter.





## DOOR SPRINGS

This counter balance system is not adjustable. Rollers are mounted to the frame under each corner of the door. If a roller has to be replaced, the end of the shaft must be cut off with a hacksaw or the flutes filed off.

A kit is supplied which includes a different shaft and fastener to hold pulley and shaft in place.

To Remove:

1. Hold double wire eyelet.
2. Unhook springs, one at a time. Reverse procedure for reassemble.

**NOTE: Yellow coded springs are for the Value Line.  
Blue coded springs are for the Smart Line.**

## DOOR INTERLOCK SWITCH

The door interlock switch is a plunger type of door switch.

A portion of the latch fits into the curved receiver of the interlock switch.

This switch has dual contacts and will break both sides of the electrical line. It is held in place by two screws going through the switch and into the escutcheon.

**NOTE: After any separation of the inner and outer door, make sure that the bottom portion of the latch mechanism fits within the curved portion of the interlock switch.**

## DETERGENT CUP COVER AND LATCH ASSEMBLY

The detergent cup cover and latch are assembled together through the inner door. This assembly consists of a cup cover, handle, latch, spring and push pin.

To Remove:

Separate the door and remove (pull) the push pin. Squeeze fingers at the end of the handle shaft with 1/4" nut driver and push through the door.

To Install:

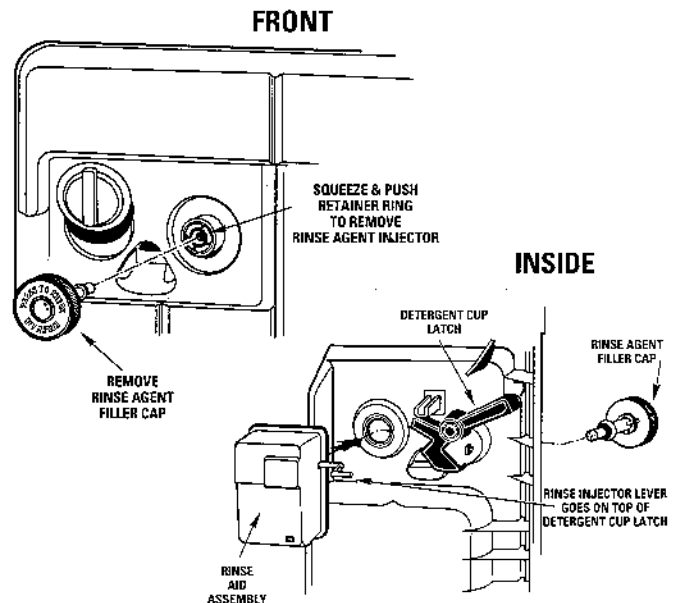
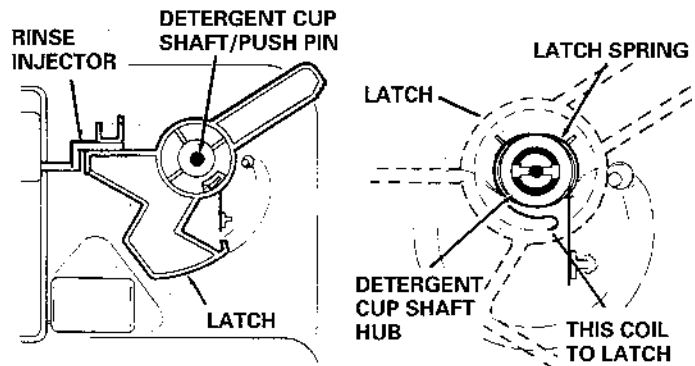
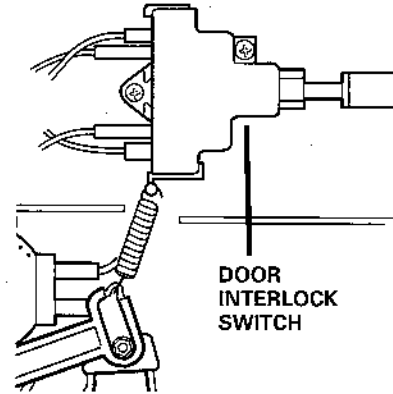
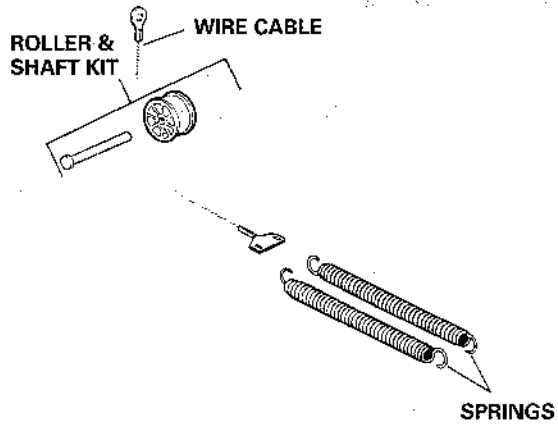
1. Position latch spring on detergent cup as shown.
2. Using the tapered end catch of the latch, wind (load) the spring counterclockwise as shown.
3. Work the cup handle shaft through the door back and forth until the fingers snap back into place.

## RINSE AID ASSEMBLY

The detergent trip mechanism will be energized for the second time during the final rinse to dispense the rinse aid. The rinse aid container mounts to the inner door.

To Remove:

1. Separate door.
2. Unscrew rinse aid cap.
3. Squeeze fingers on rinse aid container and push through the door.



## DETERGENT CUP MOTOR

The detergent cup motor is energized during the main wash and final rinse. A feedback switch from the detergent trip mechanism will provide a signal to the control to indicate the home position. It should be in the home position at the start of all wash cycles. The control will energize the detergent trip motor for 5 seconds at the beginning of the circulate time of the main wash.

When in the final rinse, the control will energize the detergent trip motor at the beginning of the circulate time and keep the motor energized until the home position is sensed.

If the control does not sense the home position after a one minute duration, then the control shall stop the motor.

To Remove motor:

1. Separate the door and remove the control cover.
2. Remove spring from pivot post to lever and lift lever off.
3. Remove "E" clip to free cam on motor.
4. Unscrew 2 Phillips head screws to release motor.

**NOTE: Two tabs hold detergent cup feedback switch.**

## ACTIVE VENT (SMART MODELS ONLY)

The active vent closes at the end of the first fill cycle for the selected wash cycle. Energizing the active vent motor for eleven seconds will place the active vent in the closed position. The vent will stay closed throughout the cycle unless the door is unlatched. When the door is latched again the vent will close again.

The "Active Vent" will reduce the noise level and heat loss when in a closed position.

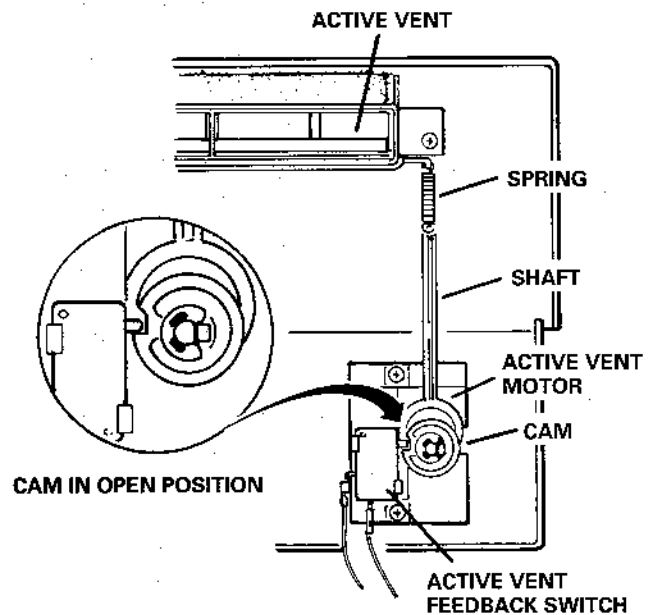
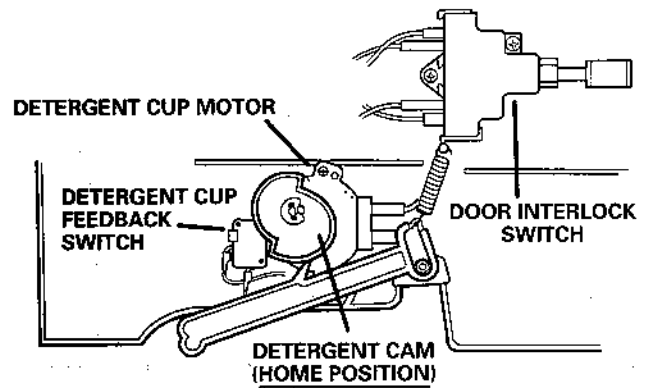
At the end of the wash cycle and at the same time the main pump is de-energized, the control will energize the active vent motor. The active vent motor will run until the control senses the vent cam is in the home position (vent open).

To Remove:

1. Separate the inner and outer doors.
2. Release spring to vent door.
3. Remove 2 screws securing vent housing to escutcheon.
4. Release "E" ring to remove cam.
5. Remove 2 screws holding active vent motor.

**NOTE: Two tabs hold active feedback switch.**

**TIP: The detergent cup motor and active vent motor are the same part number. Also, the detergent cup feedback switch and active vent feedback switch are the same part number.**



## CONTROL BOARD

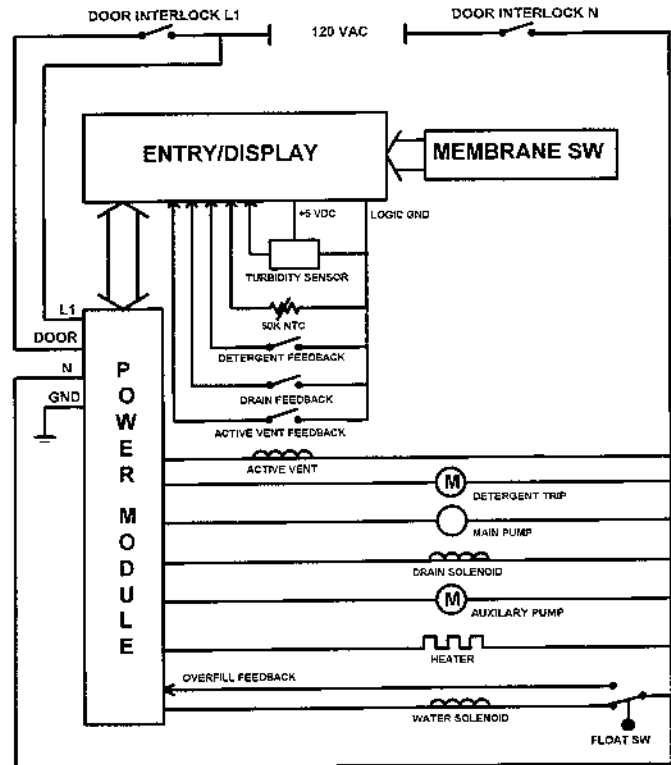
The electronic control board will consist of three replaceable components, the membrane switch, the entry/display module and the power control module.

It's important to know how these three components work together.

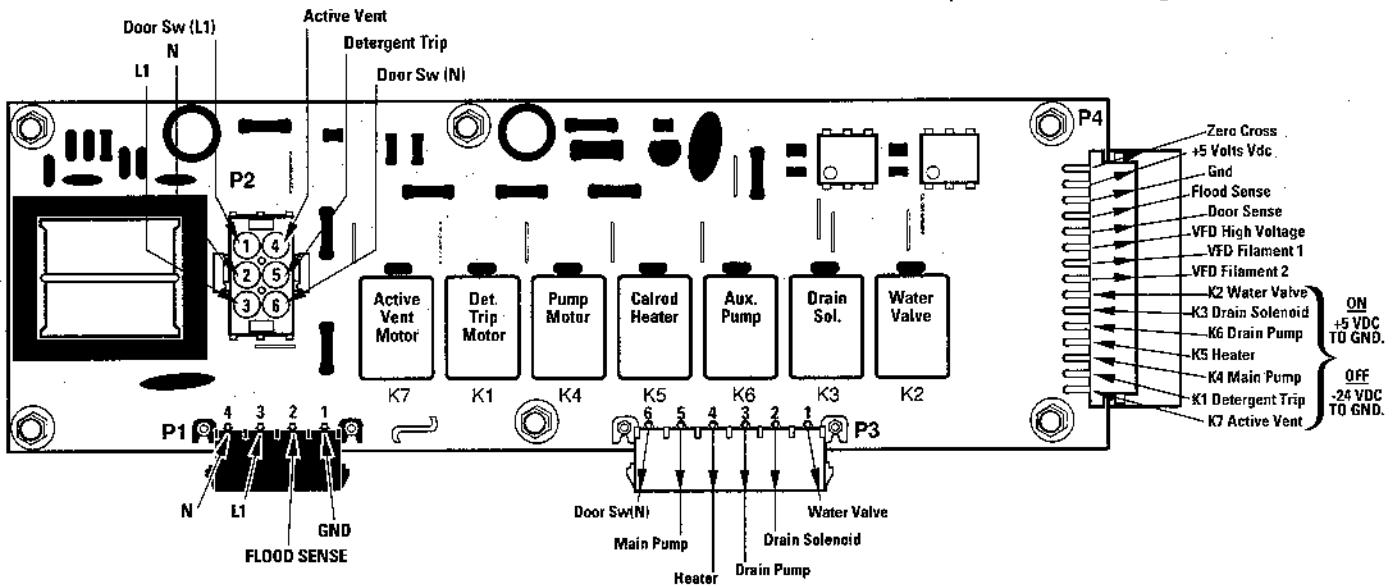
1st, 120 volts (line voltage from junction box) feeds the board at the P-1 connector (L1-#3) and routed to the P-2 connector (L1-#3) by a path on the printed circuit board.

2nd, the 120 volts feed a transformer on the power module that reduces the voltage to approximately 24 volts and a circuit changes it to dc volts. The dc voltage then feeds the entry/display module. *This will happen even if the door interlock switches are open or the door is unlatched.*

3rd, with the door latched, the current travels from the P-2 connector to the line side door interlock switch, through the closed contacts and returned to the power control board at connector P-2 (door L1-#1).



NOTE: Junction box L1 & N are not shown. (They feed transformer on power module through P1.)



4th, at this point the entry/display module is waiting for a command from the membrane switch. When a cycle is selected from the membrane switch the entry/display module will put approximately +5 vdc across the appropriate relay coils on the power control board through the P-4 connector. If the coil *is not* energized there will be approximately -24 vdc at a component connector (ex. K5 Heater to GND).

**Tip** – If -24 volts dc are not present between GND (black lead or common on GND) and VFD High Voltage at connector P-4 then the power control module is faulty, if there is 120V at L1 and N at the P1 connector.

5th, when the appropriate relay coil receives the 5 vdc across it, then it will close the 120 volt contact and put the 120 volts across the appropriate component through the P-3 connector.

6th, the neutral or return line of the component energized will be at the P-3 connector (Door N-#6). It is connected by a path on the printed circuit board to the neutral side of the P-2 (Door N-#6) connector. It is then routed across the door interlock switch that controls the neutral side of the circuit and sent to the appliance neutral at the P-2 connector, (N-#2). Finally, a path on the circuit board connects P-2 to P-1 (N-#4) which returns it to N at the junction box and completes the journey.

## MEMBRANE SWITCH

The membrane switch allows the user to input programs directly into the entry/display module. By pressing a pad it will "Close" a switch in the membrane that will tell the entry/display module which program to run.

The membrane switch can be checked by pressing the pad in question. Then, make a continuity check at the same time across the related connector pads. These connector pads are located at the entry/display module connector.

The number 1 is located next to the 1st pad to assist in identifying the correct connector pads to check.

### Smart Models

1-8 Auto/Normal  
2-8 Energy Saver  
3-8 Reset  
1-7 Auto Potscrubber  
2-7 Water Saver (GSD4500)  
3-7 Lock (GSD4900)  
1-6 Auto China Crystal  
2-6 Temp Boost (GSD4500)  
3-6 Start  
1-5 Rinse & Hold  
2-5 Delay Start  
3-5 Short Wash (GSD4500)

### Value Models

1-6 Normal  
2-6 China Crystal  
3-6 Reset  
1-5 Pots/Pans  
2-5 Temp Boost  
3-5 Delay Start  
1-4 Short Wash  
2-4 Energy Saver  
3-4 Start

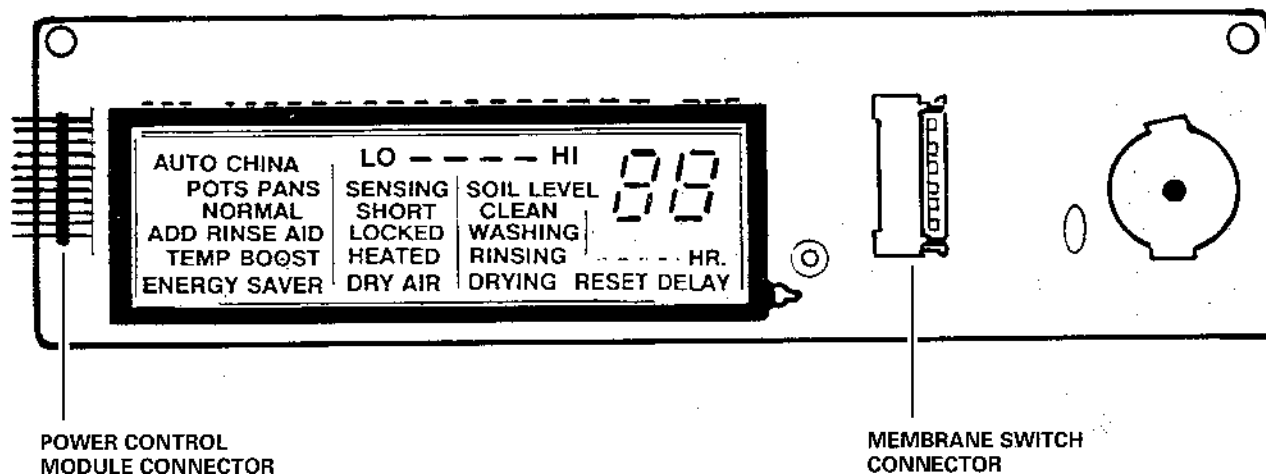
**NOTE:** ER will be on the smart display when the membrane switch or connection is faulty.

## ENTRY/DISPLAY MODULE

The entry/display module consists of a microprocessor, display (VFD or LED) and two connectors. One connector receives information from the membrane switch and the other sends information to the power control module.

The microprocessor controls the functions for the dishwasher. It does this by applying +5 volts DC to the appropriate relay coils on the power control board.

To ensure the entry/display module is working correctly measure from the pin in question (at the connector on the power control module) to ground (GND) during the time that the suspected component should be energized. +5 volts DC should be measured if it is working correctly. Of course the power control module should have 120 volts to it and some part of the display should be lit.



**To replace components, remove power and separate inner and outer door.**

To remove power control module:

- Remove black cover (2 screws)
- Remove 6 screws holding board to escutcheon
- Disconnect 4 connector plugs to board

To remove entry/display module

- Loosen or remove vent housing
- Disconnect connector plug on side
- Gently separate holding tabs (top) built into escutcheon that captures module – read next step before removing
- Rotate module on end towards the middle of the door
- Disconnect membrane switch connector

To remove membrane switch

- Remove entry/display module
- Remove insert film by lifting a corner and peeling it off
- Push membrane switch tail through escutcheon and peel it off

## INPUTS TO ENTRY/DISPLAY MODULE

These switches and sensors report conditions to the entry/display module so that it can make decisions.

*Components listed might not be on all models.*

**Detergent Feedback switch** – This switch is closed when the detergent trip mechanism is in the home position.

**Drain Feedback switch** – The drain feedback switch is closed during the drain cycle. When not in the drain mode the switch should be open.

**Door Latch (interlock)** – This latch has two switches. They are located on each half of the assembly. Remove the wires that are located next to each other and check for continuity across the switch terminals with the door in the latched position. There should be continuity on both switches.

**Overfill Feedback switch** – If the water level in the dishwasher exceeds a certain limit, the float switch will change from the water solenoid position to the overfill feedback position (see schematic). The entry/display module will then take the appropriate action (pump out).

**Temperature Sensor** – The temperature sensor is a 50K NTC thermistor that senses the water temperature. Depending on the cycle, the entry/display module will use this information to compensate for insufficient water temperature.

**Turbidity Sensor** – This sensor measures the turbidity (amount of particles in a fluid) and sends this information to the entry/display module which can decide to eliminate fills depending on the information received.

**Active Vent Feedback switch** – When this switch is open then the active vent is in the home position (vent open). The entry/display module will check this after a power outage, and until it goes through a cycle it will not allow any inputs.

## OUTPUTS FROM THE ENTRY/DISPLAY MODULE

These components are controlled by the entry/display module by putting +5 volts DC across relay coils on the power control board. The contacts of these relays have 120 volts AC across them. So when the relay is energized it will put the correct voltage across the component to operate.

*Components listed might not be on all models.*

**Main Pump** – During the appropriate time the entry/display module will send 5 volts dc across the K4 relay on the power control module which will close the 120 volt contacts to supply the motor.

**Water Valve** – When needed the entry/display module energizes this valve through the K2 relay at a preset time that is stored in the module.

**Heater** – This heater will add supplemental heat to the water during the circulate portion of the cycle and provides heat for the drying portion of the cycle, when selected. The on time is controlled by the entry/display module through the K5 relay.

**Drain Solenoid** – The drain solenoid is energized for 5 seconds to switch the gate valve to the drain position and allow the main pump to drain the unit. This is done through the K3 relay on the power control module. The water pressure will hold the gate valve in the drain position until the pressure drops to a minimum level. When the minimum pressure level is reached, the gate valve switches back to the circulate position.

**Auxiliary Pump** – This pump removes excess water left in the sump area for selected drains through the K6 relay.

**Detergent Trip Motor** – This motor will be energized once during the main wash and again during the final rinse. The on time for the main wash will be a fixed period (approx. 5 secs.) and the final rinse will be controlled by a feedback switch to indicate that the system is reset to the home position. This is done through K1 relay.

**Active Vent** – The active vent will be closed during the wash cycle and open during the dry cycle or when the unit is not being used. The active vent feedback switch will be open when the vent door is in the open position. The K7 relay controls the active vent motor.

## ELECTRICAL BOX (Junction Box)

House wiring connections are made at the right front corner. A plastic box with a Phillips head screw holds the box in place.

## WATER VALVE

The water valve is mounted by two screws to the left front channel frame. A rubber fill hose runs to the left side of the tub and is fastened with a clamp to the fill funnel. The plastic fill funnel is vibration welded to the plastic tub and is not furnished as a replacement part.

This water valve has a flow washer to control the nominal flow rate to 1.25 gallons per minute. **It is very important when replacing the water valve that the exact replacement is used. Any other will affect the amount of water into the dishwasher.**

**NOTE: The wires on the valve have positive lock connectors, squeeze and pull connector and not the wires when disconnecting the leads to the water valve.**

How to measure the correct amount of water that belongs in the dishwasher:

- Check after first fill is complete.
- Measure the water level by standing a ruler on the pedestal in the tub bottom center, just in front of the spray arm hub.
- The water level should be 3/8" to 1" high.
- If water level is low check for clogged water valve screen and check the float switch assembly.

## FLOOD FLOAT SWITCH

The float switch is captured in a plastic housing under the tub. The float switch is not adjustable.

To Remove:

- Push two plastic tabs back to release cover.
- Slide switch out.

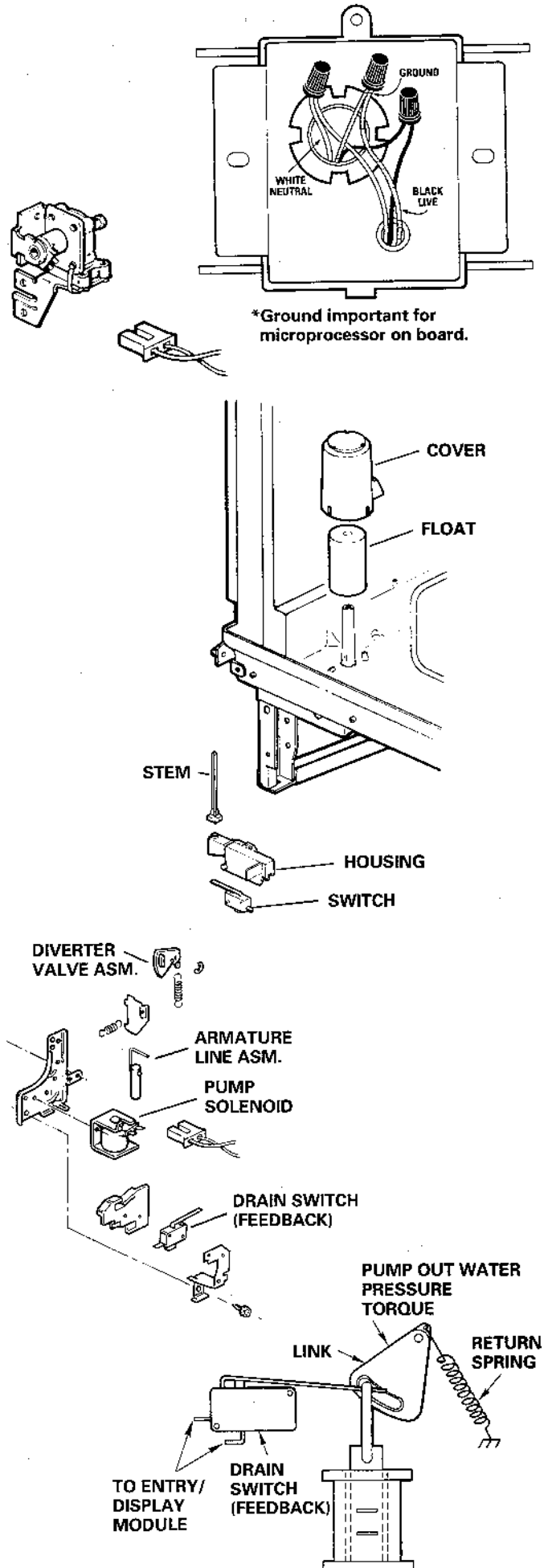
## DRAIN VALVE SOLENOID

The drain solenoid operates a gate valve on the pump. The drain solenoid is energized for 5 seconds to switch the gate valve to the drain position and allow the pump to drain the dishwasher. The water pressure will hold the gate valve in the drain position until the pressure drops to a minimum level. When the minimum pressure level is reached the gate valve will switch back to the circulate position.

Checking drain valve solenoid assembly:

- A continuity test should be performed on the solenoid to determine if it is defective.
- The armature should be inspected for bent components and ensuring that the armature bottoms out before the gate is completely closed.
- Both springs must be in place on the gate valve assembly.

**NOTE: The wires on the solenoid have positive lock connectors, squeeze and pull connector and not the wires when disconnecting the leads to the solenoid.**



## COLLECTION CHAMBER

This chamber is used for storing soil during the circulate portion of the wash and rinse cycles.

The Smart dishwasher will have an extra outlet for the auxiliary pump.

To Remove:

1. Disconnect rear Calrod support and remove filter screen assembly.
2. Unscrew plunger from collection chamber.
3. Remove hoses to collection chamber.
4. Unscrew four 5/16" hex head screws that hold collection chamber to tub.

## SUMP

The sump connects the interior of the tub to the inlet of the pump. Remove any foreign objects that land in the pump inlet through the sump area opening.

To Remove:

1. Loosen clamp connectors to inlet pump housing and if Smart model, also loosen connector to auxiliary pump.
2. Remove sump screen.
3. Sump has a lip that fits into a track in the tub, remove rubber sump from this track.

**NOTE: Reverse procedure when reinstalling and check for leaks.**

## MOTOR/PUMP MECHANISM

The motor on this mechanism has changed. This is an induction motor with a run capacitor.

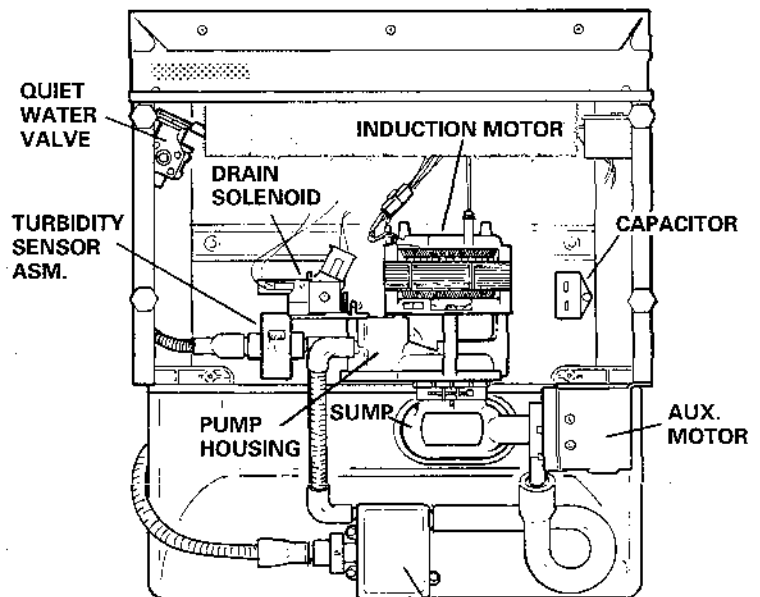
It will be quieter and more energy efficient. Because of its efficiency it does not need a fan blade or numerous open vents in the kickplate to keep it cool. Drawing less current helps keep this motor cooler.

The timing of energizing the motor is another difference in these models. Usually the motor will start running at the start of the cycle. The water valve and the motor are energized at the same time. On the Value models the motor is energized about half way through the fill cycle. The Smart models will start the motor when the water valve is turned off. This helps keep the unitized seal system lubricated in the motor and prevents the seals from squealing.

The pump used in this mechanism is the one that was introduced in May of 1994. It incorporates the new unitized seal system and an energy saving pump. It houses less water but the effectiveness of pumping the water through the dishwasher is not affected.

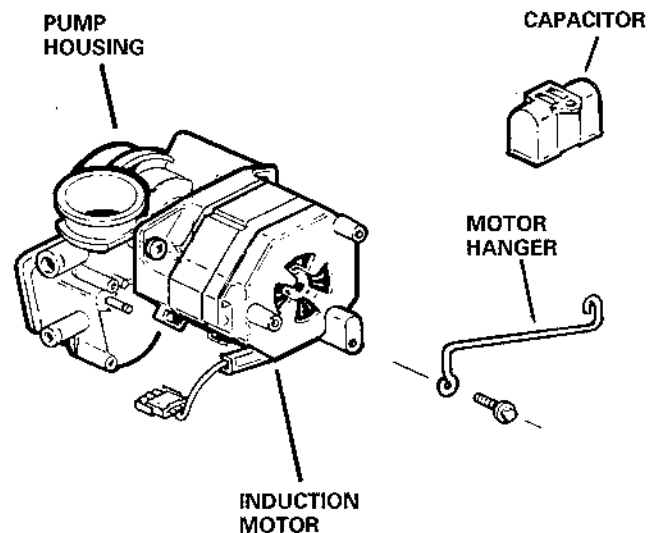
**NOTE: This motor/pump mechanism or just the motor cannot be used on any other model dishwasher.**

BOTTOM VIEW FRONT



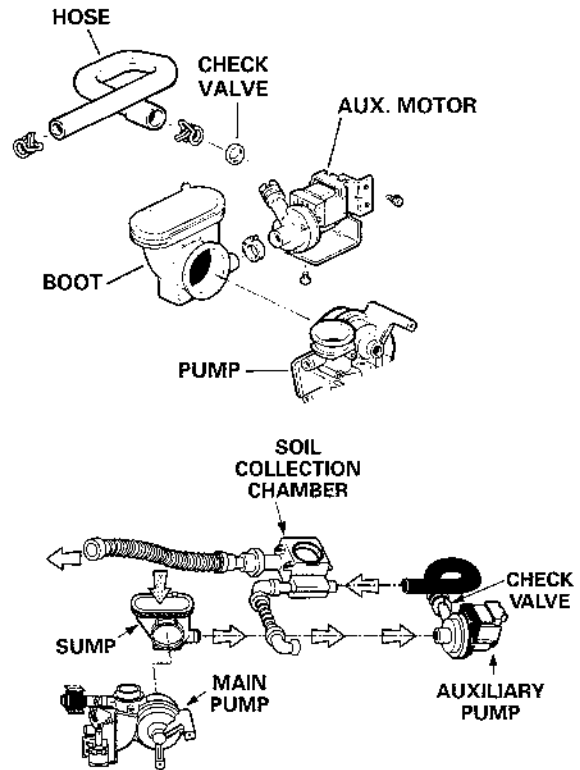
BOTTOM VIEW BACK

COLLECTION CHAMBER



**AUXILIARY PUMP (Not on all models)**

This pump works for 30 seconds to remove the remainder of the water in the sump. It doesn't work after every cycle. This will allow all new clean fresh water at the next fill. This pump is connected between the sump and the collection chamber. Therefore it is not necessary for the drain solenoid to operate for the auxiliary pump to remove sump water.



**TURBIDITY SENSOR (Smart models only)**

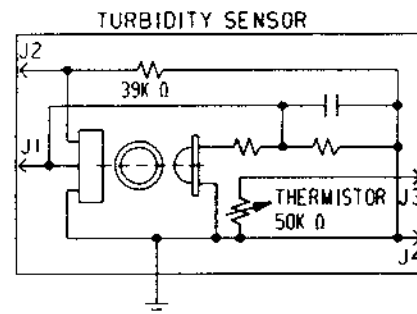
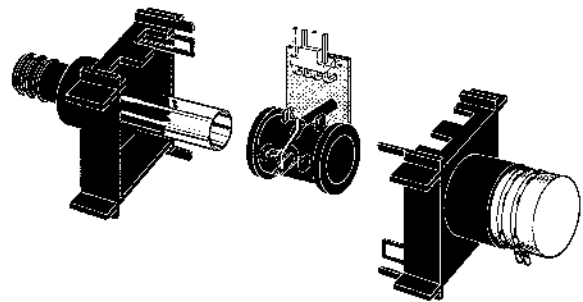
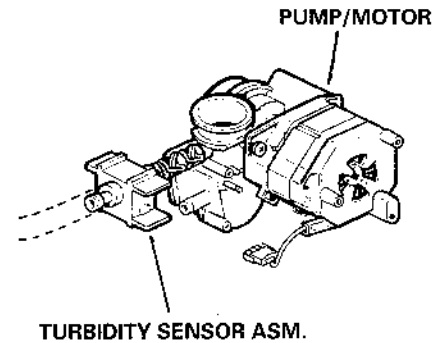
**Turbidity:** The amount of suspended particles in a fluid.

The dishwasher turbidity sensor measures the turbidity of the wash water. The sensor operates on the principle that when light is passed through a sample of water, the amount of light transmitted through the sample is dependent on the amount of soil in the water. As the soil level increases, the amount of transmitted light decreases. The turbidity sensor measures the amount of transmitted light to determine the turbidity of the wash water.

These turbidity measurements are supplied to the dishwasher controller which makes decisions on whether or not to skip any prewash and postwash cycles. These decisions are made based on a comparison between clean water measurements (taken at the beginning of the wash cycle) and the wash water turbidity measurement taken at the end of each fill.

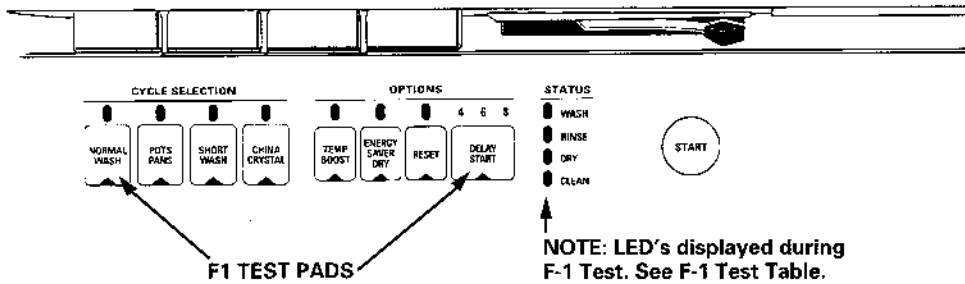
By measuring the turbidity of the wash water, the controller can conserve energy on lightly soiled loads by skipping one or two cycles. This will result in energy saving for the consumer.

A thermistor is incorporated into the turbidity sensor to aid in compensating for component variances over temperature. The thermistor will also provide the controller with an accurate measure of wash water temperature.





## VALUE MODEL F-1 TEST AND WASH CYCLE MATRIX



**NOTE: LED's displayed during F-1 Test. See F-1 Test Table.**

### F-1 TEST CYCLE SET UP (VALUE MODELS)

1. Close detergent cup and latch door.
2. Press **normal** and **delay start** at the same time and hold for 3 seconds. Pads could be difficult to contact and put into test cycle, just continue to press pads until all LED's are lit.

  - If **start** pad is pressed, control will advance to next step.
  - If **reset** pad is pressed, control will exit test cycle, pump any water out and return to normal operation.
  - Pump will **come on** in step 2 and **stay on** until step 11.
  - Use clamp on ampmeter to check current flow in heating coil.

### FREEZE CAPABILITY

This will allow the control to pause during an F-1 test cycle. Press the **normal** pad to pause and press **normal** again to continue.

F-1 TEST CYCLE MATRIX			
Step	Time (Sec)	LED Display	Definition
1	5	All LED's	Turn on heater
2	70	Wash	Turn off heater Turn water valve on for 70 sec. 30 sec. into step, pump turns on
3	180	Wash	Turn on heater. Pump will run until end of Step 11.
4	Variable	Wash	Turn off heater. Turn drain solenoid on for 5 sec. for pump-out.
5	70	Wash	Turn on water valve for 70 sec.
6	30	Wash	Turn on detergent trip motor. Detergent cup opens.
7	1800 (30 Min.)	Wash Plus Dry	Turn heater on, pump continues.
8	30	Wash	Turn heater off, pump continues.
9	30	Rinse	Turn on detergent trip motor until the detergent home switch closes.
10	1800 (30 Min.)	Rinse Plus Dry	Turn heater on. Pump continues.
11	Variable	Clean	Turn heater off. Turn drain solenoid on for 5 sec. Turn pump off when control senses that the drain feedback switch opens.
12	600	Dry	Turn heater on.

F-1 TEST DIAGNOSTIC DISPLAY RESPONSE	
LED Display	Explanation
WASH	The WASH LED will flash when the pump-out time exceeds 100 seconds, and cycle will be terminated.
RINSE	The RINSE LED will flash when one pump-out is less than 6 seconds.
DRY	The DRY LED will flash when the control senses a flood condition within the dishwasher.
NORMAL	The NORMAL LED will flash when the drain feedback signal is not sensed.
POTS/PANS	The POTS/PANS LED will flash when the detergent trip on time exceeds 60 seconds.

### X10 SPEED

Allows the testing of different wash cycles of the control at 10 times the speed.

Press the selected cycle (ex. normal wash) for 3 seconds and the control will beep twice to acknowledge setting. Press the start pad and it will start the cycle according to the E5 wash cycle matrix.

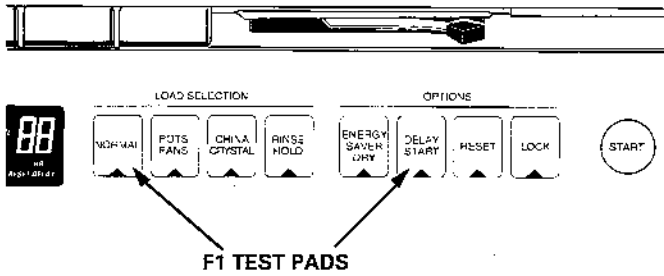
- Circulate and Extend time are done at X10 speed. Fill and pump out are at normal speed.

E-5 WASH CYCLE MATRIX				
	POTS/PANS 7 Fills	NORMAL 6 Fills	SHORT 5 Fills	CHINA 5 Fills
Fill (Sec.)	80	80	80	70
Circulate (Min)	5	5	5	4
Heater	On	Off	On	Off
Fill (Sec.)	70			
Circulate (Min)	4			
Heater	On			
Fill (Sec.)	70	70		56
Circulate (Min)	4	4		5
Heater	On	On		On
Fill (Sec.)	80	80	80	56
Circulate (Min)	24	22	9	14
Heater	On	On	On	On
Extend (Min)*	15	15	15	0
Fill (Sec.)	56	56	56	56
Circulate (Min)	3	2	2	3
Heater	Off	Off	Off	Off
Fill (Sec.)	70	70	70	
Circulate (Min)	3	3	2	
Heater	Off	Off	Off	
Fill (Sec.)	70	70	70	70
Circulate (Min)	6	6	3	5
Heater	On	On	On	On
Total Wet Time (Circulate & Fill Time)	65	52	29	38
Dry (Min)	38	38	38	38
Water Gal.	10.6	9.1	7.6	6.6

\*Extend time will be added when temp boost is selected.

SYSTEMS MONITOR CODES	
LED Display	Problem
RESET	Power failure occurs with machine latched, the RESET LED will flash until the machine is reset.
WASH	The WASH LED will flash when the pump-out time exceeds 400 seconds.
RINSE	The RINSE LED will flash when 2 consecutive pump-outs are less than 6 seconds.
DRY	The DRY LED will flash and the control will beep when the control senses a flood condition within the dishwasher. When pump-out stops control will continue to beep and cycle will be terminated.

# SMART MODEL F-1 TEST AND TIMING CHART



## F-1 TEST CYCLE (SMART MODELS)

This test will allow the technician to step through the test cycle and exercise the components and the control to check for proper operation.

### F-1 TEST CYCLE SET UP

1. Close detergent cup and latch door.
  2. Press **normal** and **delay start** at the same time and hold for 2 seconds.
- If **start** pad is pressed, control will advance to next step.
  - If **reset** pad is pressed, control will exit test cycle, pump any water out and return to normal operation.
  - Use clamp on ampmeter to check current flow in heating coil.

### FREEZE CAPABILITY

This will allow the control to pause during an F-1 test cycle. Press the **lock** pad to pause and press **start** pad to continue. If the heating coil is on when the freeze capability is activated the heating coil will turn off after one minute. When the water valve is energized, it will stay that way until the flood/float switch turns it off.

F-1 TEST CYCLE MATRIX			
Step	Time	Display	Definition
1	5	All Segments	Check temp. sensor for open.
2	70	Auto	Turn water valve on for 70 seconds. Close active vent.
3	5-30	Sensing Soil Level	Reading turbidity sensor – running average of 4 readings.
4	5	Clean & #	Display clean water reading. Display fault if sensor error.
5	Variable	Reset	Turn on drain solenoid and main pump. Turn main pump off when control – senses feedback switch opens.
6	70	Normal	Turn water valve on for 70 seconds.
7	30	dA	Turn on main pump. Turn on detergent trip motor.
8	1800 (30 Min.)	Washing Temp Boost	Turn heater on, pump continues looking for 120° water temp. If >120°, turn off heater.
9	30	Washing	Turn off heater.
10	30	rA	Turn on detergent trip motor until the detergent home switch closes. Open active vent.
11	1800 (30 Min.)	Rinse Temp Boost	Turn heater on, main pump continues looking for 130° water temp. If >130°, turn off heater.
12	45	Reset	Pump out, using only the drain pump.
13	600 (10 Min.)	Drying	Turn on heater.

If monitor code is displayed – press start to finish F1 test.

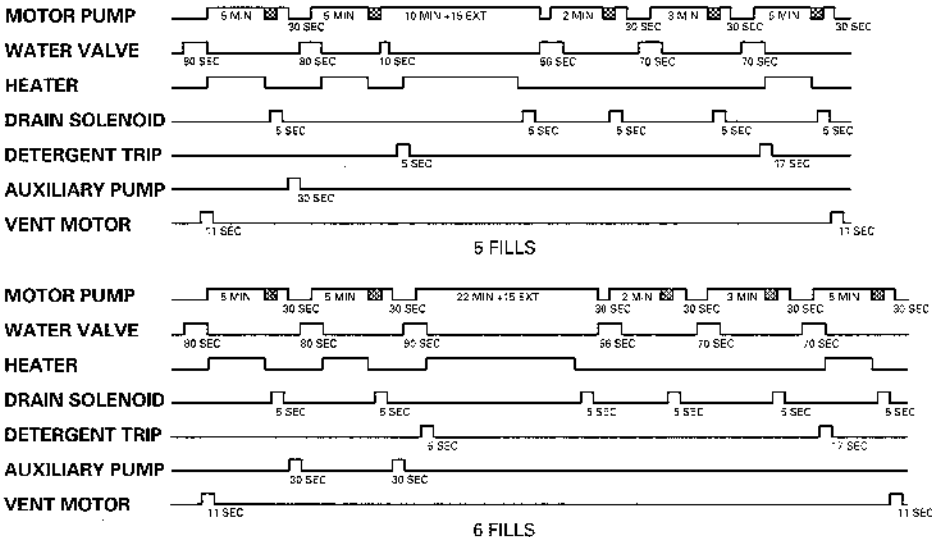
### FAILED TURBIDITY SENSOR

If the turbidity sensor fails, the AUTO in the display will not be shown. There might be one of three different F codes (F0, F1, or F4) that would be displayed during the F1 test only.

- F0 – LOW SIGNAL – failed LED, failed receiver, optical window degraded. Replace turbidity sensor.
- F1 – HIGH SIGNAL – Bad sensor – replace sensor. Intermittent connection – repair.
- F4 – NO SIGNAL – Bad sensor – replace sensor. Open or shorted wire – repair.

## TIMING CHART FOR AUTO NORMAL CYCLE

NOTE: Not drawn to scale, raised line indicates power to component.



☒ – Read Turbidity, 30 seconds  
(Pump and heater will be off)

## SYSTEM MONITOR CODES FOR THE SMART DISHWASHER

**"PF/RESET"** – Electrical power has been interrupted to the dishwasher. "PF" comes up in the display along with RESET; if unlatched nothing happens until the door is latched. In both cases a Normal Wash cycle is automatically programmed, but the pads can't be activated until the active vent and detergent trip feedback switches are both in the home position, and RESET pad is pressed.

**"C1"** – This will illuminate when a slow drain fault is detected. If the pump out time is over 100 seconds "C1" will be in the display. If the pump runs longer than 400 seconds the C2 code will take effect.

**"C2"** – Displays when the pump out time is more than 400 seconds. The control shall stop the pump for 5 seconds, and then restart the pump and energize the drain solenoid. The drain solenoid shall be energized for 5 seconds and the pump should continue to run. This procedure will determine if the drain valve is stuck open or if the drain is truly plugged. If the drain feedback indicates that the drain valve has closed, then the control will adjust the count down time and continue the wash cycle. When the stop and restart procedure does not cause the drain valve to close then the drain is plugged. The fault code "C2" will be displayed and accompanied by a beep at 1 second intervals and the cycle will be terminated. "C2" will remain displayed until RESET is pressed.

### POSSIBLE CAUSES

- Drain air gap is restricted
- Clogged disposer
- Pump gate valve did not return after normal pump out
- Faulty drain sensor switch
- Drain solenoid plunger stuck
- Food soil in filter chamber
- Check valve in filter chamber not sealing
- Pump inlet partially clogged
- Loose pump impeller

### REPAIR

- Clean air gap
- Run disposer to clean it out
- Repair, if necessary replace motor mech.
- Repair or replace switch
- Replace solenoid
- Remove filter screen and check valve assembly in filter chamber
- Swollen or distorted, check leakage around threads
- Clean inlet/sump
- Replace motor/pump mechanism

**"C3"** – Displays when the control DOES NOT sense the drain feedback signal. The control will default to continue the wash cycle and finish the cycle.

### POSSIBLE CAUSES

- Pump out switch inoperative
- Solenoid did not pull in
- Loose or open connections
- Bent or misaligned drain sensor switch bracket

### REPAIR

- Replace switch
- Check solenoid for continuity, if okay check for 120 volts
- Check connections from control to solenoid
- Straighten or replace

**"C4"** – Displayed when the control senses a flood condition within the dishwasher. The control will beep at 1 second intervals, de-energize the water valve, start the circulate pump (if not running) and run up to 1 minute after the overflow condition ceases. Pressing RESET will clear display, if in the wash cycle it will be terminated.

### POSSIBLE CAUSES

- Double fill after "PF"
- Float switch cover dislodged
- Water valve stuck open
- Flow rate of valve too high
- Bad switch, open wire

### REPAIR

- Normal condition, press RESET
- Reseat cover
- Replace valve
- Replace (use correct valve)
- Repair or replace as needed

**"C5"** – If the control detects two consecutive pump out times of less than 6 seconds this will be on the display.

The control assumes that either no water has entered the dishwasher during the last two fills or the pump inlet is clogged. The fault code will be displayed with a beep at 1 second intervals and the wash cycle will be terminated. It will remain on the display until the reset pad is pressed.

### POSSIBLE CAUSES

- Water turned off to machine
- False signal
- Water valve inoperative
- Leak causing water to drain from tub
- Pump out during circulation (diverter valve leak)

### REPAIR

- Check supply and turn on
- Press RESET and try again
- Check valve and signal to it
- Repair as required
- Replace mechanism

**"C6"** – The water temperature did not reach 120° during the main wash. The fault shall continue to be illuminated until the door latch is opened or the RESET pad is pressed.

### POSSIBLE CAUSES

- Water heater set too low
- High hot water usage prior to using dishwasher
- Open heating element
- No voltage to heating element

### REPAIR

- Water temp coming into dishwasher must be 120°F.
- Avoid showers, etc.
- Replace element
- Check circuit from control to element

**"C7"** – At the start of each wash cycle the control will check the temperature sensor to determine if the sensor is open or shorted. If the sensor is open or shorted, then this code will be displayed and the heater will not operate during the wet part of the cycle. The wash cycle will be completed and pressing RESET will clear fault from the display.

### POSSIBLE CAUSES

- Bad thermistor
- Open wire
- Bad control

### REPAIR

- Check resistance from pin 3 to 4 on turbidity sensor, should be 50K @ room temp. if not, turbidity sensor would have to be replaced
- Check continuity from control to sensor
- Check for 5 VDC from 3-4 at turbidity connector

### SOIL LEVEL BAR GRAPH

The soil level bar graph indicates the relative amount of soil in the dishwasher. The different auto cycles have different number of fills that is also a function of the soil level. The number of bars illuminated for the soil level bar graph will be a function of which fill number the controller goes into main wash. The following table indicates the number of bars illuminated for each of the auto cycles.

EXAMPLE: Cycle – China, 2 Bars = 5 Fills

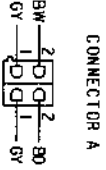
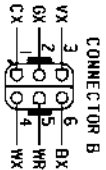
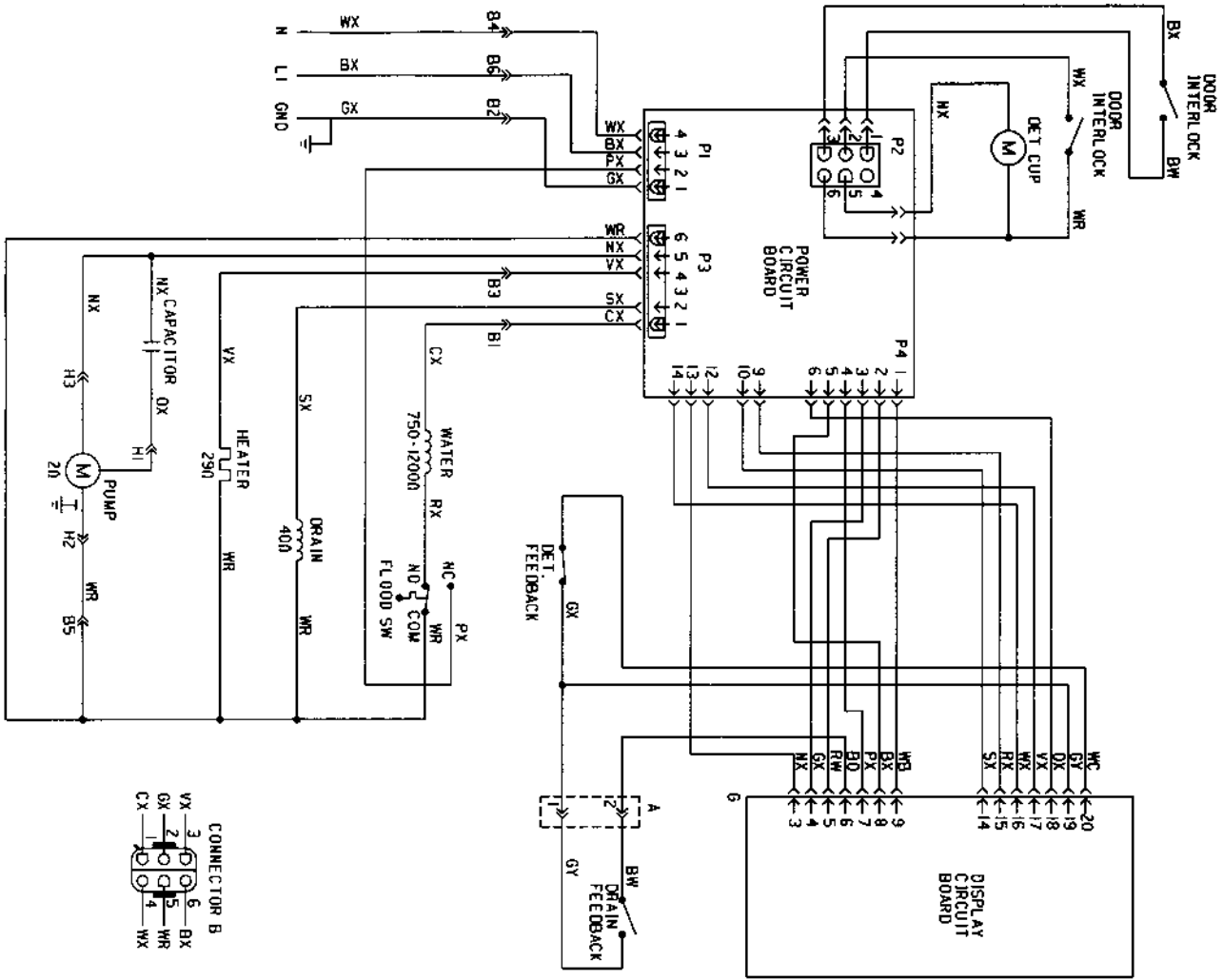
Cycle	Number of Fills				
	4	5	6	7	8
POTSCRUBBER	n/a	1	2	3	4
NORMAL	1	2	3	n/a	n/a
CHINA	1	2	n/a	n/a	n/a

### TIME TO END OF CYCLE

The time to end of cycle in the display will be determined after the controller goes into main wash and after displaying the soil level bars for three minutes. The time to end of cycle will include the remaining main wash time, two post rinse times, final rinse time plus extend time, fills plus drain times, and dry time if heated dry is selected.

# GSD4210X/4220X/4230X VALUE MODELS E5 CONTROL

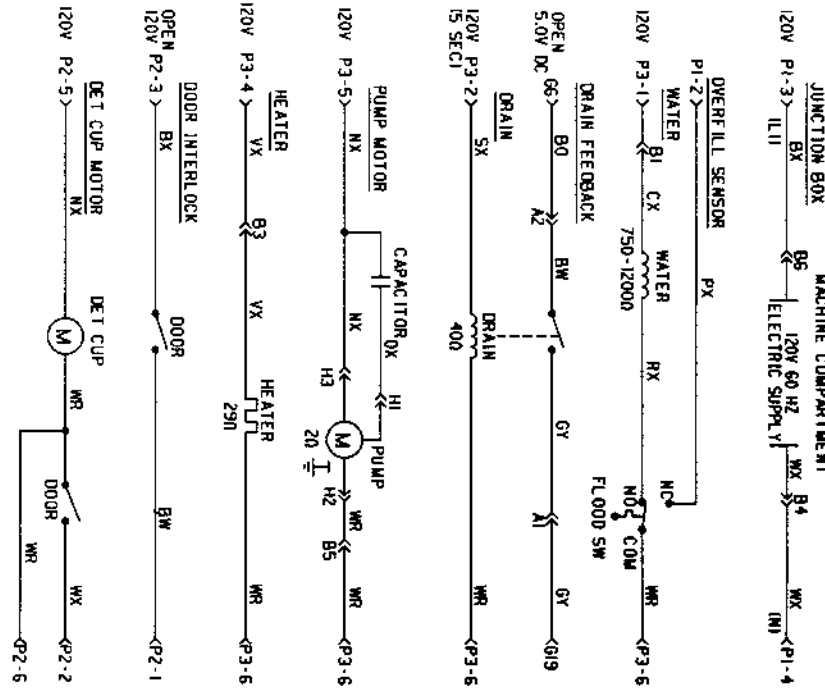
1G5D3267P001



LETTERS	COLOR	LETTERS	COLOR
BX	BLACK	BX	RED
CX	BROWN	SX	GRAY
GX	GREEN	TX	TAN
HX	BLUE	VX	VIOLET
DX	ORANGE	WX	WHITE
PX	PINK	YX	YELLOW

THE "X" INDICATES ONE SOLID COLOR. NO TRACER. WIRES WITH TRACER SHOW BOTH COLORS. EXAMPLE: WR IS WHITE WITH RED TRACER.

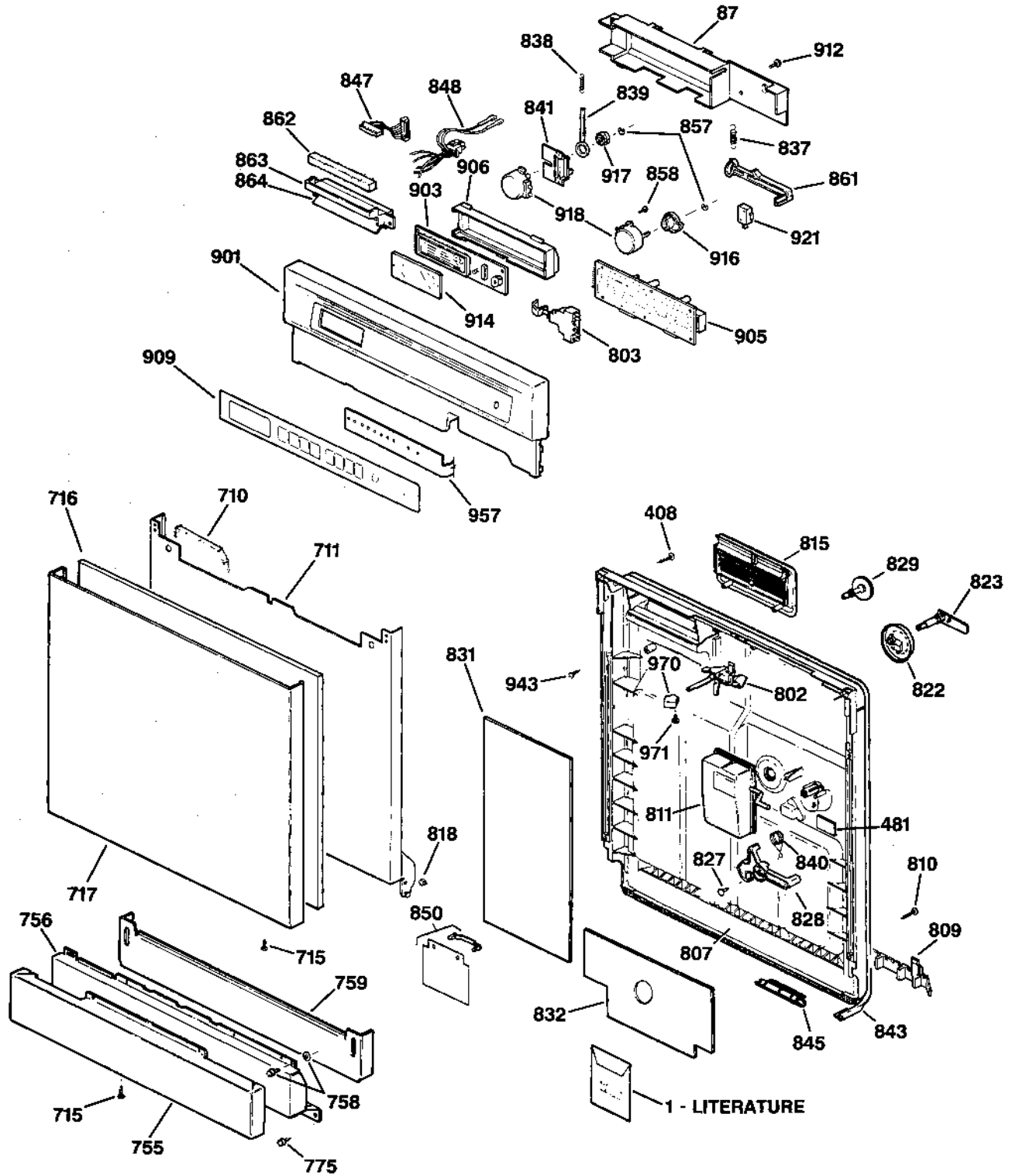
## STRIP CIRCUITS





# GSD4430X/4420X/4410X/4930X/4920X/4910X

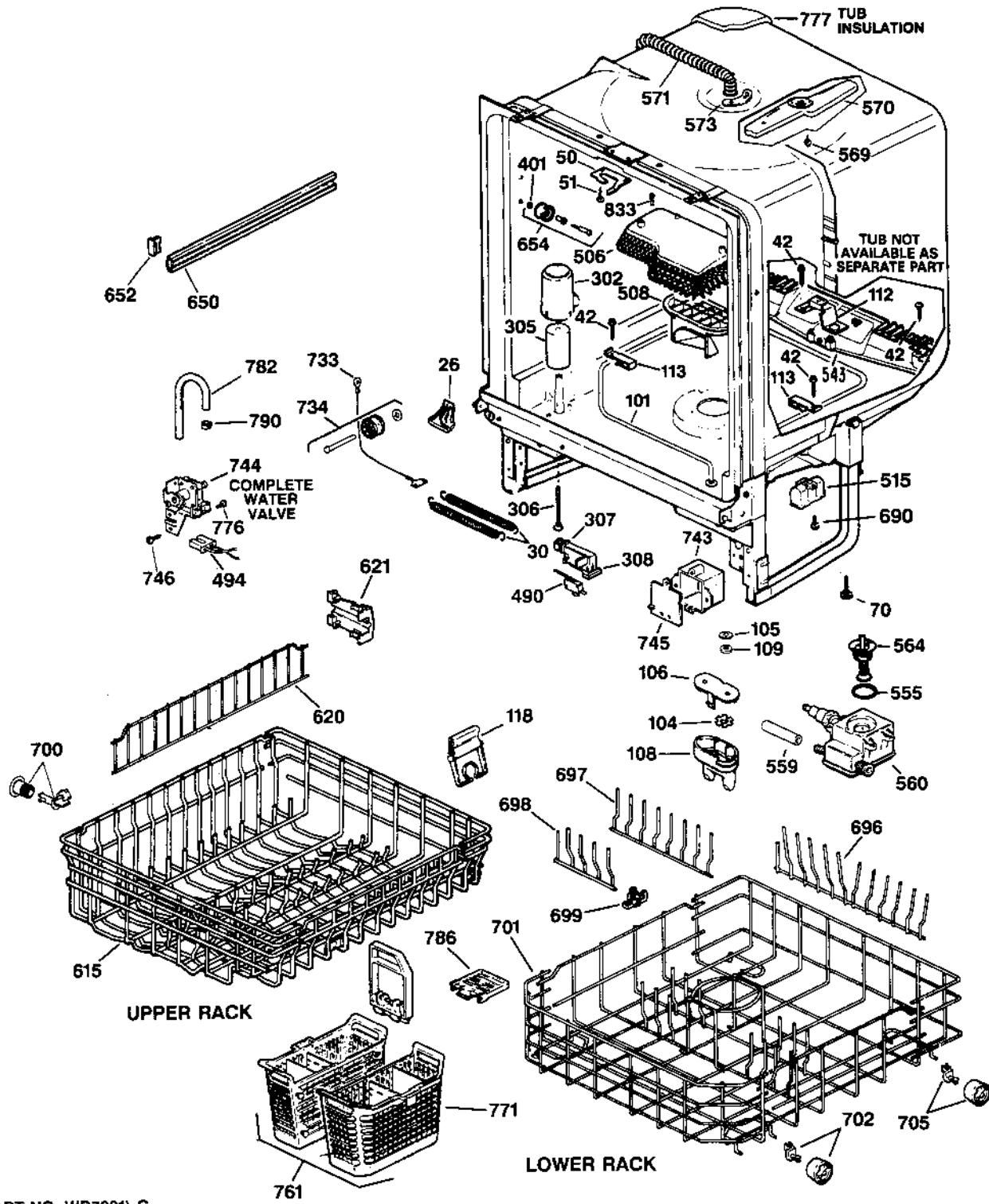
NOTE: Parts listed not on all models.



(ART NO. WD7990) C

# GSD4430X/4420X/4410X/4930X/4920X/4910X

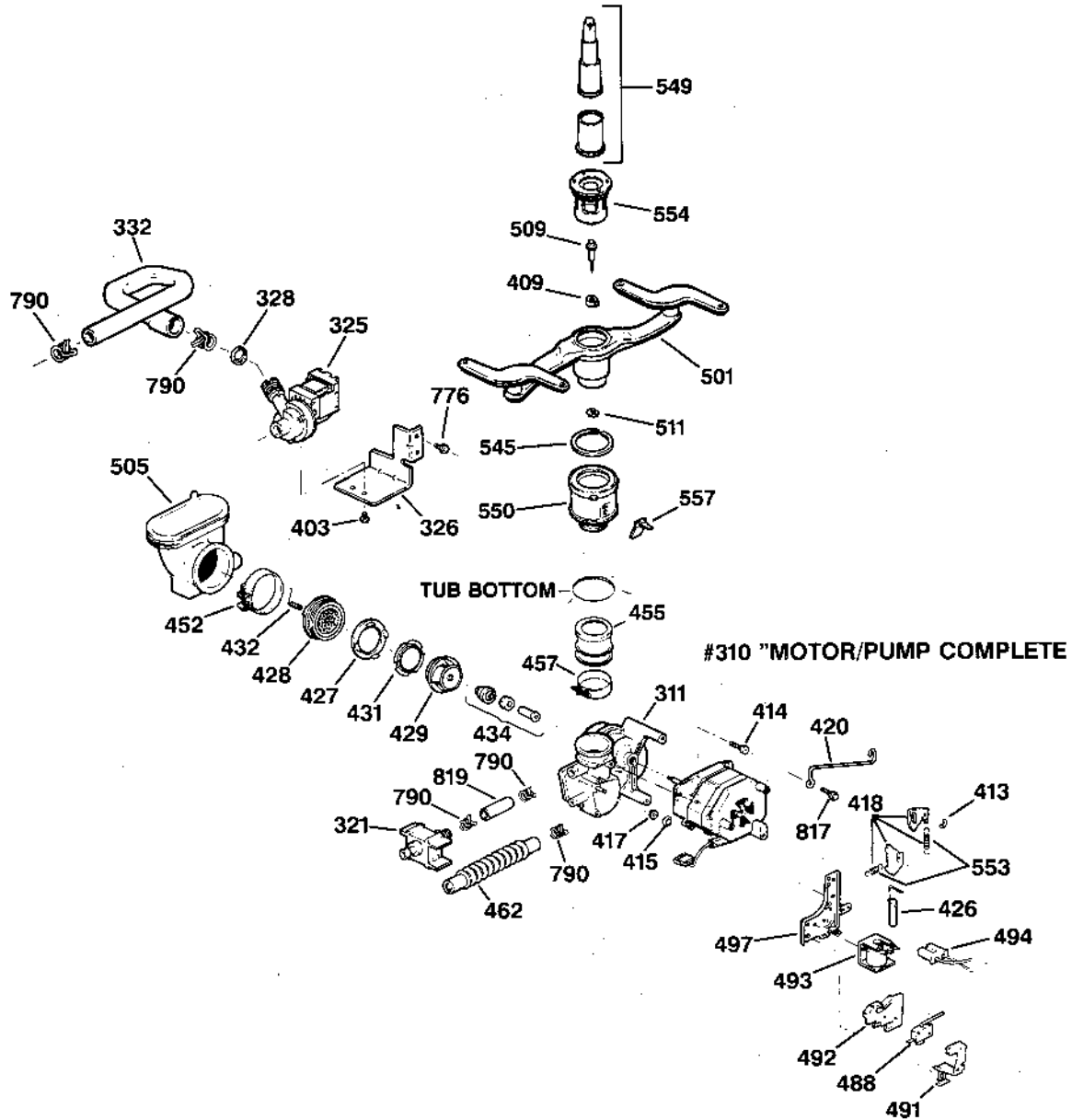
NOTE: Parts listed not on all models.



(ART NO. WD7991) C

# GSD4430X/4420X/4410X/4930X/4920X/4910X

NOTE: Parts listed not on all models.

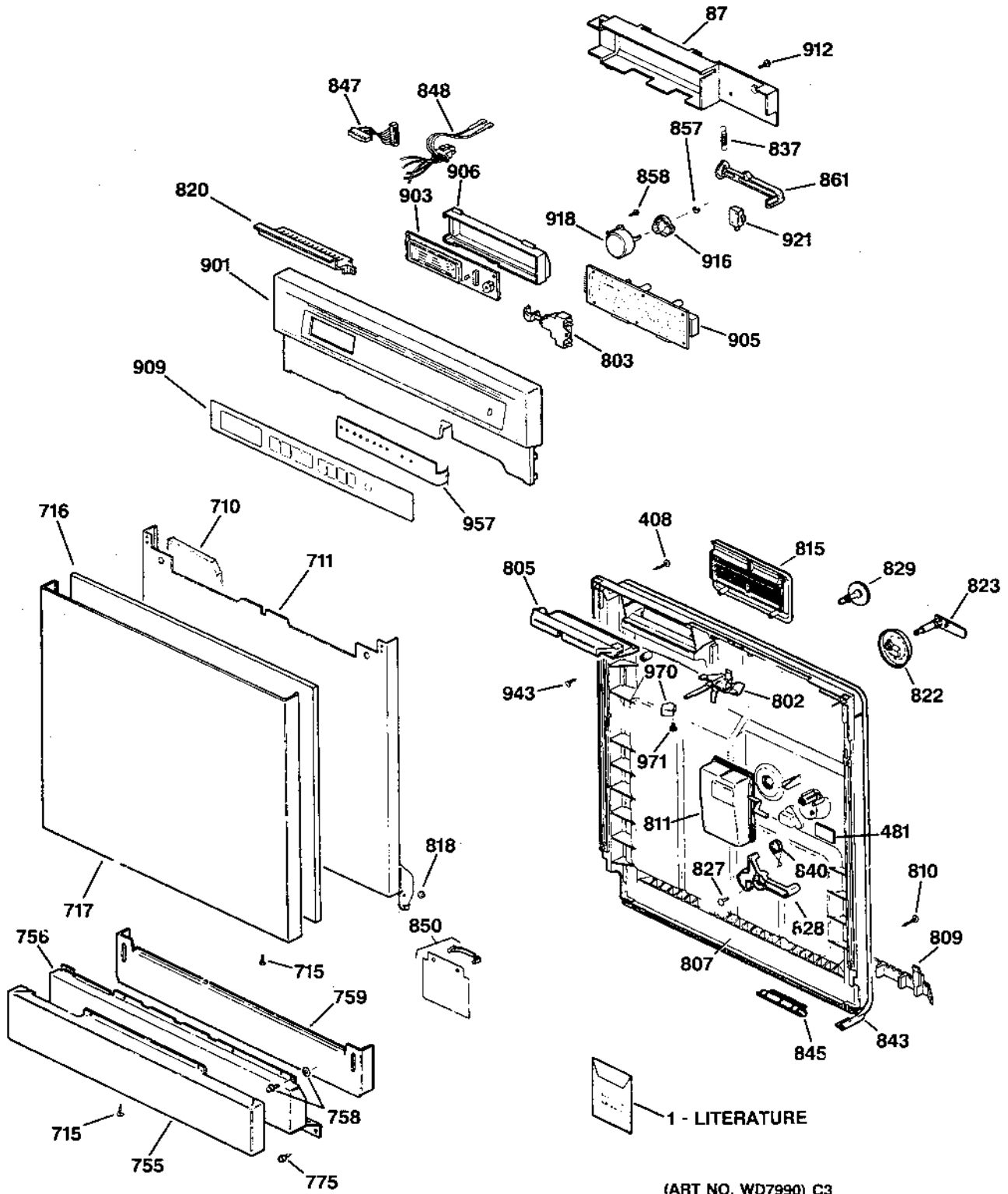


(ART NO. WD7992) C



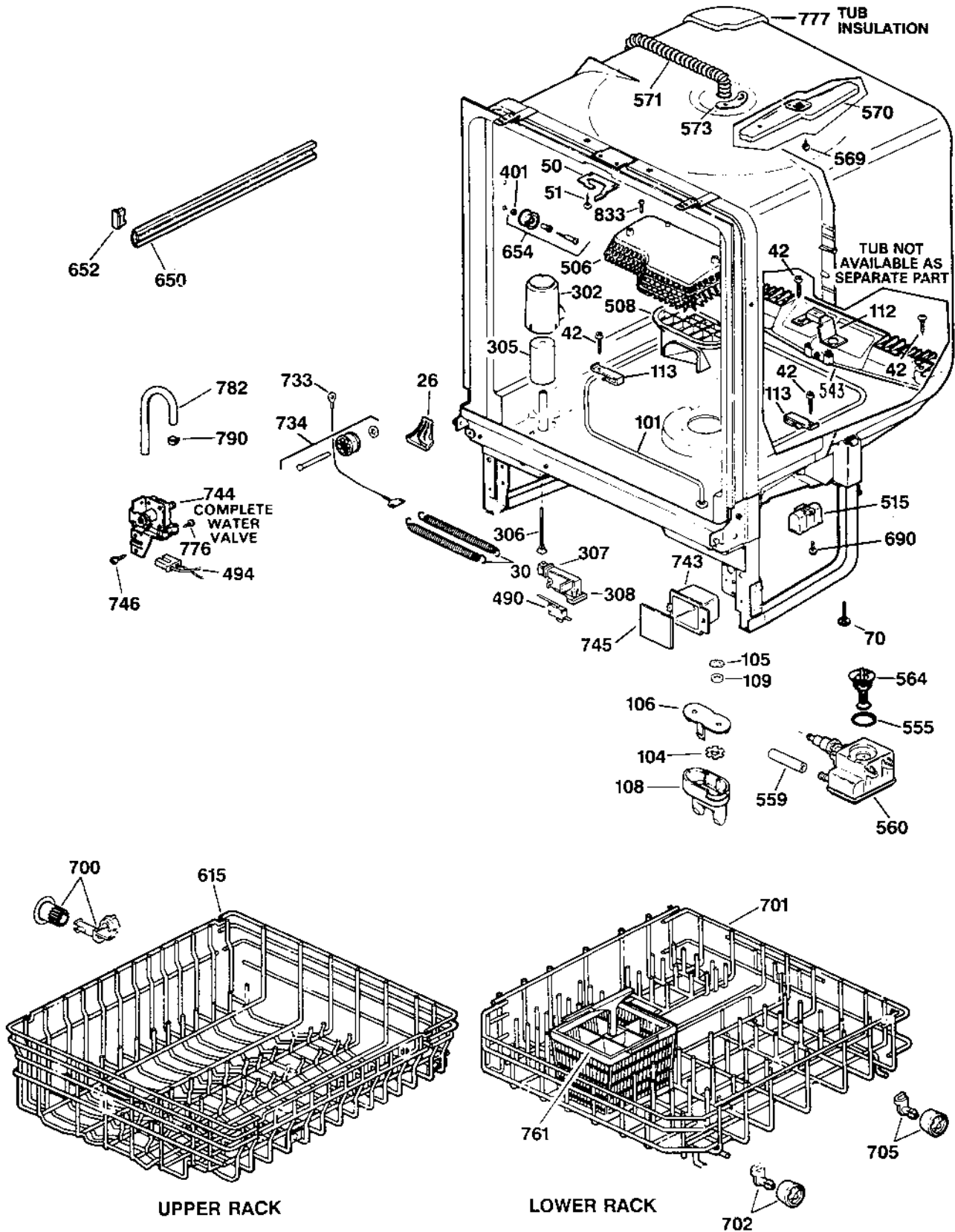
# GSD4230X/4220X/4210X

NOTE: Parts listed not on all models.



# GSD4230X/4220X/4210X

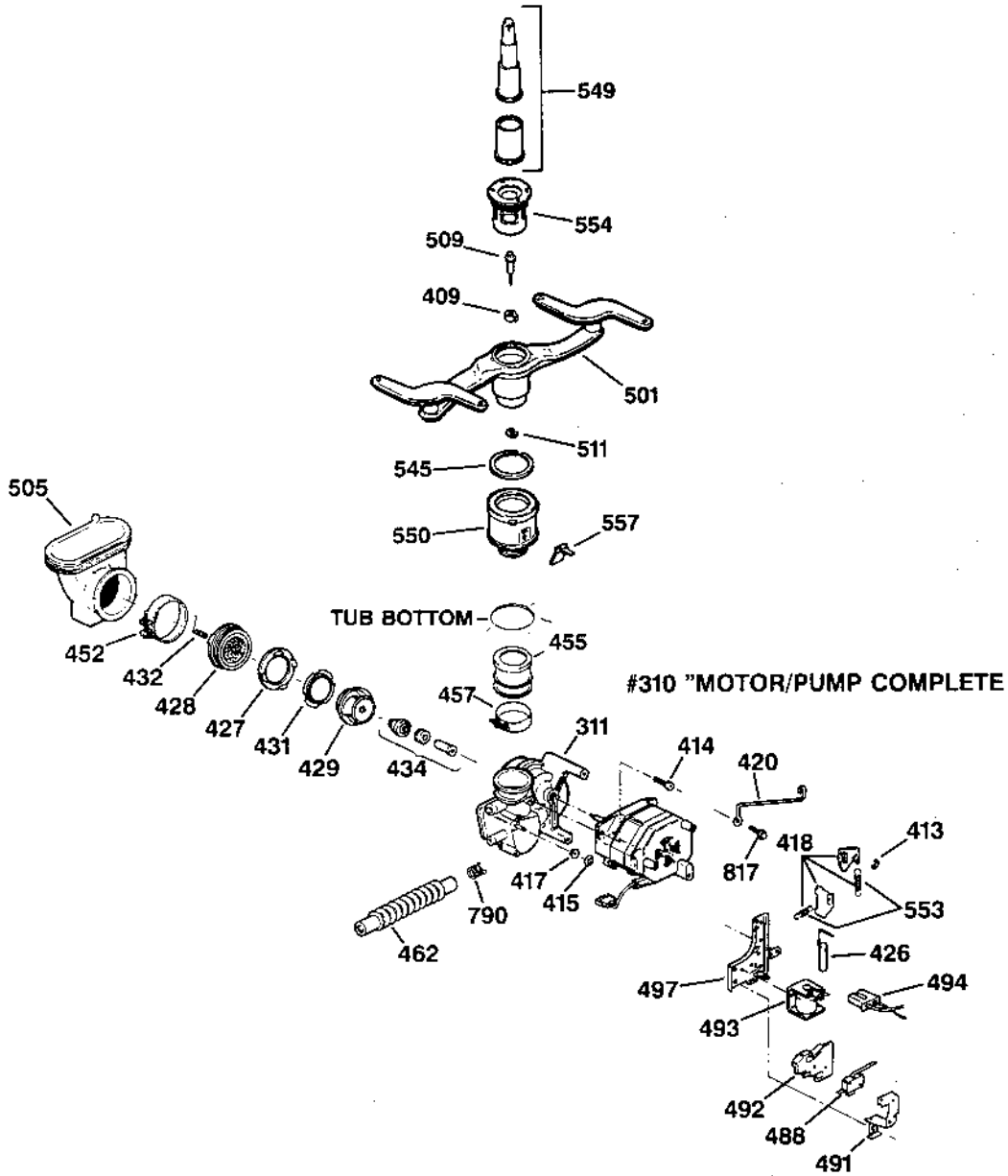
NOTE: Parts listed not on all models.



(ART NO. WD7989) C3

# GSD4230X/4220X/4210X

NOTE: Parts listed not on all models.



(ART NO. WD7992) C3

Ref. No.	Part No.	Part Description	GSD4910X	GSD4920X	GSD4930X	GSD4210X	GSD4220X	GSD4230X
0001	31-3525	Instruction Install	1	1	1	1	1	1
	31-4133	PM Sheet Mini Manual	1	1	1			
	31-4134	PM Sheet Mini Manual				1	1	1
	49-5502	PM Instr. Hugger	1	1	1			
	49-5679	Use & Care Manual	1	1	1			
	49-5680	PM Manual Use & Care				1	1	1
0026	WD08X0227	Baffle, Tub Corner R.H.	1	1	1	1	1	1
	WD08X0228	Baffle, Tub Corner, L.H.	1	1	1	1	1	1
0030	WD01X1333	Spring Door (Blue-30.0)	2	2	2			
	WD01X1354	Spring Door (Yel-25.0)				2	2	2
0042	WZ04X0376	SCR 10-16x3/4 #8 Hx SSSL	7	7	7	7	7	7
0050	WD13X0067	Keeper Latch	1	1	1	1	1	1
0051	WZ02X0492	SCR 10-24x1/2 TT TRR S	2	2	2	2	2	2
0070	WD02X0320	Screw Level	4	4	4	4	4	4
0087	WX04X0241	Screw				-	1	-
	WZ04X0241	Screw	1	1	1	1	-	1
0101	WD05X0069	Element Heating Asm D&D	1	1	1	1	1	1
0104	WD01X1289	Nut Heater	2	2	2	2	2	2
0105	WD01X1168	Heater Washer	2	2	2	2	2	2
0106	WD01X1453	Base Barrier	1	1	1	1	1	1
0108	WD01X1454	Barrier Heating Element	1	1	1	1	1	1
	WR01X1718	Screw	4	4	-	2	-	-
0109	WD08X0225	Grommet Heater	2	2	2	2	2	2
0112	WD01X1462	Support Calrod	1	1	1	1	1	1
0113	WD01X1430	Support Asm	2	2	2	2	2	2
0118	WD28X0287	Bag & Hugger Asm	1	1	1			
0302	WD12X0333	Float Dome	1	1	1	1	1	1
0305	WD12X0334	Flood Float	1	1	1	1	1	1
0306	WD12X0335	Float Stem	1	1	1	1	1	1
0307	WD12X0376	Bracket Flood Switch	1	1	1	1	1	1
0308	WD12X0377	Cover Bracket	1	1	1	1	1	1
0310	WD26X0079	Mechanism S/S Asm	1	1	1	1	1	1
0311	WD19X0057	Housing Pump Asm	1	1	1	1	1	1
0321	WD21X0769	Sensor Turbidity	1	1	1			
0325	WD19X0059	Pump	1	1	1			
0326	WD01X1485	Bracket Pump	1	1	1			
0328	WD01X1486	Valve Flapper	1	1	1			
0332	WD24X0223	Hose Dual Pump	1	1	1			
0401	WD03X0767	Washer ST STL	8	8	8	8	8	8
0403	WD02X0446	Screw	2	2	2			
0408	WD02X0296	Screw - 8-32x5/8	4	4	4	4	4	4
0409	WD03X0766	Thrust Washer	1	1	1	1	1	1
0413	WD03X0487	PS Retainer	1	1	1	1	1	1
0414	WD02X0444	Screw Mech	3	3	3	3	3	3
0415	WD02X0429	Nut Push On	1	1	1	1	1	1
0417	WD08X0181	Gate Shaft Seal	1	1	1	1	1	1
0418	WD35X0192	Gate Valve Arm Kit	1	1	1	1	1	1
0420	WD01X1482	Hanger Mech	1	1	1	1	1	1
0426	WD01X1316	Armature & Link Asm	1	1	1	1	1	1
0427	WD12X0354	Wear Ring Base	1	1	1	1	1	1
0428	WD12X0378	Grader/Nut	1	1	1	1	1	1
0429	WD19X0060	Impeller Asm	1	1	1	1	1	1
0431	WD01X1341	Wear Ring	1	1	1	1	1	1
0432	WD01X1487	Spring Cutter	1	1	1	1	1	1
0434	WD19X0058	Pump Seal Asm	1	1	1	1	1	1

Ref. No.	Part No.	Part Description	GSD4910X	GSD4920X	GSD4930X	GSD4210X	GSD4220X	GSD4230X
0452	WD01X1392	Clamp, Sump	1	1	1	1	1	1
0455	WD18X0214	Connector Pump Asm	1	1	1	1	1	1
0457	WD01X1376	Clamp (Pump Connector)	1	1	1	1	1	1
	WD01X1489	Clamp Sump to Drain	1	1	1			
0462	WD24X0219	Drain Tube Asm	1	1	1	1	1	1
0481	WD01X1348	Deflector	1	1	1	1	1	1
0488	WD21X0643	Switch Drain Fdbk	1	1	1	1	1	1
0490	WD21X0706	Switch Flood	1	1	1	1	1	1
0491	WD01X1355	Switch Bracket	1	1	1	1	1	1
0492	WD12X0372	Switch Guard	1	1	1	1	1	1
0493	WD21X0710	Solenoid	1	1	1	1	1	1
0494	WD01X1459	Insulator Hsng Term	2	2	2	2	2	2
0497	WD01X1439	Bracket Solenoid	1	1	1	1	1	1
0501	WD22X0144	Spray Arm Asm	1	1	1	1	1	1
0505	WD18X0213	Sump Inlet				1	1	1
	WD18X0215	Sump Inlet	1	1	1			
0506	WD12X0417	Cover Inlet	1	1	1	1	1	1
0508	WD12X0418	Cap Sump	1	1	1	1	1	1
0509	WD02X0439	Screw Spray Arm	1	1	1	1	1	1
0511	WD02X0438	E Ring	1	1	1	1	1	1
0515	WD21X0770	Capacitor	1	1	1	1	1	1
0543	WD22X0138	Filter Frame Asm	-	1	1	1	1	1
	WD22X0149	Filter Frame Asm	1	-	-			
0545	WD22X0143	Ring Seal	1	1	1	1	1	1
0549	WD22X0148	Tower Asm	1	1	1	1	1	1
0550	WD22X0142	Support Asm	1	1	1	1	1	1
0553	WD03X0721	Spring Set	1	1	1	1	1	1
0554	WD22X0140	Nut Tower	1	1	1	1	1	1
0555	WD08X0219	Gasket Valve Body	1	1	1	1	1	1
0557	WD01X5488	Check Valve	1	1	1	1	1	1
0559	WD24X0221	Hose Chamber	1	1	1	1	1	1
0560	WD22X0147	Valve & Check Asm				1	1	1
	WD22X0150	Body Valve & Check Asm	1	1	1			
0564	WD24X0220	Piston & Nut Asm	1	1	1	1	1	1
0569	WD01X1297	SCR 10-12x5/8 A PHR SS	2	2	2	2	2	2
0570	WD22X0116	Power Shower Assembly	1	1	1	1	1	1
0571	WD24X0214	Hose Power Shower				1	1	1
	WD24X0222	Hose Power Shower	1	1	1			
0573	WD01X1007	Nut Strip	1	1	1	1	1	1
0615	WD28X0277	Rack Upper & Roller TM				1	1	1
	WD28X0329	Rack Upper & Roller Asm	1	1	1			
0620	WD28X0330	Shelf Cup Ranger	1	1	1			
0621	WD28X0331	Support Shelf	2	2	2			
0650	WD30X0098	Rack Slide	2	2	2	2	2	2
0652	WD12X0344	Rack Slide Endcap	4	4	4	4	4	4
0654	WD12X0332	Roller & Stud Asm	8	8	8	8	8	8
0684	WZ04X0417	Screw	13	13	13	11	11	11
0690	WR01X1466	SCR 8-32 T HXW 3/8 S	1	1	1	1	1	1
0696	WD28X0332	Comb Ranger	2	2	2			
0697	WD28X0333	Comb Ranger	2	2	2			
0698	WD28X0334	Comb Ranger	2	2	2			
0699	WD28X0309	Retainer Comb	12	12	12			
0700	WD12X0383	4-Rlr & STD Asm, Upr Rack	4	4	4	4	4	4
0701	WD28X0305	Rack Lower & Roller Asm				1	1	1
	WD28X0335	Rack Lower & Roller Asm	1	1	1			

Ref. No.	Part No.	Part Description	GSD4910X	GSD4920X	GSD4930X	GSD4210X	GSD4220X	GSD4230X
0702	WD12X0271	Roller Asm Lwr Rack Front	4	4	4	4	4	4
0705	WD12X0272	Roller Asm Lwr Rack Rear	2	2	2	2	2	2
0706	WD03X0772	Washer	1	1	1	1	1	1
0710	WD01X1463	Insulation	1	1	1	1	1	1
0711	WD31X0304	Door & Hinge Asm Outer	1	1	1	1	1	1
0715	WD02X0432	Screw	-	6	-	-	6	-
	WD02X0433	Screw 8-18 x 5/16 WH	-	-	6	-	-	6
	WD02X0434	Screw 8-18 x 5/16 AD	6	-	-	6	-	-
0716	WD01X1481	Insulator Color Pack	1	1	1	1	1	1
0717	WD27X0551	Panel Decorative	1	-	-	1	-	-
	WD27X0554	Panel Decorative	-	1	-	-	1	-
	WD27X0557	Panel Decorative	-	-	1	-	-	1
0733	WD07X0014	Cable & Eyelet Asm	2	2	2	2	2	2
0734	WD35X0183	Kit Pulley & Shaft	2	2	2	2	2	2
0743	WD12X0419	Junction Box	1	1	1	1	1	1
0744	WD15X0096	Valve Water Inlet	1	1	1	1	1	1
0745	WD12X0420	J-Box Cover	1	1	1	1	1	1
0746	WD02X0248	SCR 10-24 x 3/8 TT HEX	5	5	5	3	3	3
0755	WD27X0553	Panel Decorative Access	1	-	-	1	-	-
	WD27X0555	Panel Decorative Access	-	1	-	-	1	-
	WD27X0558	Panel Decorative Access	-	-	1	-	-	1
0756	WD27X0547	Panel Access & Scr Asm	1	-	-	1	-	-
	WD27X0548	Panel Access & Scr Bk	-	1	-	-	1	-
	WD27X0549	Panel Access & Scr Wh	-	-	1	-	-	1
0758	WD02X0323	Screw 8-32 x 3/8 Sph	2	2	2	2	2	2
0759	WD27X0552	Toekick Asm Ad	1	-	-	1	-	-
	WD27X0556	Toekick Asm Bk	-	1	-	-	1	-
	WD27X0559	Toekick Asm Wh	-	-	1	-	-	1
0761	WD28X0265	Basket Silverware TM				1	1	1
	WD28X0318	Basket Silverware Asm	1	1	1			
0771	WD28X0317	Basket	2	2	2			
0773	WD28X0272	Shelf Rack TM	-	-	1			
0775	WD02X0435	Screw 10-16x5/8 HXP Chr	2	-	4	2	-	4
	WD02X5166	Scr 10-16x1/2 AB HxW S	3	5	1	3	5	1
0776	WZ05X0222	Scr 10-32 T Hex 7/16 S	1	1	1	1	1	1
0777	WD01X1465	Insulation Tub	1	1	1	1	1	1
0782	WB17X5060	Terminal Blk Asm (2 Pin)				1	-	-
	WD18X0202	Water Inlet Hose	1	1	1	1	1	1
0786	WD28X0319	Cover Cell	2	2	2			
0788	WB17X5064	Housing Socket Pkg 4 Pin	1	1	1	1	1	1
	WB17X5079	Housing Socket Pkg 6 Pin	3	3	3	2	2	2
0790	WH01X2036	Clamp Hose	2	2	2	2	2	2
0802	WD13X0069	Latch Asm	1	1	1	1	1	1
0803	WD06X0245	Switch Interlock Asm	1	1	1	1	1	1
0805	WD01X1489	Support Foam				1	1	1
0807	WD31X0303	Door Inner	1	1	1	1	1	1
0809	WD31X0312	Door Extension	1	1	1	1	1	1
0810	WD02X0322	Scr 8-18x7/8 BT	3	3	3	3	3	3
0811	WD12X0398	Rinse Aid Inj Asm	1	1	1	1	1	1
0815	WD12X0328	Vent Asm	1	1	1	1	1	1
0817	WD02X0445	Screw Hanger	1	1	1	1	1	1
0818	WD12X0231	Bearing Hinge Arm	2	2	2	2	2	2
0819	WD24X0224	Hose Turbidity Sensor	-	1	1			
0820	WD01X1490	Vent Pad				1	1	1
0822	WD16X0297	Cover Detergent Cup	1	1	1	1	1	1

Ref. No.	Part No.	Part Description	GSD4910X	GSD4920X	GSD4930X	GSD4210X	GSD4220X	GSD4230X
0823	WD16X0313	Shaft/Handle Det Cup	1	1	1	1	1	1
0827	WD02X0425	Scr 10-12x1/2 AC Pnr S	2	2	2	2	2	2
0828	WD16X0318	Latch D Cup	1	1	1	1	1	1
0829	WD12X0409	Rinse Aid Disp Asm	1	1	1	1	1	1
0831	WD01X1468	Damper Sound	1	1	1			
0832	WD01X1469	Damper Sound	1	1	1			
0833	WD02X0295	Scr 8-16x2 SS	2	2	2	2	2	2
0837	WD03X0749	Spring Timer Lever	1	1	1	1	1	1
0838	WD03X0776	Spring Vent	1	1	1			
0839	WD01X1477	Linkage Vent	1	1	1			
0840	WD03X0764	Detergent Trip Spring	1	1	1	1	1	1
0841	WD01X1478	Switch Support	1	1	1			
0843	WD08X0229	Gasket Door TM	1	1	1	1	1	1
0845	WD08X0231	Gasket Insert	1	1	1	1	1	1
0847	WD12X0438	Harness Power/Signal	1	1	1			
	WD12X0443	Harness Power/Signal				1	1	1
0848	WD12X0439	Harness - AC	1	1	1			
	WD12X0444	Harness - AC				1	1	1
0850	WD12X0338	Drip Shield	1	1	1	1	1	1
0857	WD12X0192	Retainer	2	2	2	1	1	1
0858	WD12X0443	Screw	1	1	1	1	1	1
0861	WD12X0436	Lever Timer	1	1	1	1	1	1
0862	WD01X1479	Vent Insulation	1	1	1			
0863	WD01X1480	Vent Asm	1	1	1			
0864	WD01X1488	Flap Vent	1	1	1			
0901	WD34X1178	Escutcheon Asm PS	1	-	-			
	WD34X1183	Escutcheon Asm PS	-	1	-			
	WD34X1185	Escutcheon Asm PS	-	-	1			
	WD34X1191	Escutcheon Asm PS				1	-	-
	WD34X1193	Escutcheon Asm PS				-	1	-
	WD34X1195	Escutcheon Asm PS				-	-	1
0903	WD21X0765	Signal Board	1	1	1			
	WD21X0772	Signal Board				1	1	1
0905	WD21X0766	Power Board	1	1	1	1	1	1
0906	WD12X0435	Cover Elec. Signal	1	1	1	1	1	1
0909	WD34X1177	Insert Film	1	-	-			
	WD34X1182	Insert Film	-	1	-			
	WD34X1184	Insert Film	-	-	1			
	WD34X1192	Insert Film				1	-	-
	WD34X1194	Insert Film				-	1	-
	WD34X1196	Insert Film				-	-	1
0912	WD12X0437	Housing Power Board	1	1	1	1	1	1
0914	WD34X1179	Filter Display	1	1	1			
0916	WD16X0319	Cam D Cup	1	1	1	1	1	1
0917	WD16X0320	Cam Actuator Vent	1	1	1			
0918	WD26X0080	Motor	2	2	2	1	1	1
0921	WD21X0767	Switch Sensor	2	2	2	1	1	1
0943	WZ05X0219	Screw	2	2	2	2	2	2
0957	WD21X0768	Switch Membrane	1	1	1			
	WD21X0773	Switch Membrane				1	1	1
0970	WD09X0311	Knob Latch Handle	-	-	1	-	-	1
	WD09X0312	Knob Latch Handle	-	1	-	-	1	-
	WD09X0313	Knob Latch Handle	1	-	-	1	-	-
0971	WZ02X0045	Screw Latch Knob	1	1	1	1	1	1





