



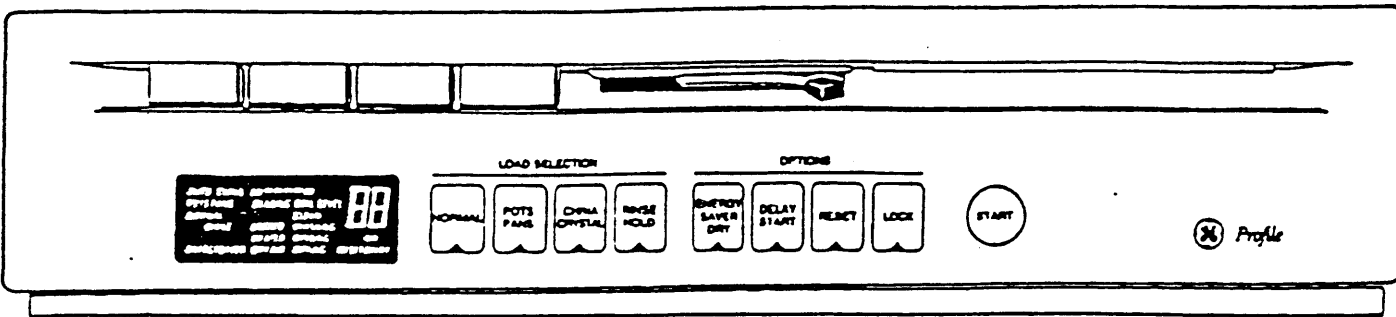
GE Appliances

TECHNICIAN'S MANUAL

GE BUILT-IN DISHWASHERS
GENERATION II

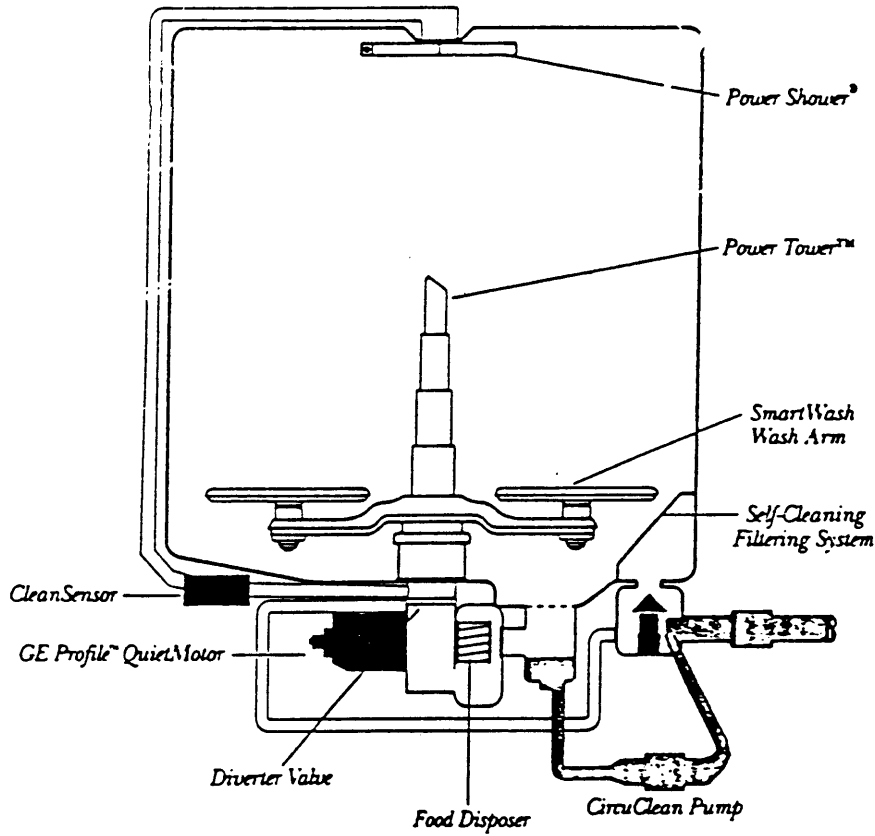


CONTROL PANEL:



■ Improved Wash Performance

The SmartWash System, CleanSensor, CircuClean Pump and GE Profile™ Quiet Motor



The CircuClean Pump clears the wash system between fills of carryover water.

This small amount of water can make a difference in cleaning performance and amount of water used during the wash cycle.



OPERATING INSTRUCTIONS

Soil Sensor System



Your new dishwasher automatically decides the best way to get your dishes clean using the least amount of water and energy. It has an exclusive Soil Sensor System that measures the amount of soil in the load. After the soil is measured the dishwasher decides the length of the Main Wash cycle and the number of rinses needed.

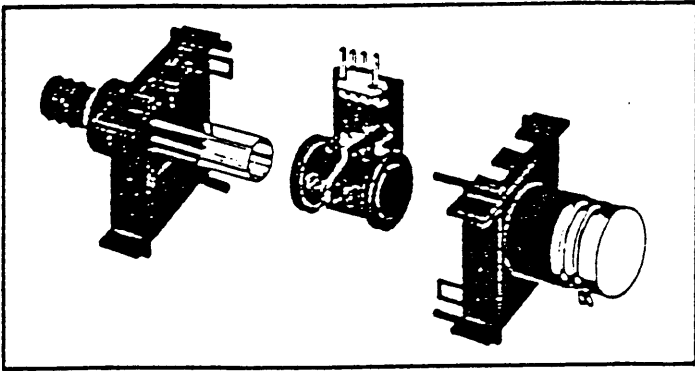
CYCLE	SOIL LEVEL	CYCLE SEQUENCES								WATER USAGE Gal./Litres	TOTAL TIME MINUTES
Normal	Heavy LO --- HI	Pre Wash/ Pre Rinse	Pre Rinse			Main Wash 22-37 minutes	Rinse	Rinse	Rinse	7.7/35.2	58 - 73
Normal	Medium LO -- HI	Pre Wash/ Pre Rinse				Main Wash 15-30 minutes	Rinse	Rinse	Rinse	6.3/28.8	44 - 59
Normal	Light LO - HI	Pre Wash/ Pre Rinse				Main Wash 12-27 minutes		Rinse	Rinse	5.4/24.6	36 - 51
Pots/Pans	Extra Heavy LO ---- HI	Pre Wash/ Pre Rinse	Pre Rinse	Pre Rinse	Pre Rinse	Main Wash 22-37 minutes	Rinse	Rinse	Rinse	10.2/46.2	67 - 82
Pots/Pans	Heavy LO --- HI	Pre Wash/ Pre Rinse	Pre Rinse	Pre Rinse		Main Wash 22-37 minutes	Rinse	Rinse	Rinse	9.0/40.9	62 - 77
Pots/Pans	Medium LO -- HI	Pre Wash/ Pre Rinse	Pre Rinse			Main Wash 22-37 minutes	Rinse	Rinse	Rinse	7.7/35.2	58 - 73
Pots/Pans	Light LO - HI	Pre Wash/ Pre Rinse				Main Wash 15-30 minutes	Rinse	Rinse	Rinse	6.3/28.8	43 - 58
China Crystal	Medium LO -- HI	Pre Wash/ Pre Rinse				Main Wash 15-30 minutes	Rinse	Rinse	Rinse	6.2/28.0	42 - 57
China Crystal	Light LO - HI	Pre Wash/ Pre Rinse				Main Wash 9 minutes		Rinse	Rinse	4.9/22.3	29
Rinse Hold		Pre Wash/ Pre Rinse								1.2/5.7	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.

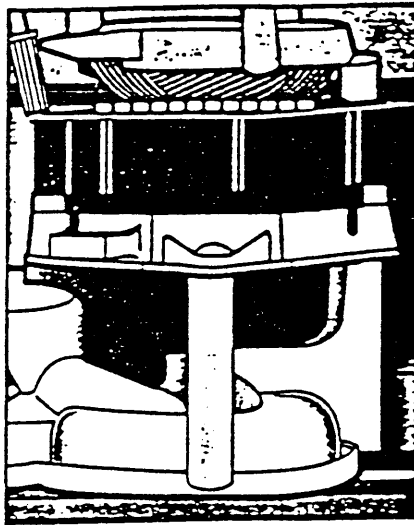
ENERGY SAVER DRY on. Drying heater is turned off. Dishes dry naturally.

■ CleanSensor



The CleanSensor shines light through a sampling of soiled water. The dishwasher then determines the amount of water, temperature and time needed to adequately clean the dishload.

■ GE Profile™ QuietMotor

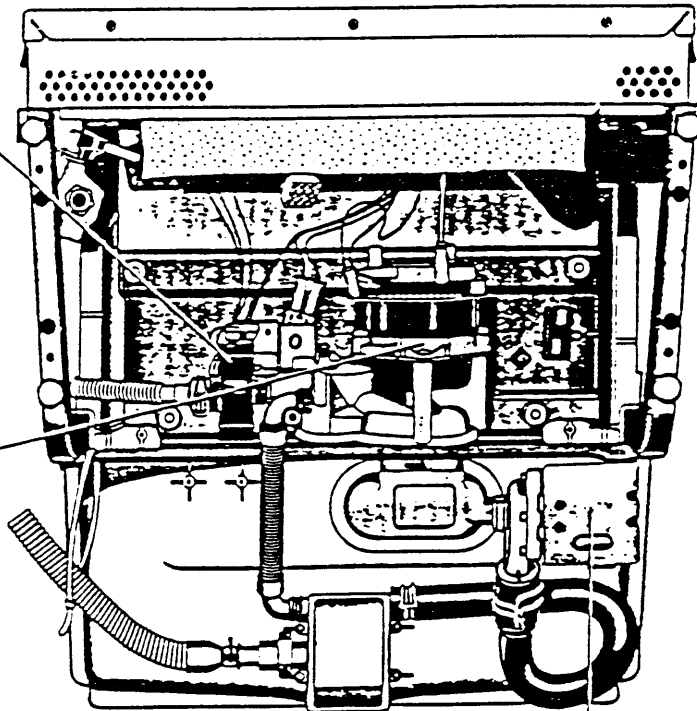


A new GE Profile™ QuietMotor designed to operate quieter than the motor hum heard with a relay start induction motor.

■ The Inside Story of GE's Best Wash Performance Ever!

CleanSensor
CleanSensor, located in 3rd level hose, determines the appropriate wash cycle based on soil level.

GE Profile™ QuietMotor
GE Profile™ QuietMotor is a quiet and efficient, permanent split capacitor motor. Unlike relay start induction motors, where an annoying motor hum may be heard.



CircuClean Pump
CircuClean Pump clears the wash system between fills to reduce soiled water in system.

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.

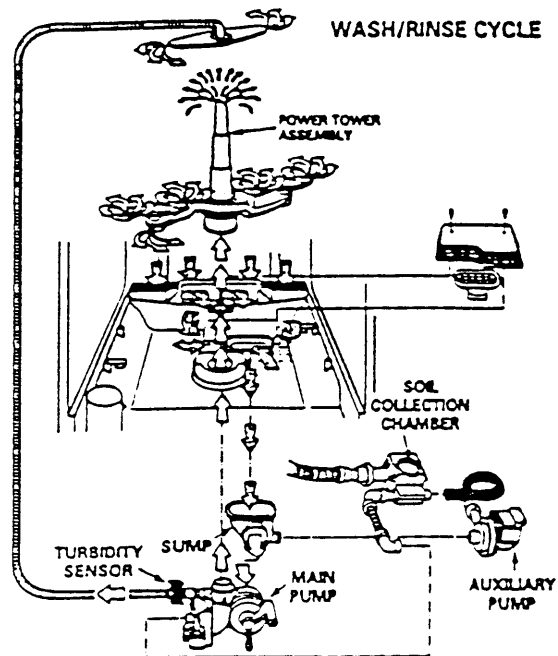
A check valve is located in the drain line. This valve allows the water to flow in the drain direction only and prevents the water from coming back into the tub. The drain line check valve must close in the back flow direction or the piston valve in the collection chamber may not reopen into the tub 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.

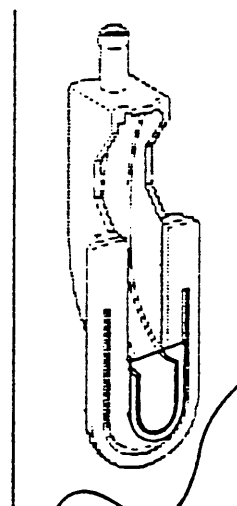
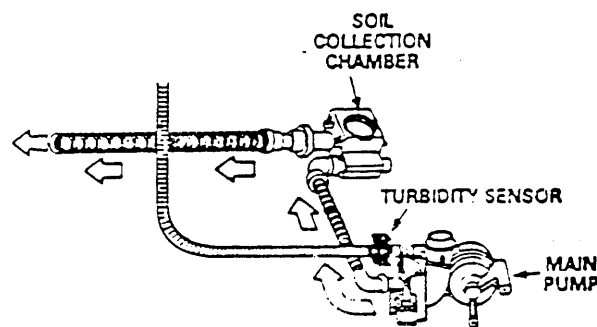
FILL FUNNEL

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.



DRAIN CYCLE



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.

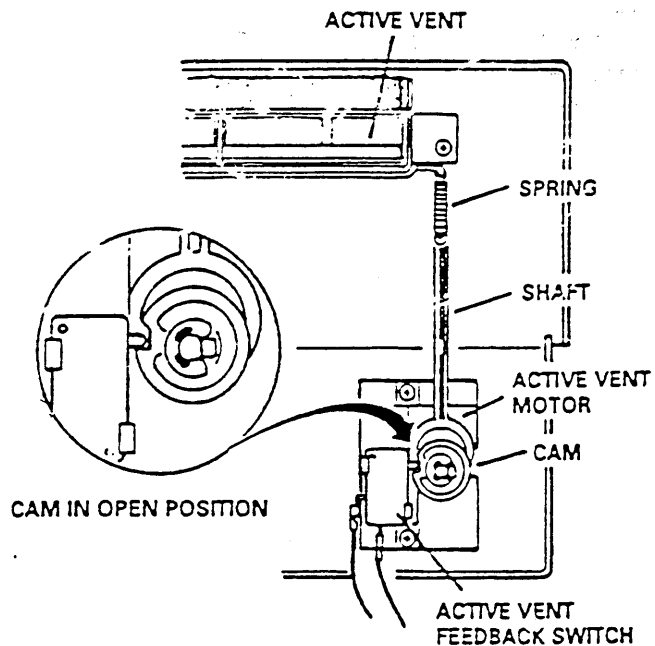
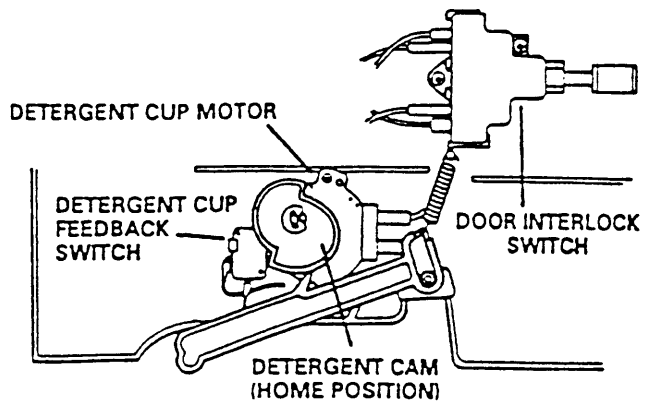
At the end of the wash cycle and at the same time the main pump is de-energized, the control will energize the active vent motor. The active vent motor will run until the control senses the vent cam is in the home position.

To Remove:

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

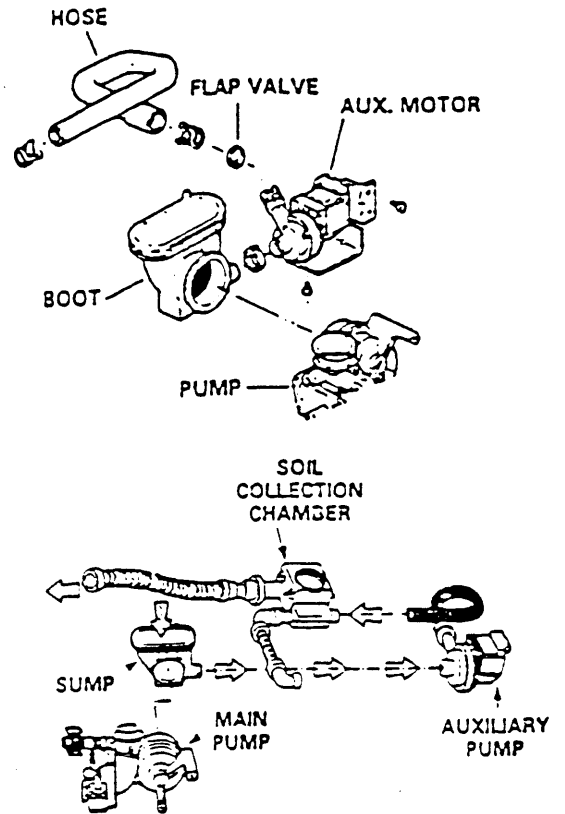
NOTE: Two tabs hold active feedback switch.

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



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)

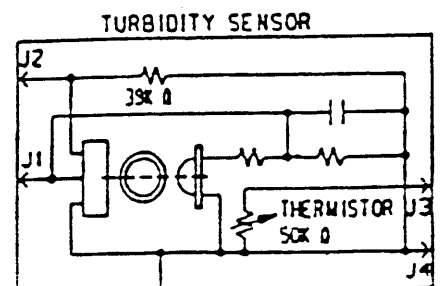
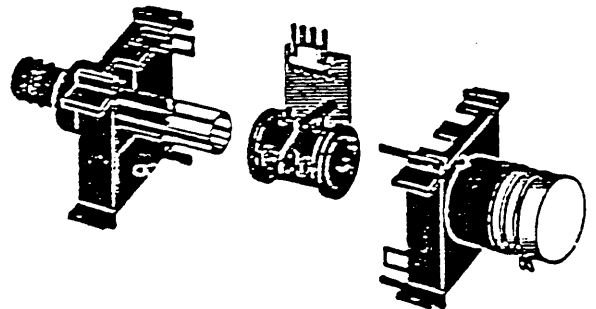
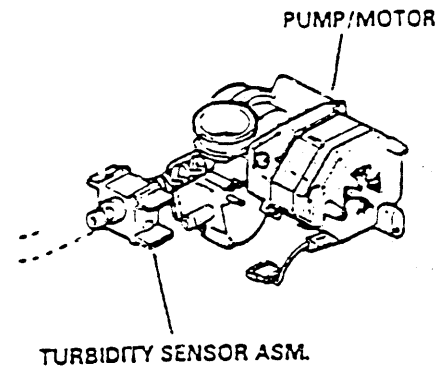
Turbidity: The amount of suspended particles in a fluid.

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.



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

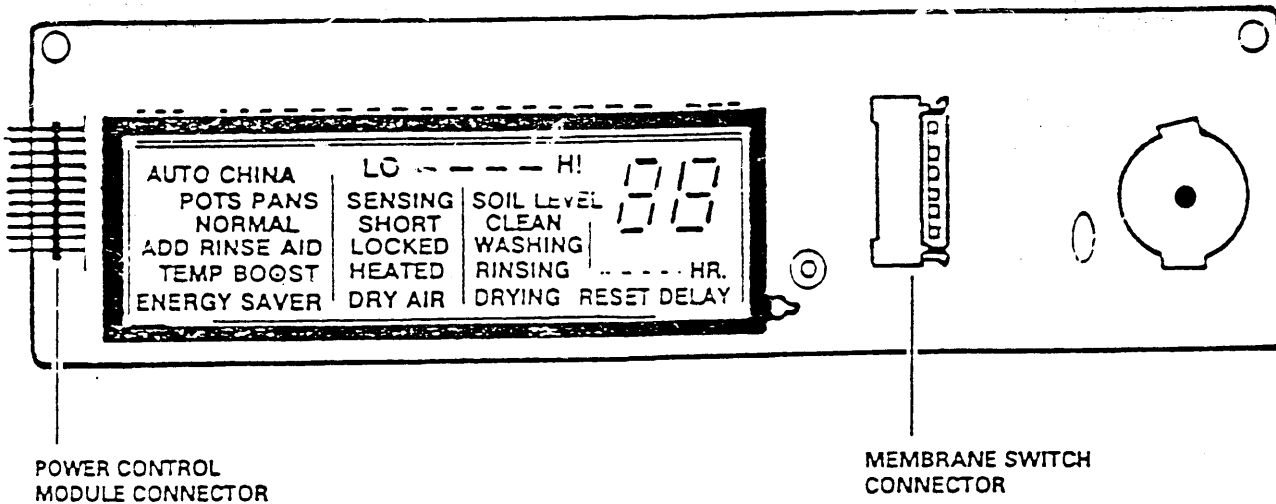
NOTE: ER will be on the smart display when the membrane switch or connection is faulty.

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 or 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

CONTROL BOARD

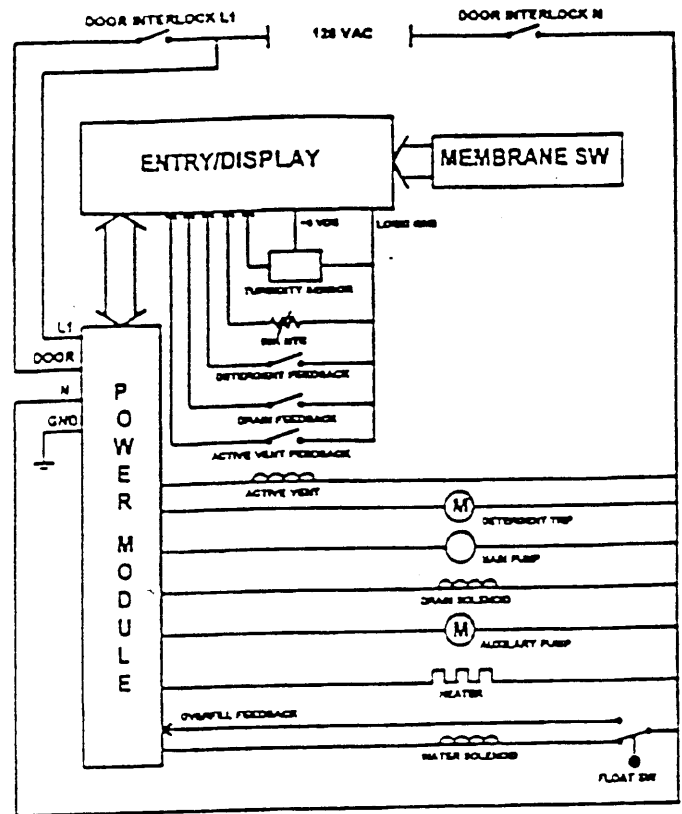
The electronic control board will consist of three replaceable components, the membrane switch, the entry/display module and the power control module.

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

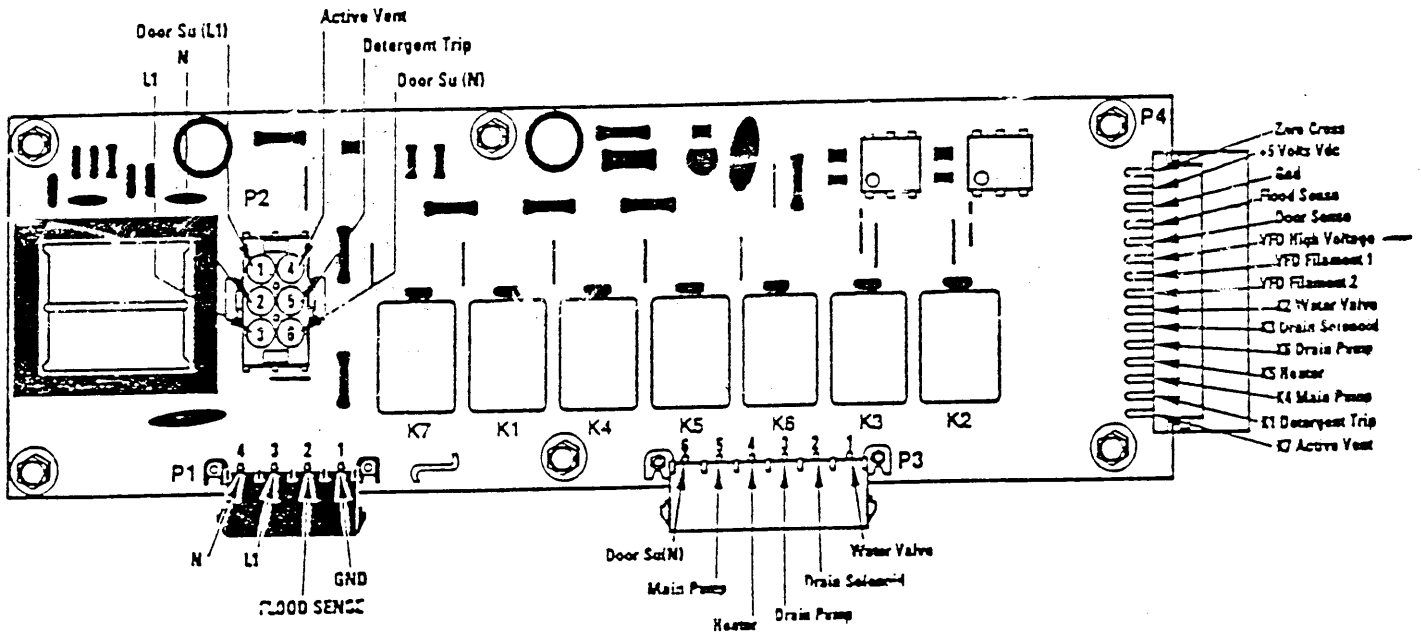
1st, 120 volts (line voltage from junction box) feeds the board at the P-1 connector (L1-#3) and routed to the P-2 connector (L1-#3) by a path on the printed circuit board.

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



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 -18 volts dc 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-#3) which returns it to N at the junction box and completes the journey.

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 them with the door in the latched position. There should be continuity on both switches.

Overflow 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 overflow 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 relays 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. 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.

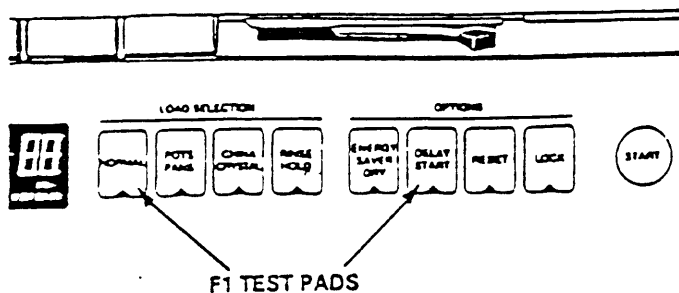
Drain Solenoid – The drain solenoid is energized for 5 seconds to switch the gate valve to the drain position and allow the main pump to drain the unit. This is done through the K3 relay on the power control module. The water pressure will hold the gate valve in the drain position until the pressure 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.

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 ammeter 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	500 (10 Min.)	Drying	Turn on heater.

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

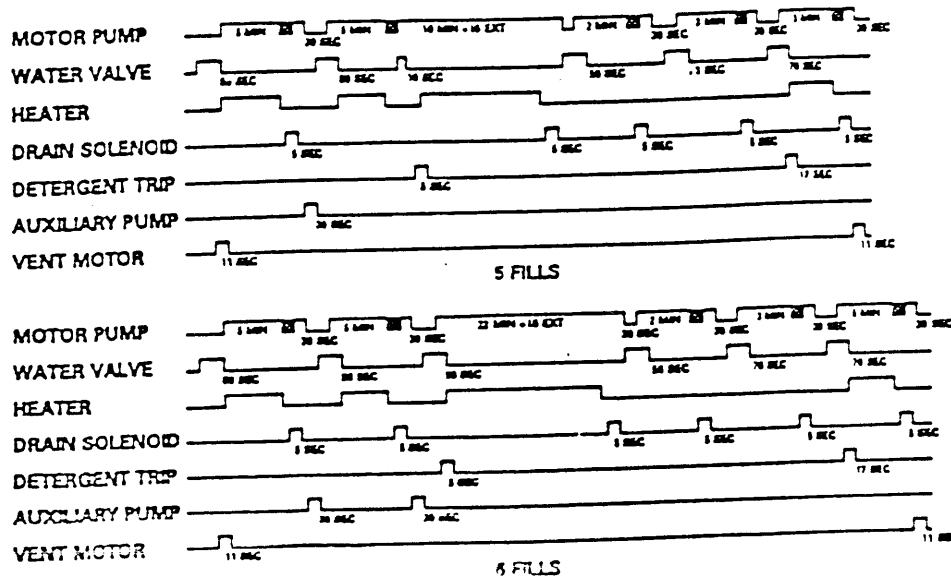
FAILED TURBIDITY SENSOR

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.



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

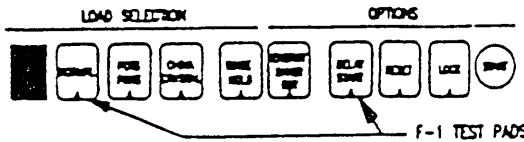
The time to end of cycle in the display will be determined after the controller goes into main wash and after displaying the soil level bars for three minutes. The time to end of cycle will include the remaining main wash time, two post rinse times, final rinse time plus extend time, fills plus drain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

IMPORTANT SAFETY NOTICE

THIS INFORMATION 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.

DISCONNECT POWER BEFORE SERVICING
IMPORTANT-RECONNECT ALL GROUNDING DEVICES.
 IF GROUNDING WIRES, SCREWS, STRAPS, CLIPS OR WASHERS USED TO COMPLETE A PATH TO GROUND ARE REMOVED FOR SERVICE, THEY MUST BE RETURNED TO THEIR ORIGINAL POSITION AND PROPERLY FASTENED.

DANGER-SERVICE PERSONNEL
 DANGER! HEATING ELEMENT, WATER VALVE, CAPACITOR, DRAIN SOLENOID, DETURGENT CUP MOTOR, ACTIVE VENT MOTOR (IF PRESENT), AND AUXILIARY PUMP (IF PRESENT) ARE INTENTIONALLY NOT GROUNDING AND MAY PRESENT A RISK OF ELECTRICAL SHOCK ONLY DURING SERVICING.
 DO NOT CONTACT WHILE APPLIANCE IS ENERGIZED.



F-1 TEST CYCLE

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.

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/flood switch turns it off.

FAILED TURBIDITY SENSOR

If the turbidity sensor fails, the AULT 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 lens, or optical window degraded. Replaces turbidity sensor.
 F1 - HIGH SIGNAL - Bad sensor-replace sensor. Intermittent connection-repair.
 F4 - NO SIGNAL - Bad sensor-replace sensor. Open or shorted wire-repair.

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 & f	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 boiling 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 boiling for 130° water temp. If > 130°, turn off heater.
12	45	Reset	Pump out, using only the drain pump.
13	800 (10 MIN.)	Drying	Turn on heater.

*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

- 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

- 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/pump.
- 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"
- Flood switch cover dislodged.
- Water valve stuck open.
- Flow rate of valve too high.
- Bad switch, open wire.

REPAIR

- Normal condition, press RESET.
- Reset 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

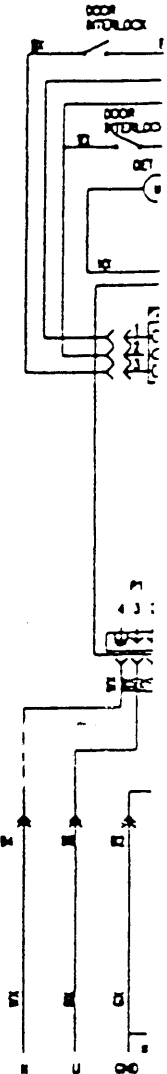
REPAIR

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

*C7 - At the 1st temperature sensor sensor is open or heater will not operate will be completed

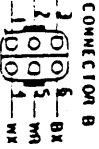
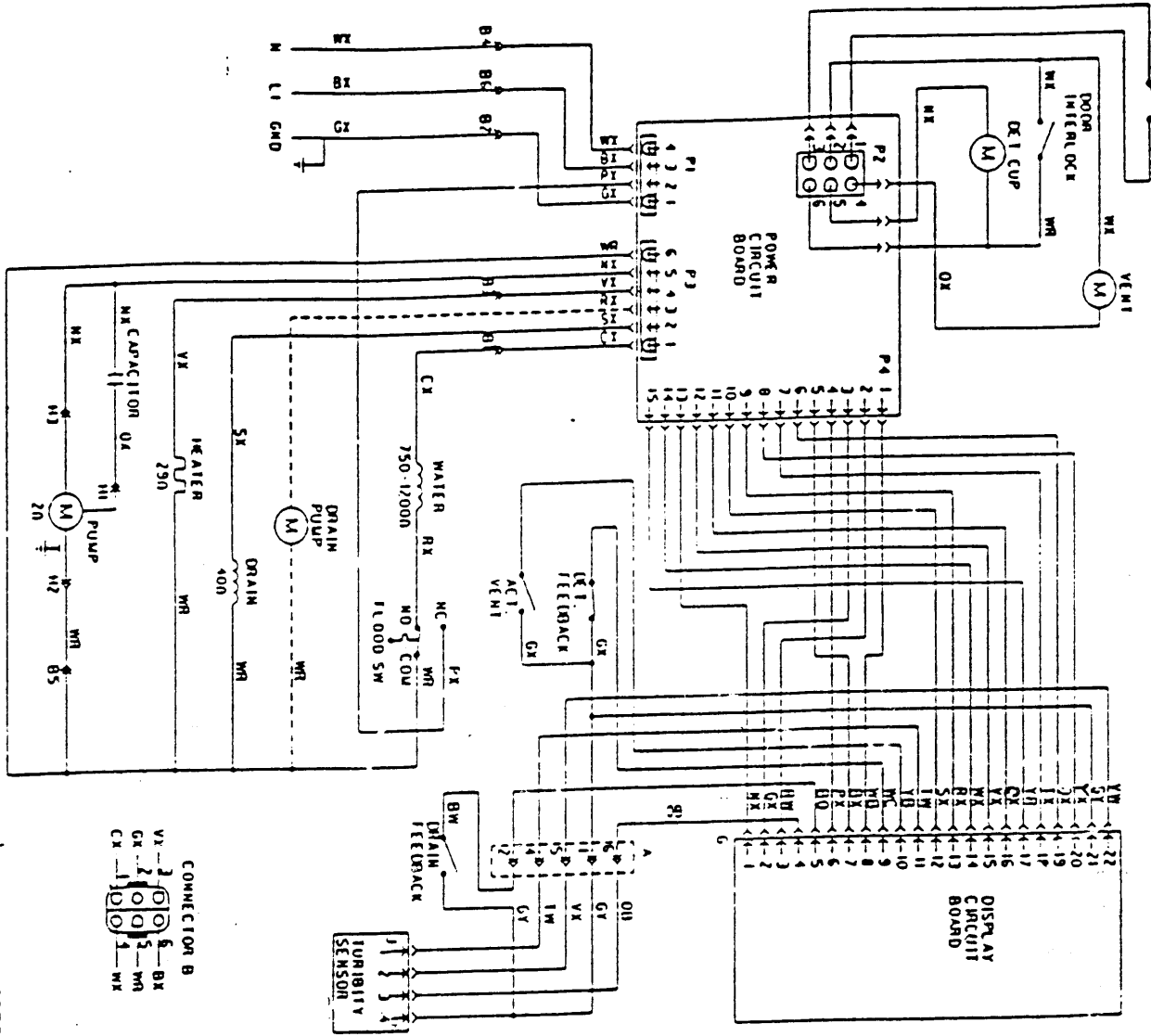
POSSIBLE CAUSES

- Bad thermostat.
- Open wire
- Bad control

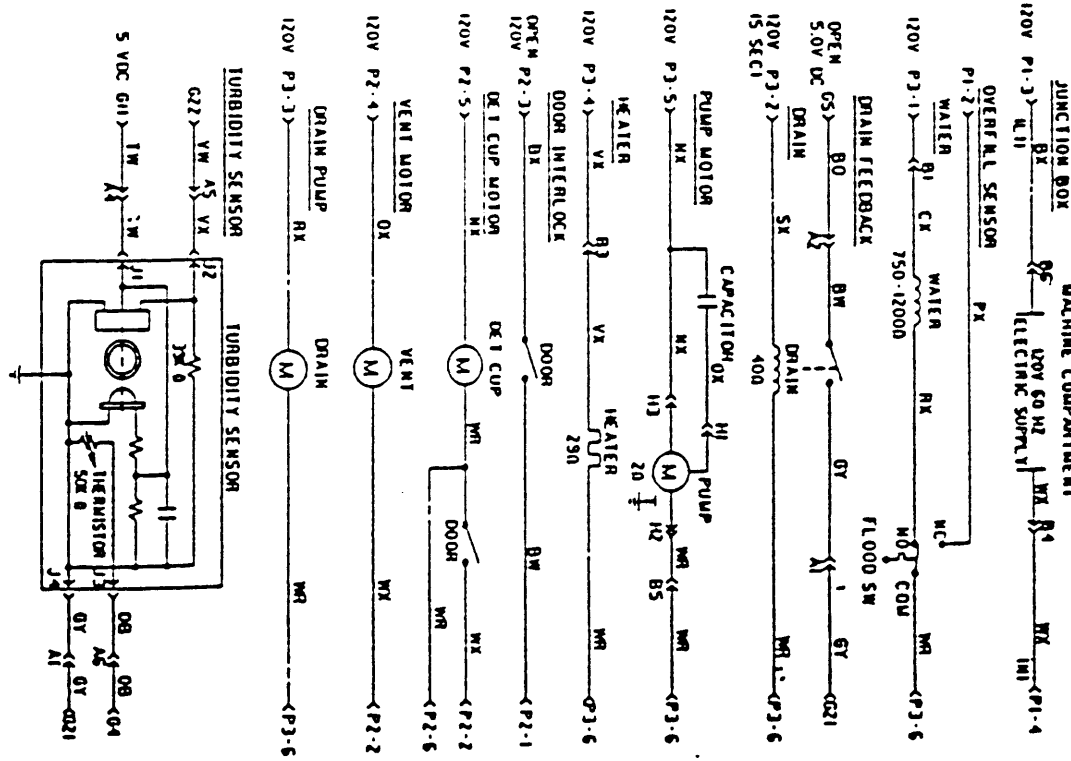


SMART MODELS E4 CONTROL

1650J3266P001



STRIP CIRCUITS



THIS CIRCUIT NOT IN ALL MODELS

LETTERS	OR	LETTERS	OR	OR
BX	BLACK	R2	RED	RED
CX	BROWN	S2	GRAY	GRAY
GX	GREEN	T2	TEAL	TEAL
HX	ORANGE	V2	VIOLET	VIOLET
IX	YELLOW	W2	WHITE	WHITE
OX	WHITE	X2	YELLOW	YELLOW

THE "X" INDICATES ONE SOLID COLOR - NO TRACER. BURS WITH TRACER SHOW BROWN OR ORANGE. EXAMPLE - WX IS WHITE WITH RED TRACER.