



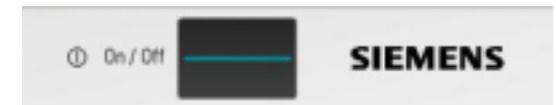
DISHWASHER SERVICE TRAINING MANUAL

SIEMENS

Dishwasher Service Training Manual

Each section contains:

- Access/Disassembly
- Installation/Reassembly
- Service Tips, including quick measurements from fascia panels



This manual covers the S line of dishwashers, the high tech leader worldwide.

There's also helpful serial # label information.

Distinctive Features & Innovations (1)

By definition, service professionals are only called when there are problems -- getting only one side of the story. The complete story includes many innovations and features not found on other dishwashers. Because of these distinctive features & innovations, many people will be owning S dishwashers -- making learning how to repair them very important.

Separate circulation & drain pumps

Separate pumps are quieter, more efficient and use less energy.



Flow-through water heater

Flow-through water heaters allow use of tall tubs (with more space for dishes), prevent damage to dishes & allow 100% water filtering.

A safety flow switch prevents heating without water flow.



Distinctive Features & Innovations (2)

No Pre-washing Needed

Some dishwashers clean so well no pre-washing is needed.



NSF Sanitizing

Many wash cycles are NSF certified, providing sanitized dishes. Many models have an indicating light showing dishes are sanitized.



Insulation

Tank & door insulation provides quiet dishwashers.

Bitumen insulation also holds heat in, saving time/energy and enabling condensation drying.



*Dishwasher insulation packages vary by model.

Condensation Drying

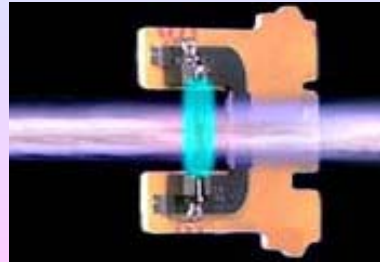
Dishes are dried quickly without using an element in the tank.



Distinctive Features & Innovations (3)

hydroSensor™ Wash

Provides energy & water savings.



Suspended circulation pump +
solid base

Helps provide the quietest dishwashers in the industry.



Did you know S is the industry leader in dishwasher innovations worldwide?



Distinctive Features & Innovations (4)

100% Filtered Wash Water

Unlike other dishwashers, 100% of water is filtered.



Tall Stainless Steel Tanks



Adjustable Racks

Adjustable racks and many other options provide complete flexibility in dishwasher loading.



Energy Star Rated

All dishwashers are certified energy savers.



Warranty Serial # Info



The serial label is fastened to the right edge of the inner door.

FD8308 00004

Understanding FD Serial # (used for warranty)

The FD # shows the Fabrication Date

- The first 2 #s represent the year: 83 = 2003 (after adding "20" to the #; e.g. 83 + 20 = 103)
- The next 2 #s represent the month: 08 = August
- The next 5 #s represent the unit made that month: 00004 = 4th SL84A306 made that month

This helps the factory investigate product problems.

Please hold all warranty parts for (60) days for possible return for analysis.

10 3 08 0082942 00004 5

Understanding Factory Serial

- The first 2 #s represent a factory code: 10 = New Bern dishwasher, 82 = New Bern cooking
- The 3rd # represents the last digit of the year: 3 = 2003
- The next 2 #s represent the month: 08 = August
- The next 7 #s represent the model: 0082942 = SL84A306UC
- The next 5 #s represent the unit made that month: 00004 = 4th SL84A306UC made that month
- The last # represents a check digit = 5 in this case (is dependent on all preceding #'s)

Dishwasher Service Training Contents


















Dishwasher Main Parts:

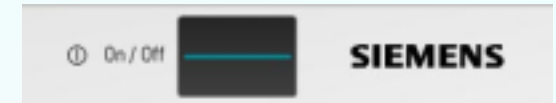
NOTE: Dishwashers are rated 120V, 60 Hz, 15A, 1450W (max.).
Maximum amp draw when heaters running ~ 11A.

- ① **Water valves**.... Most damaged valves occur from being cracked by fittings being overtightened -- some valves are damaged from hard water or debris from customer pipes clogging them so they can't close securely. A damaged valve can allow some water onto kitchen floors.
- ② **Impellers or circulation pumps**....They're improved and perform well, but expectations are high for dishwashers in rarely used summer homes.
- ③ **Control modules**....From heater relay solder joints to broken buttons to "F" or "2H" fault codes, modules can fail occasionally. However, many good modules have been replaced due to unrelated problems.
- ④ **Heaters & NTC's**....Either one can cause heating problems, but there can be other parts to check as well....
- ⑤ **Drain pumps**....Check drain hose installation 1st to confirm if it's the pump or not. Many good pumps have been replaced because high loops were missing.
- ⑥ **Dispensers**....Repairs often due to customer abuse.
- ⑦ **Cosmetic damage**....Dinged doors and broken buttons, often during shipment.
- ⑧ **Door latches**.... Often broken microswitches on integrated models, understandable seeing how dishwashers are treated. Can be misaligned latches or miswired switches.
- ⑨ **Hydrosensors**....Not crucial to operation, but can affect energy & water usage.
- ⑩ **Water fill assemblies**....Microswitches can fail. Can be affected when units have been flipped upside-down, allowing sump water to get into diaphragm.



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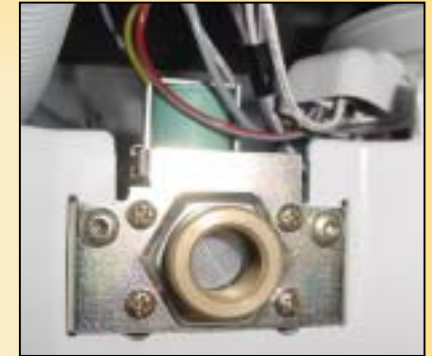
Part # 1 -- Water Valve (1)

Disassembly

The water valve is accessed from the front of the dishwasher base by removing the toe kick.

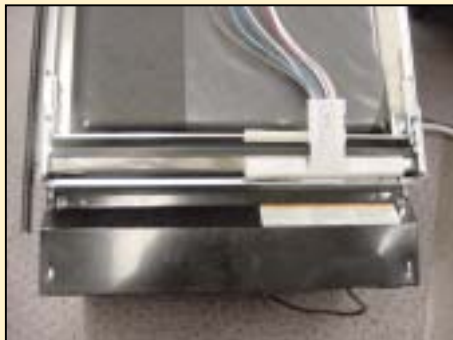
To remove water valve:

- ✂ Remove two (2) T-20 Torx screws from toe kick and tilt toe kick out from under dishwasher.
- ✂ Remove base insulation (on models with insulation).
- ✂ Move sump inlet hose away from water valve (without disconnecting it).
- ✂ Disconnect wires from water valve, including ground wire.
- ✂ Remove two (2) T-20 Torx screws from water valve.
- ✂ Pull valve out from dishwasher and disconnect water hose from rear of valve. Remove any water from sump & base.

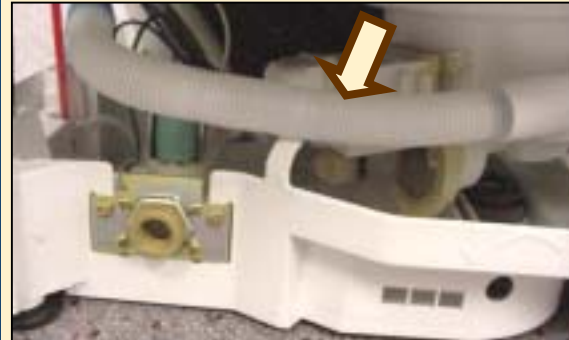


CONNECTION HINTS: Water connection 3/8" NPT female. Inlet water pressure range 5 - 120 psi (0.3 – 8.27 bars).

Removing toe kick



Moving sump hose



Removing hose clamp



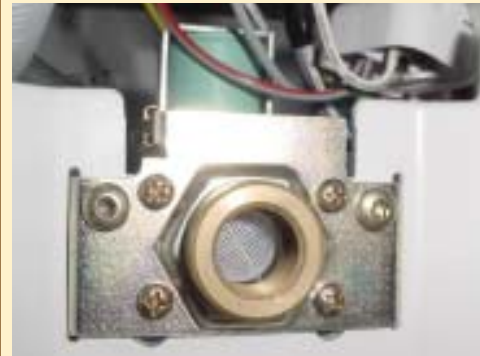
Part # 1 -- Water Valve (2)

Service Tips



NOTE: All water valves have yellow solenoid stems.

- The current valve (part # **189533**) has the solenoid mounted horizontally and the water fitting held in place by the metal mounting bracket. It is the only replacement valve available.



HINTS:

- When reconnecting the water supply to the water valve, don't overtighten the fitting.
- Using Teflon tape on water fittings can help prevent leaking.
- The water valve can be accessed without removing outer door or base cover. However, removing them will provide easier access.

Part # 2 -- Circulation Pump & Impeller (1)

Access

The circulation pump & capacitor are accessed from the right side of the dishwasher by removing the right side panel and blocking the tank.

To remove outer door:

- ✂ Remove six T-20 Torx inner door screws below fascia panel -- three per side (1).
- ✂ Carefully pull bottom of outer door out from dishwasher until top door tabs clear, then pull door down until it releases from dishwasher (2). Take care to not scratch outer door.
- ✂ Remove two plastic door guards (3). They occasionally fall out when the outer door is removed.



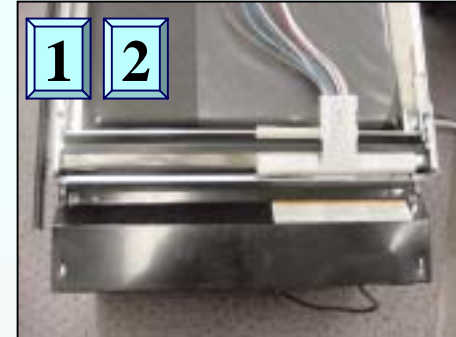
NOTE: Circulation pump motor rated 120V, 60 Hz, 160W, insulation class A. Motor has an auto-reset thermal protector and uses a 10 μ F capacitor.

HINT: The fascia panel and door don't need to be removed to access the circulation pump. However, they must be removed to completely remove the tank.

Part # 2 -- Circulation Pump & Impeller (2)

To remove toe kick:

- ✖ Remove two T-20 Torx screws from toe kick (1).
- ✖ Tilt toe kick out from under dishwasher (2).



To remove right & left side panels:

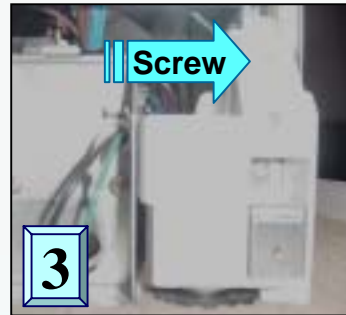
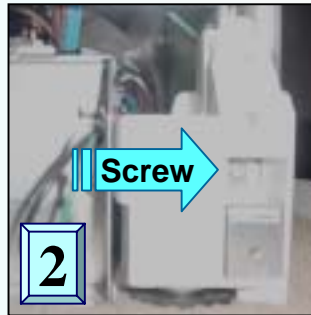
- ✖ Remove two T-20 Torx side panel screws through holes in right & left trim strips (1).
- ✖ Carefully slide trim strips up and out of dishwasher (2). If side panels are removed carefully to avoid damaging trim strips, then trim strips don't need to be removed.
- ✖ Lift side panels up and out from dishwasher (3). Panels can be removed with trim strips. Although removing the left side panel isn't necessary for access, it does allow the right side of the tank to be blocked upward.



Part # 2 -- Circulation Pump & Impeller (3)

To raise right side of tank for circulation pump access:

- ✘ Remove one T-20 Torx screw from both rear corners holding tank to base (1) -- removing screw from both sides allows tank to be blocked upward.
- ✘ Remove right toe kick bracket by removing T-20 Torx screw (2).
- ✘ Remove T-20 Torx screws from front right bottom corner holding tank to base (3).
- ✘ Remove right hinge cover (4a), release right door tension cord from hinge (4b) & remove ground wire (4c).
- ✘ Raise and block up tank as shown with strut onto base (5a), sliding a piece of wood or other solid material between the tank and base to keep tank from falling back onto base (5b).



CAUTION: Its not recommended to turn dishwashers upside-down for tank access. When dishwashers are turned upside-down, water can flow into the diaphragm of the water fill assembly and cause water to not fill properly.

Part # 2 -- Circulation Pump & Impeller (4)

Disassembly

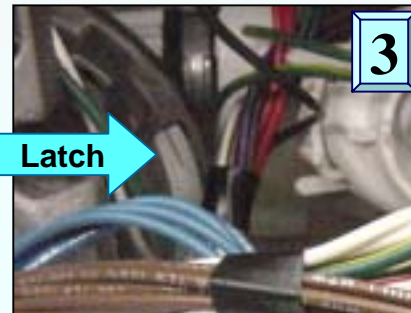
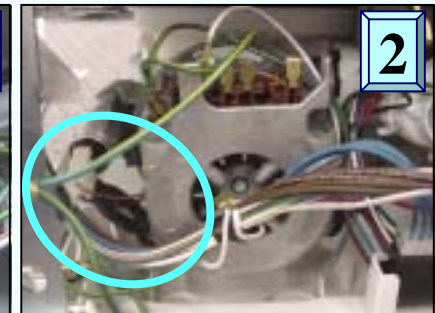
To remove motor to access impeller or change complete pump:

- ✘ Disconnect wire harness from motor after carefully noting connections (1).
- ✘ Lift up rubber straps from both sides of motor (2).
- ✘ To release plastic latch on pump/motor housing, carefully push onto latch with screwdriver (3).
- ✘ To release motor from pump housing, twist motor to the right (clockwise). Some force may be required. Capacitor should be ~ 11:00 position (4). Pull motor out from pump housing.



HINT: When replacing complete circulation pumps, reusing existing front pump housings (& discarding replacement housings) can save time by not having to change hose clamps. If desired, order # **172272** hose clamps & replace entire pumps.

CAUTION: Don't grab motor next to the capacitor to avoid jamming your hand on the capacitor.

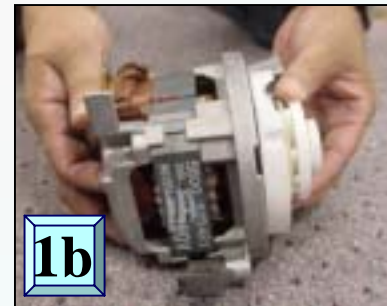


Part # 2 -- Circulation Pump & Impeller (5)

Reassembly

To remove & install impeller (using kit # 167085):

- ✂ While holding motor fan so shaft won't spin (1a), unscrew impeller counterclockwise (1b).
- ✂ Rotate pump housing counterclockwise until tabs clear, then lift housing from motor (2).
- ✂ Remove spring and O-ring from pump housing, then lift spacer up from motor shaft (3).
- ✂ Place replacement spacer onto motor shaft (4). Note larger end goes onto shaft 1st.
- ✂ Install replacement spring & O-ring onto pump housing, then line up housing-motor tabs to screw pump housing onto motor (5a). Screw replacement impeller onto motor shaft (5b).
- ✂ Align motor to pump housing with capacitor @ 11:00 position to facilitate reassembly.



Service Tips -- Checking (PTC) Pump Motor Starter (1)

The (PTC) circulation pump motor starter (# **182318**) is used on **SL95A** (“ExactWash”) models with water switches. The matching circulation pump (# **437345**) has three slightly smaller & more efficient windings compared to the traditional pump with two larger windings (# **266511** motor / # **239144** pump). The 3rd (start) winding is cut out when the motor gets running. This stronger pump is needed due to the increased water flow resistance from the water switch.



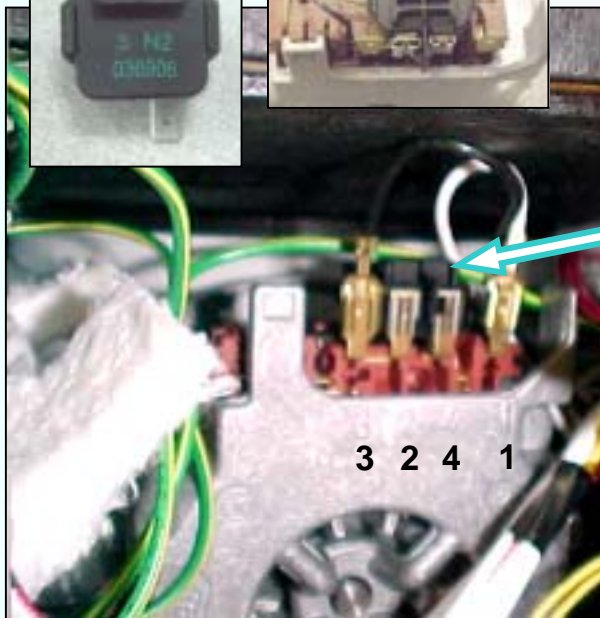
NOTE: Install starter with terminal pointing inward.

NOTE: Pump # **437345** includes starter # **182318**.

HINT: (PTC) motor starter is located on top of the pump motor and faces inward over the motor.



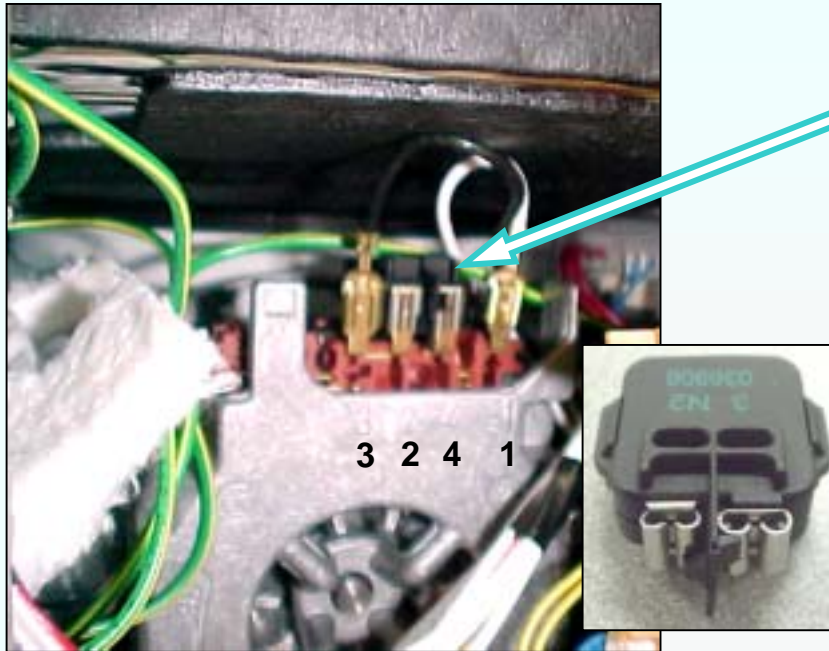
To install (PTC) motor starters, push female terminals over pump motor terminals 2 & 4. The terminals are different sizes to match the smaller motor terminal 4.



The (PTC) motor starter helps start the circulation pump. It's a ceramic thermal switch which conducts current & heats up, cutting out the 3rd (start) winding at a preset temperature. The two main windings (with the start/run capacitor) have power whenever the pump is running.

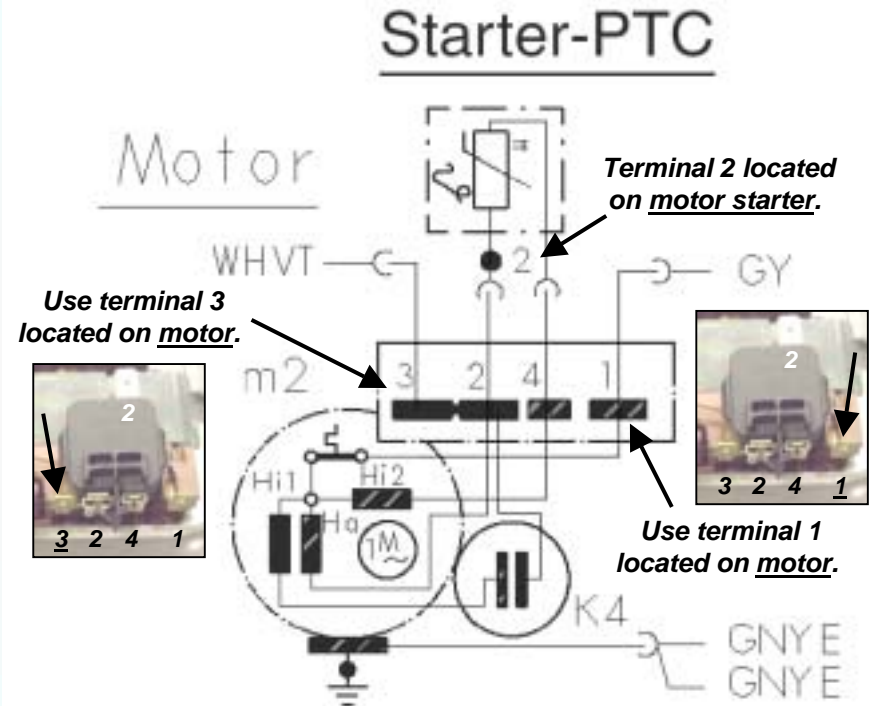
- ✘ Check the motor starter if the pump motor won't start (starter stuck open) or runs hot (starter stuck closed).

Service Tips -- Checking (PTC) Pump Motor Starter (2)



PTC

NOTE: Unlike standard two-winding pump motors, these three-winding pump motors have four terminals instead of three.



TECH TIPS: Resistance measurements:

- Ω Between terminals 1 - 2 is ~ 7 Ω (one of the main run windings).
- Ω Won't help between terminals 2 - 4 (start winding, a run winding & the motor starter). The motor starter can't be measured since the windings are always connected. Must disconnect PTC 1st to measure its continuity.

NOTE: Motor terminals 2 - 3 and both PTC terminals are tied together. Although factory units are connected to motor terminal 3, it doesn't matter if motor terminal 3 or PTC terminal 2 is used (both will work). Use motor terminal 3 to be consistent with factory units.

Service Tips – Water Switch Pump Nuisance Tripping (1)

There has been some nuisance tripping of motor thermal protectors on three-winding circulation pumps for use with water switches (# **239129**). To prevent nuisance tripping, these pumps have been replaced by pumps with upgraded thermal protectors (# **437345**).

NOTE: Circulation pump # **437345** includes motor starter # **182318**. When replacing any pump, **always** replace the motor starter as well.

TECH NOTES: Motor starter # **423023** (15Ω) has a larger resistance to limit current draw through pump motor start windings. Winding temperatures are reduced, but starting torque is reduced as well (by **10%**). To obtain designed (and maximum) start torque and keep UL certification, do **not** use motor starter # **423023** with circulation pump # **437345**. Use **only** motor starter # **182318** with circulation pump # **437345**.



TECH TIPS: All circulation pump motors use auto-reset thermal protectors. Once motor windings cool below a preset temperature, protectors reset and pumps will work again. If thermal protectors fail to reset, replace pumps.

Service Tips – Water Switch Pump Nuisance Tripping (2)

HINTS: Identifying circulation pumps & motor starters:

- ⚠ Circulation pump # 437345 – look for # “**5600 060022**” stamped on housing.
- ⚠ Motor starter # 182318 – look for # “**036906**” stamped on housing.
- ⚠ Circulation pump # 239129 – look for # “**5600 050139**” stamped on housing.
- ⚠ Motor starter # 423023 – look for # “**041692**” stamped on housing.



Service Tips -- Impeller Troubleshooting

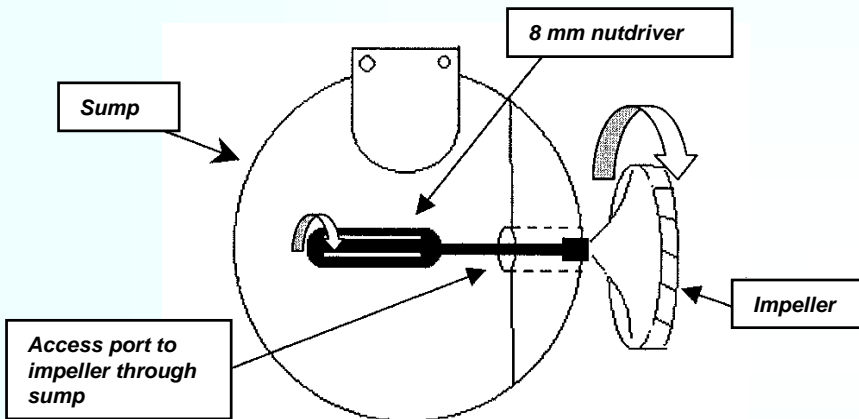
Symptom	Problem	Solution
Impeller won't turn.	Impeller is frozen.	Replace impeller with impeller kit # 167085 . If not able to replace impeller immediately, place 8mm nutdriver on 8mm stud on impeller and rotate clockwise twice until impeller is freed up (for temporary fix until impeller can be replaced).
Impeller won't turn.	Debris binding pump.	Open sump & remove sump pump cover, then carefully remove debris from impeller. Check for broken glass to avoid being cut.
Impeller won't turn.	Motor is faulty.	Check resistance at motor terminals or at control panel (~ 7Ω with water switch or 10Ω without). Replace motor if faulty.

WARNING! Unplug dishwasher before starting any repairs.

Service Tips -- Replacing Impellers (1)

Occasionally, a circulation pump impeller can stick if a dishwasher hasn't been used for a long time. Impeller ceramic rings and carbon rings are designed to reduce or eliminate impeller sticking (ceramic rings are located around shaft on rear of impeller).

For temporary repairs when impeller replacement isn't possible, impellers can be loosened by rotating them (accessed through the sump) using an **8mm** nut driver. Impellers should be replaced shortly thereafter when repairs are possible.



NOTE: Impellers should be replaced, not loosened, whenever possible. Loosening impellers should be done only as a temporary fix.

HINTS: Make sure black spacer is reinstalled -- failure to reinstall spacer can cause motor to bind.

INSTRUCTIONS FOR LOOSENING IMPELLER: To loosen stuck impeller, access sump by removing microfilter and sump screen. Insert an 8mm nutdriver through sump hole to impeller -- place nutdriver onto 8mm stud on impeller and carefully rotate impeller clockwise until it becomes free (at least two full revolutions).

NOTE: Spacers and ceramic rings provide low friction and contact area, preventing impeller sticking when dishwashers haven't been used for long periods of time.

HINT: Impeller ceramic ring colors:

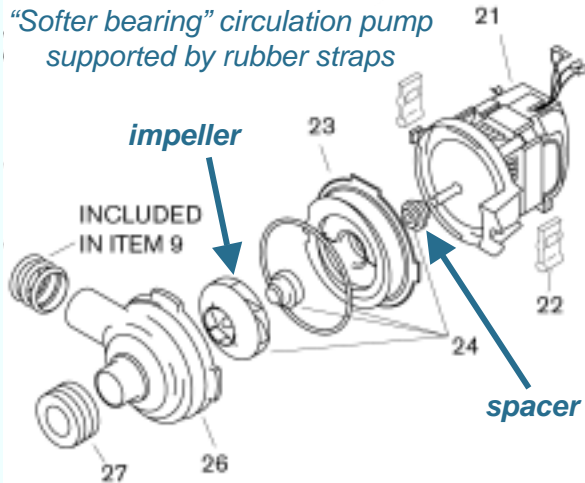
Bright white

Pink



Service Tips -- Replacing Impellers (2)

"Softer bearing" circulation pump supported by rubber straps



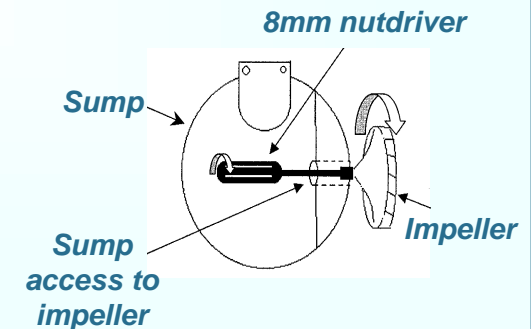
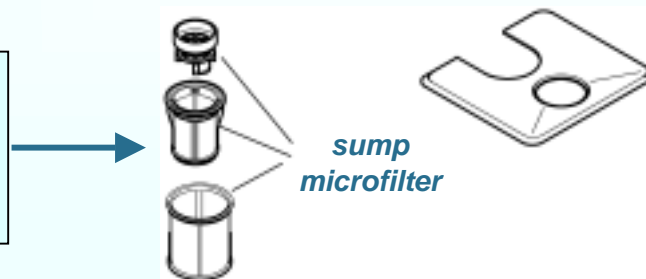
Occasionally, a circulation pump will jam when debris gets caught inside (when the sump filter wasn't tightened down) or when a dishwasher hasn't been used for months. Often circulation pumps are replaced when merely changing the **impeller** (kit # **167085**, item # 24) will solve the problem.

CAUTION: When replacing an impeller, install the black spacer between the pump motor and the rear pump housing. Failure to do so may lock up the pump and damage the rear pump housing!



HINT: Before replacing an impeller, try to break it free using an 8mm nut driver (or similar tool).

HINT: When replacing an impeller, instruct the customer to tighten the sump filter properly to avoid future problems.



Service Tips -- Replacing Impellers (3)



Replacement impellers will have a **green** tint compared to older impellers. The impeller ceramic ring should be **pink** or bright white.

Note **pink** ceramic ring around impeller shaft.

Impeller kit # **167085**, showing front and rear sides of impeller and carbon ring (spring).

Carbon ring (spring)

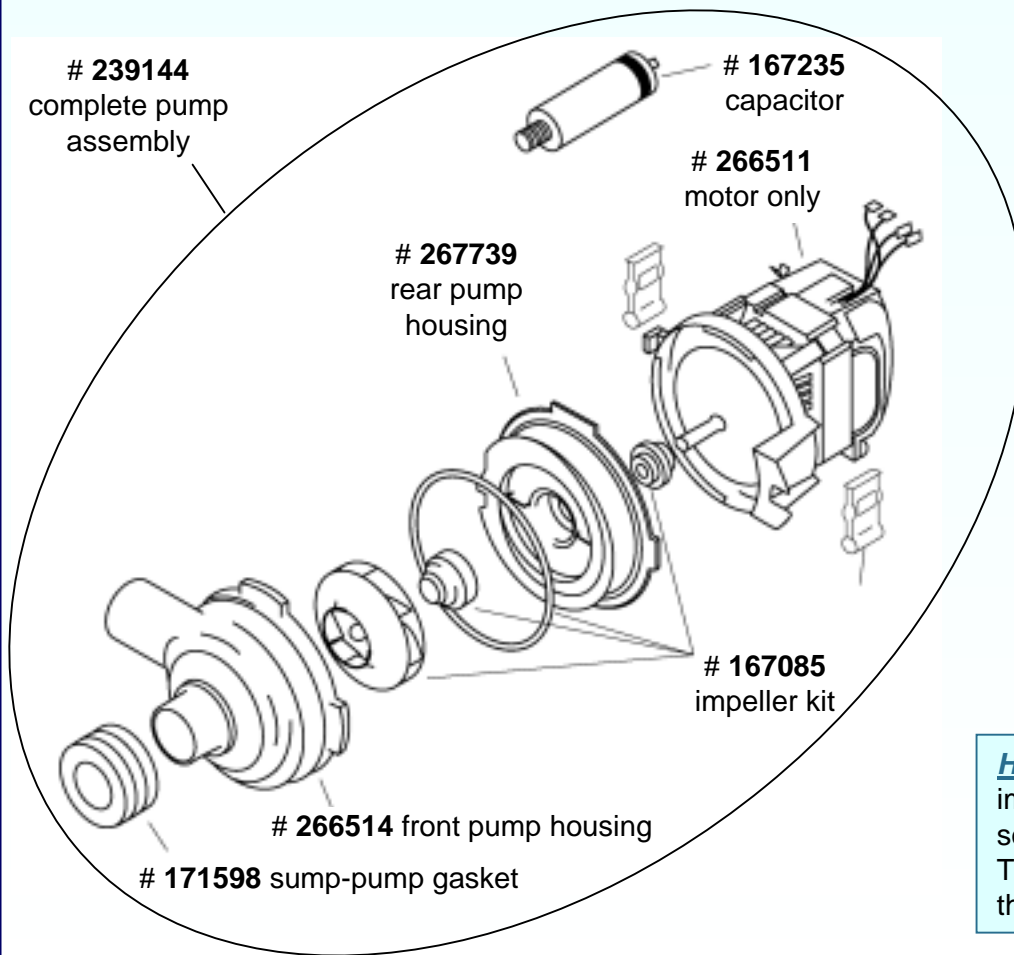


Black spacer

HINT: To remove or temporarily break loose an impeller, place a 8mm nut driver (or similar tool) on 8mm stud in center of impeller. Freed impellers should be replaced as soon as possible.

Service Tips -- Pump & Motor Part #'s Change

SL34A & SL84A models use standard circulation pumps – repairs can be made with impeller kits (**167085**), complete pumps (**239144**) or pump motors (**266511**).



- **239144** -- complete circulation pump assembly (with impeller)
- **266511** -- circulation pump motor only

HINT: The preferred repair for replacing pump impellers is the # **167085** impeller kit. The other solution is using complete pump assembly # **239144**. The # **266511** pump motor only should only be used if the motor fails (which rarely happens).

Part # 3 -- Control Module (1)

Disassembly

Control modules are easily removed from fascia panels by bending console tabs.

- ⚡ Remove fascia panel by removing T-20 Torx inner door screws.
- ⚡ Disconnect wire harnesses from module after noting connector locations.
- ⚡ Pry out metal console tabs holding module to console.
- ⚡ Carefully pry back plastic tabs, then slide module from console.



Removing door screws



Removing fascia panel



Viewing control module



Disconnecting wires



Bending back tabs



Sliding module out



Console without module

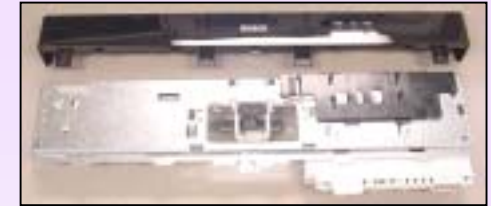
NOTE: Control modules for non-integrated models look differently and have different tabs, but are removed using the same procedure.

Part # 3 -- Control Module (2)

Disassembly

SL95A control modules are different than other models and are removed differently.

- ✦ Remove fascia panel by removing six (6) T-20 Torx inner door screws.
- ✦ Disconnect wire harnesses from module after noting connector locations.
- ✦ Remove fascia panel from console by removing four (4) T-20 Torx screws.
- ✦ Remove two (2) T-20 Torx screws holding module to console.
- ✦ Carefully pry back locking tabs on each front corner of module, then remove module from console. Remove button pad from module.



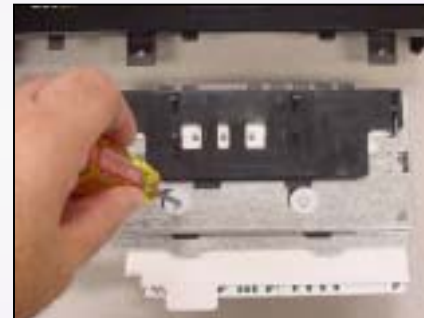
These instructions apply to SL95A models.



Removing door screws



Removing fascia screws



Removing module screws



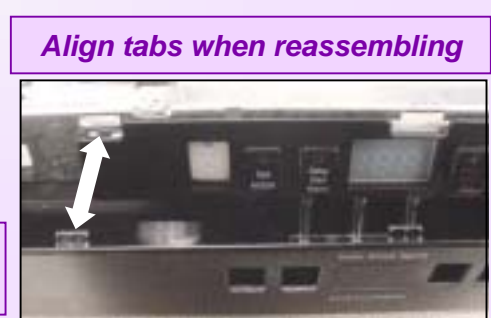
Prying back module tabs



Sliding module out



Removing button pad -- buttons can come off pad



Align tabs when reassembling

Service Tips – Test Programs

Using test programs for various models

Models	Buttons to Enter Test Program
SL34A	Regular Wash + Rinse & Hold
SL84A	Power Scrub + Delicate/Econo
SL95A	Regular Wash + Quick Wash

◆ To enter test programs, hold down buttons above (2nd & 4th from left), then turn dishwasher on by pushing on/off button. Push buttons above a 2nd time to start test program. Allow program to finish to see fault codes. Turn dishwasher off to exit test program.

HINT: Dishwasher test programs heat water to 150°F, so test programs will generally run > 20 minutes for incoming water temperatures ~ 120°F.

HINT: Open door to select test program for fully-integrated models (SL84A/95A), then close door to run program.

Example of a test Program (varies by model - SL95A shown)

TEST	TIME	NOTES
Entering test program	----	While pressing and holding Regular Wash & Quick Wash buttons (simultaneously), press On/Off button. Indicating lights (on button pads) will flash, indicating the test program has been entered.
Starting test program	----	Press Regular Wash & Quick Wash buttons a 2nd time (simultaneously).
Skipping a test	----	Press Delicate Wash button (except for filling stages which cannot be skipped).
Draining	15 seconds	Allow dishwasher to drain.
Initial water filling	Until water level switch closes.	Can't skip this test.
Final water filling	Until water level switch closes.	Can't skip this test.
Heating + Circulating + Detergent Dispenser	120 seconds	
Heating + Circulating	Until water reaches 140°F (rises ~ 2°F/minute)	To save time, don't run entire test. When water circulates, measure current in black power line to dishwasher, then skip test. <ul style="list-style-type: none"> ● If current ~ 11A, heater, flow switch & Hi-limit are OK. ● If ~ 1.5A, measure heater, Hi-limit & flow switch resistances to determine failed part.
Circulating + Rinse-aid Dispenser	120 seconds	
Hydrosensor calibration	50 - 250 seconds	Skip this test to save time.
Change draining sequence	30 seconds	
Draining	45 seconds	Last test. To end test program, press On/Off button.

NOTE: Flow through heaters heat water ~ 2°F / minute.

Service Tips – Fault Codes

DISHWASHER TEST PROGRAM ERROR CODES (on 2 & 3-digit digital displays):

- ✘ 0 – No faults
- ✘ 1 – Aqua Sensor (Sensotronic) fault
- ✘ 2 – Heating system fault (heater, Hi-Limit, flow switch, NTC, control heater relay)
- ✘ 4 – Water filling fault
- ✘ 8 – NTC (temperature sensor) fault
- ✘ 16 – Water switch fault

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DISHWASHER CUSTOMER USE ERROR CODES (on 2 & 3-digit digital displays):

- ✘ F – Water filling fault (underfill, overfill or water in the base)
- ✘ 2H – Last wash cycle too long (> 99 minutes). Can be cold inlet water or heating system fault (heater, Hi-Limit, flow switch, NTC, control module heater relay).
- ✘ _h – Delay Start feature (not a fault code)

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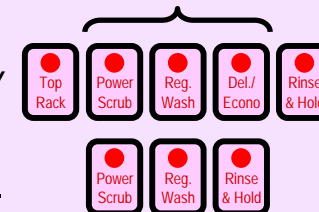
DISHWASHER TEST PROGRAM ERROR CODES (on SL84A models):

- ✘ ○ ○ ● – Heating system fault (heater, Hi-Limit, flow switch, control heater relay)
- ✘ ○ ● ○ – NTC (temperature sensor) fault
- ✘ ○ ● ● – Water filling fault
- ✘ ● ○ ○ – N/A
- ✘ ● ○ ● – N/A
- ✘ ● ● ○ – Aqua Sensor (Sensotronic) fault
- ✘ ● ● ● – N/A

SHV46C, SHX43E/
46A-B, SL84A

SHX33A

Fault code LED's



TIP: Fault codes do NOT add up for multiple faults – shows highest fault code on list above (1st – heating, 2nd – NTC, 3rd – water filling, 4th – aqua sensor)

HINT: Dishwasher test programs heat water to 150°F, so test programs will generally run > 20 minutes for incoming water temperatures ~ 120°F.

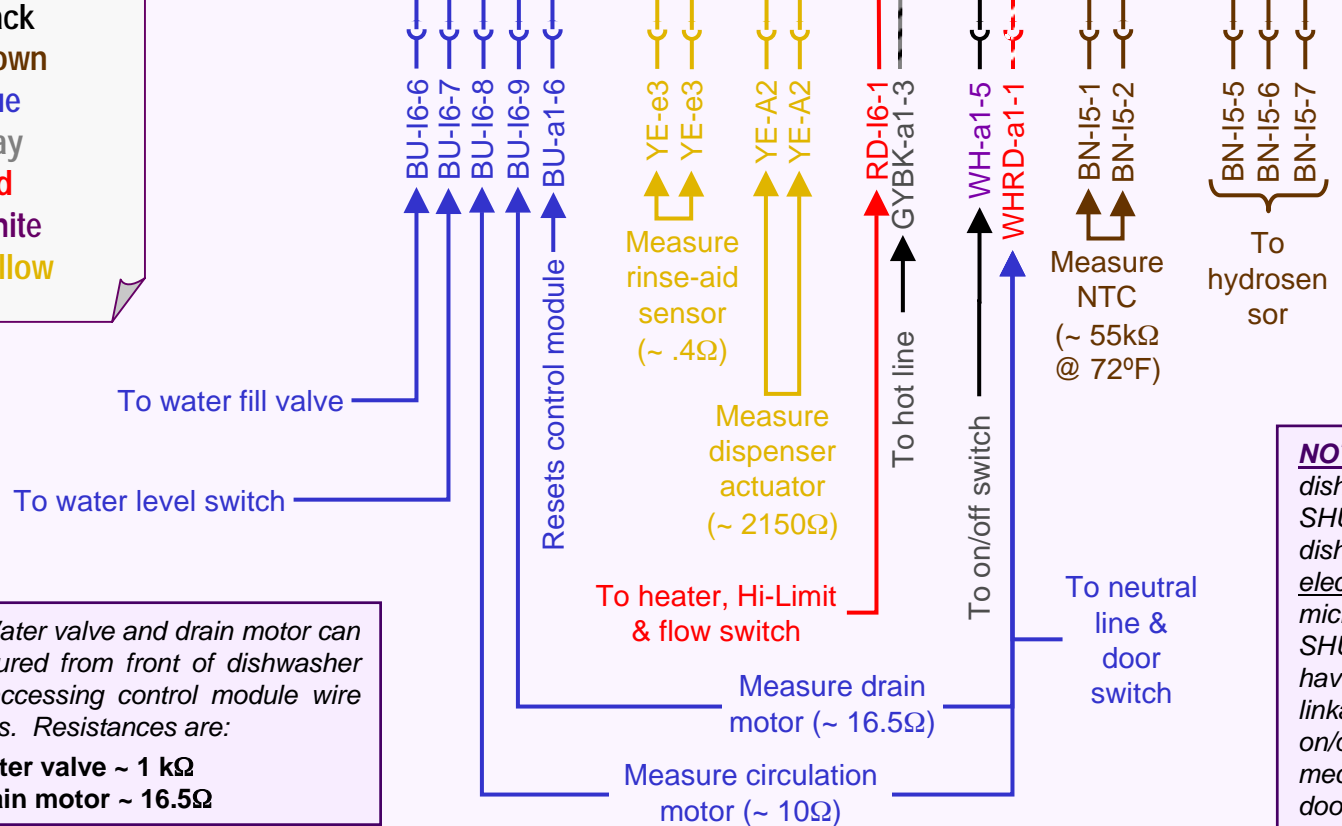
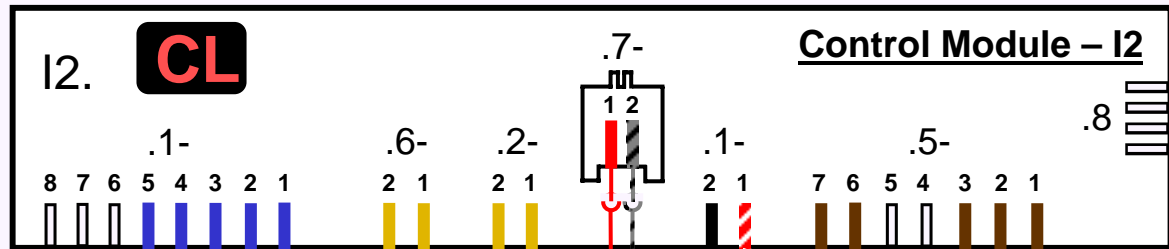
HINT: Open door to select test program for fully-integrated models, then close door to run program.

NOTE: Flow through heaters heat water ~ 2°F / minute.

Service Tips -- Measuring Resistances @ Modules (1)

SL34A

- Wire color codes:**
- BK = Black
 - BN = Brown
 - BU = Blue
 - GY = Gray
 - RD = Red
 - WH = White
 - YE = Yellow



HINT: Water valve and drain motor can be measured from front of dishwasher without accessing control module wire harnesses. Resistances are:

- Water valve ~ 1 kΩ
- Drain motor ~ 16.5Ω

NOTE: SL34A dishwashers, unlike SHU43C & SHU53A dishwashers, have electric door microswitches. All SHU dishwashers have mechanical linkages that open on/off switches mechanically when doors are opened.



Service Tips -- Measuring Resistances @ Modules (2)

SL84A



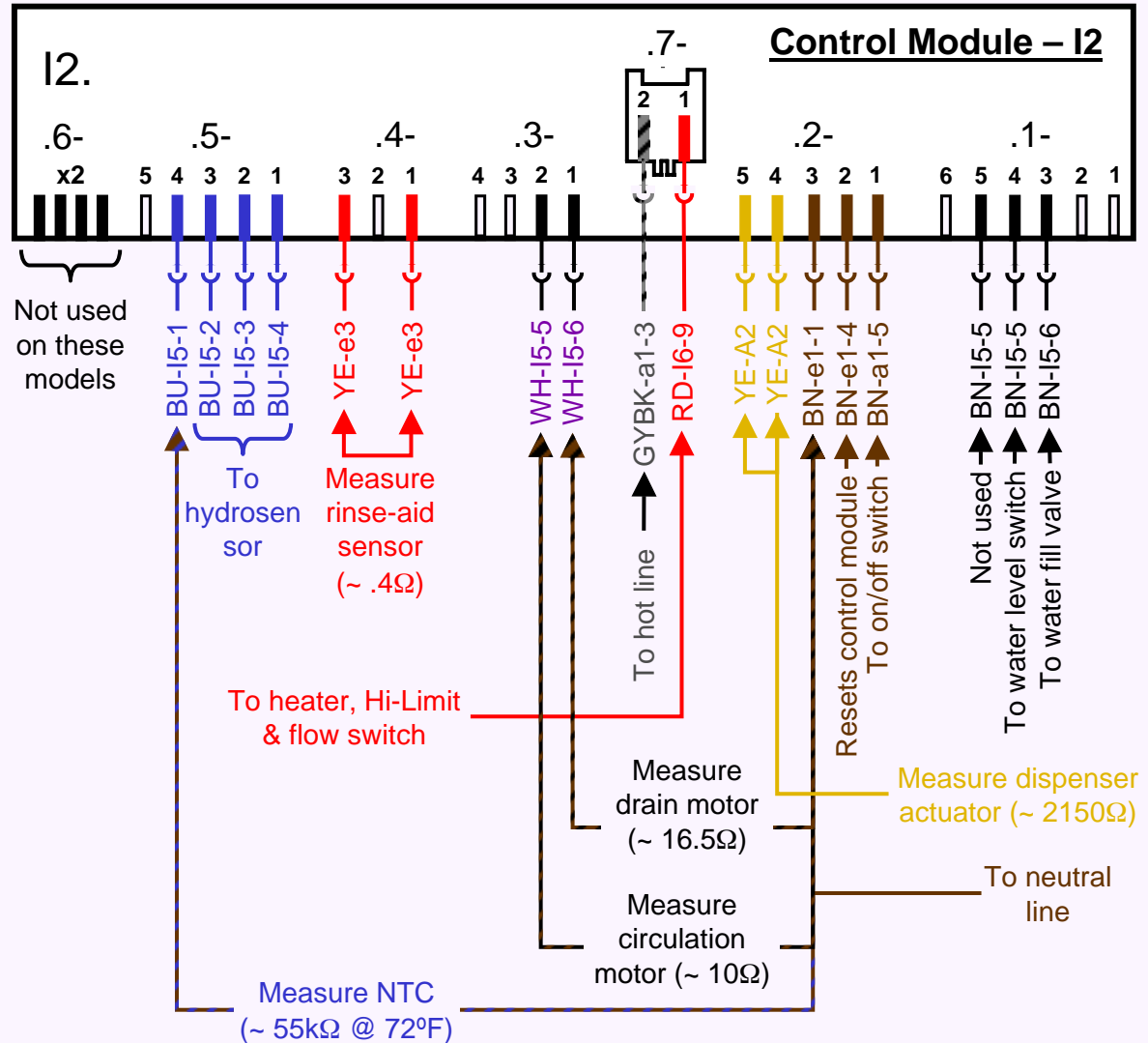
Wire color codes:

- BK = Black
- BN = Brown
- BU = Blue
- GY = Gray
- RD = Red
- WH = White
- YE = Yellow

HINT: Water valve and drain motor can be measured from front of dishwasher without accessing control module wire harnesses. Resistances are:

- Water valve ~ 1 kΩ
- Drain motor ~ 16.5Ω

NOTE: This control module measures the NTC differently – measuring voltage (NTC - neutral) instead of current.



Service Tips -- Measuring Resistances @ Modules (4)

SL95A

Wire color codes:

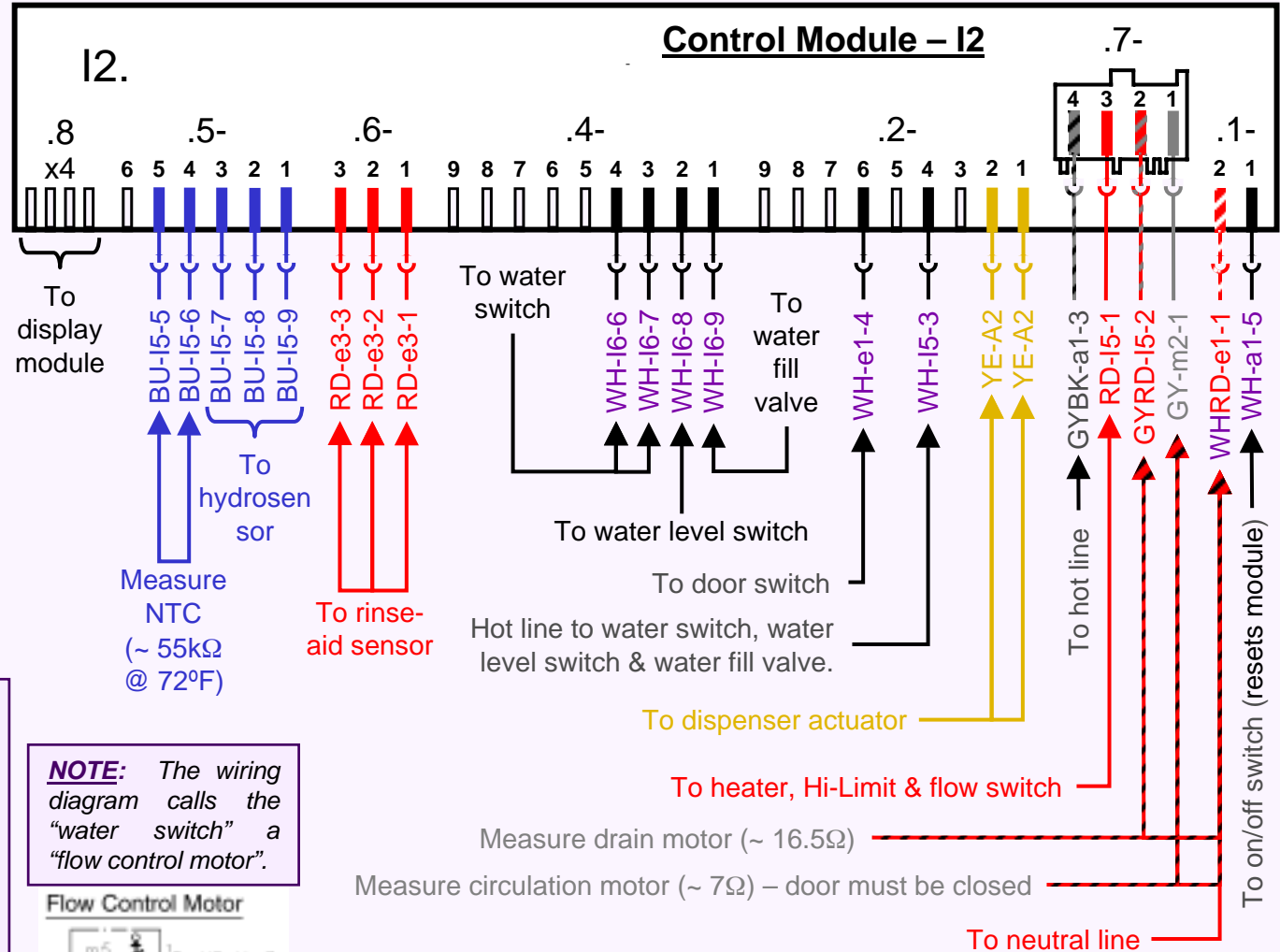
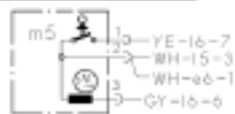
- BK** = Black
- BN** = Brown
- BU** = Blue
- GY** = Gray
- RD** = Red
- WH** = White
- YE** = Yellow

HINT: Water valve and drain motor can be measured from front of dishwasher without accessing control module wire harnesses. Resistances are:

- Water valve ~ 1 kΩ
- Drain motor ~ 16.5Ω

NOTE: The wiring diagram calls the "water switch" a "flow control motor".

Flow Control Motor

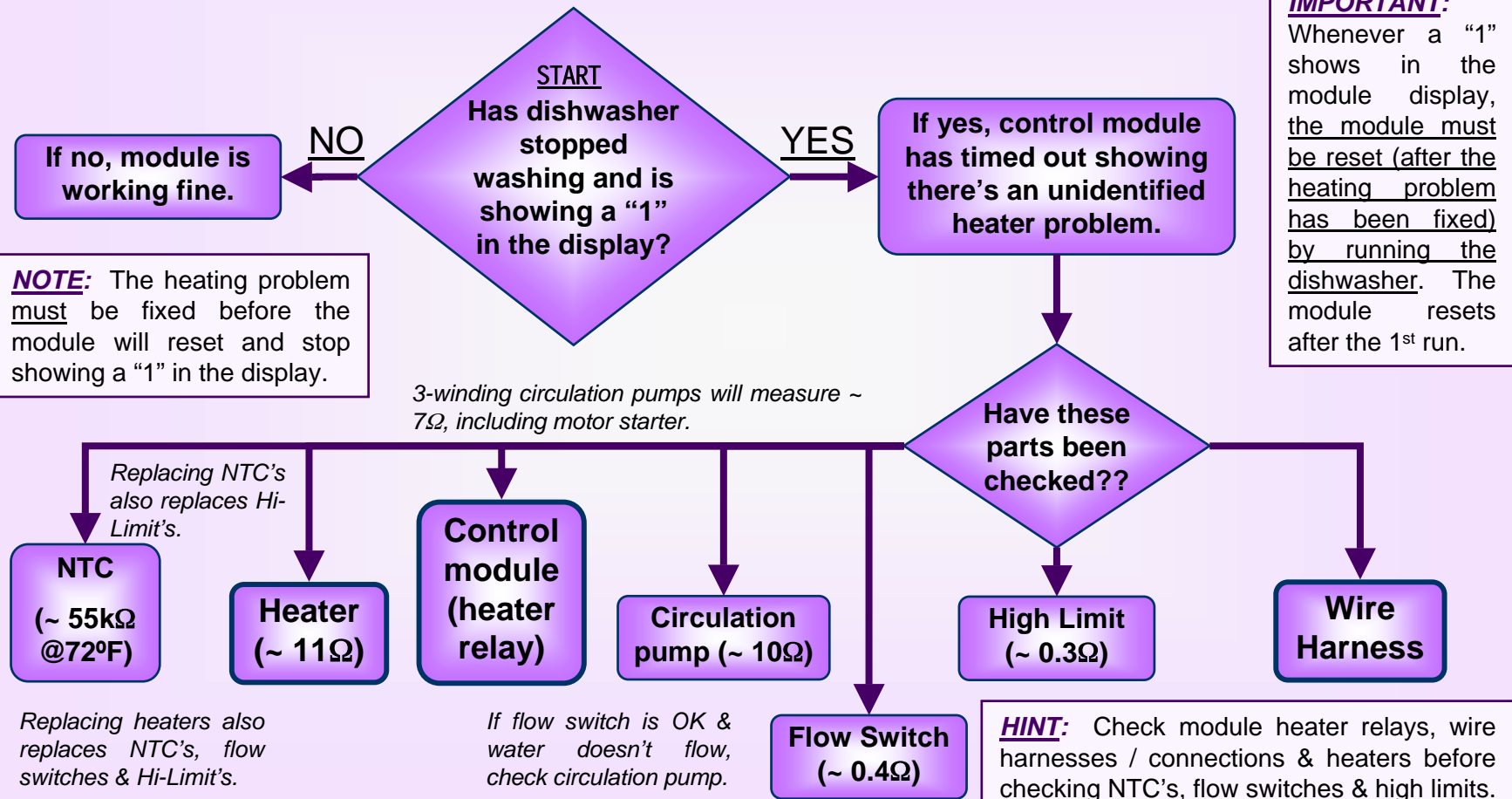


NOTE: These use the top-load dispenser with different actuator & rinse-aid sensor.



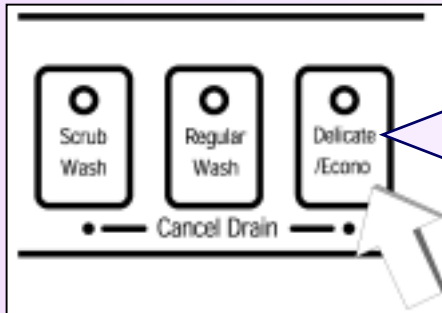
Service Tips -- Modules Displaying "1"

Occasionally dishwashers will run for hours, not finish washing & show a "1" in the display. This means the module has timed out due to an unidentified heating problem -- all heating related parts must be checked until the problem is found.



Service Tips -- Turning Off End of Cycle Tones

Control modules on integrated models (**SL84A, SL95A**) have been replaced when end of cycle tones couldn't be turned off, not for module failures. Following these instructions for turning off cycle tones, instead of replacing entire control modules, will save customers time and money. Use these instructions (copied from *Use & Care Manuals*) when manuals aren't available.



Push right-hand button marked "Cancel Drain"



HINT: Open door slightly to access buttons.

SL84A MODELS WITHOUT DISPLAYS:

- 🎵 While pushing & holding right-hand button marked **Cancel Drain** (regardless of model), push **On/Off** button. When light on button and tone come on, release both buttons.
- 🎵 Push right-hand button again to scroll through tone volumes until no tone is heard (or desired volume is reached if tone is to be kept on).
- 🎵 To save changes, push **On/Off** button and close door. Dishwasher can now be run.

SL95A MODELS WITH DISPLAYS:

- 🎵 While pushing & holding **Delay Start** button (regardless of model), push **On/Off** button. When display shows a # (**0, 1** or **2**) and tone comes on (if tone is on), release both buttons. (If no tone comes on, tone is already off -- push **On/Off** button to exit change mode.)
- 🎵 Push **Delay Start** button again to scroll through tone volumes until no tone is heard (or desired volume is reached if tone is to be kept on). Volume level on display will show "0" when tone is off.
- 🎵 To save changes, push **On/Off** button and close door. Dishwasher can now be run.

Part # 4 -- Heater & NTC (1)

Access

The heater & NTC can be accessed or measured from the right side of the dishwasher, but can only be removed by dropping the entire base (by flipping the dishwasher on its back) since they are wedged underneath the tank.

To remove outer door:

- ✂ Remove six (6) T-20 Torx screws from inner door below fascia panel (three (3) per side).
- ✂ Carefully pull bottom of outer door out from dishwasher until top door tabs clear, then pull door down until it releases from dishwasher. Take care to not scratch outer door.
- ✂ Remove two (2) plastic door guards. They can fall out when the outer door is removed.



Remove inner door screws



Slide out outer door



Remove door guards

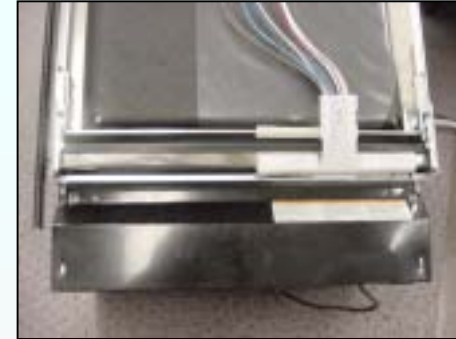
HINT: Remove all water from the sump and hoses before accessing the heater -- when the dishwasher is flipped on its back, water can enter the water fill assembly diaphragm and cause the dishwasher to not fill properly.

Part # 4 -- Heater & NTC (2)

To remove toe kick:

- ✖ Remove two (2) T-20 Torx screws from toe kick.
- ✖ Tilt toe kick out from under dishwasher.

HINT: The fascia panel and door don't need to be removed to access the heater & NTC. However, the door must be removed to completely remove the tank.



To remove right & left side panels:

- ✖ Remove two (2) T-20 Torx side panel screws from each side (through holes in trim strip).
- ✖ Carefully slide trim strips up and out of dishwasher. If side panels are removed carefully to avoid damaging trim strips, then trim strips don't need to be removed.
- ✖ Lift side panels up and out from dishwasher. Panels can be removed with trim strips.



Remove panel screws



Slide out trim strips



Lift panels up and out

Part # 4 -- Heater & NTC (3)

To separate base from tank (1):

- ✂ Carefully lay dishwasher on its back.
- ✂ Carefully pull door springs out from base.
- ✂ Remove terminal blocks from base.
- ✂ Separate water valve from base by removing two (2) T-20 Torx screws, then move water valve out of the way.

HINT: Remove water from sump and hoses before laying dishwasher on its back (to avoid water entering water fill assembly & causing faulty water filling).



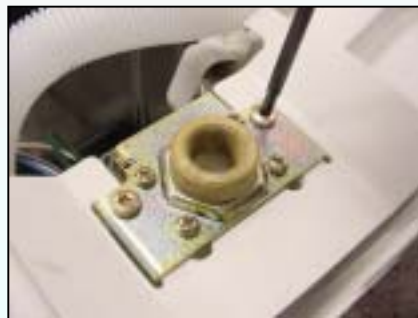
Place on back



Pull out door springs from base & disconnect cords



Remove terminal blocks from base



Disconnect water valve from base



Part # 4 -- Heater & NTC (4)

To separate base from tank (2):

- ✂ Disconnect J-box ground wire, then pull wires out of J-box.
- ✂ Pull out inlet hose from sump.
- ✂ Carefully pull base away from tank and sump.



Pull wires from J-box



Pull out sump inlet hose



HINT: Its simpler & quicker to remove the two water valve screws than to remove the hose clamp.



Front & side views of junction box (J-box)



Carefully pull base away from tank & sump



HINT: Don't order duplicate parts when ordering parts below -- when these parts are replaced, others are included:

- **Heater assy.** -- includes NTC, Hi-Limit, flow switch (& hydrosensor where applicable).
- **NTC** -- includes Hi-Limit.

Part # 4 -- Heater & NTC (5)

Removing & Installing Heater & NTC:

- ✂ Remove two (2) T-20 Torx screws holding heater assembly to sump.
- ✂ Disconnect wires from heater, flow switch, NTC & Hi-Limit after noting connections.
- ✂ Pull clips, then carefully pull heater assembly from sump & pump. Note heater comes as an assembly (with housing & gasket).

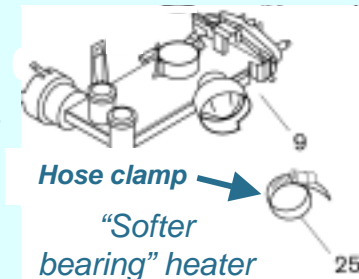


HINT: If needed, use rinse-aid to lubricate gaskets to make it easier to assemble heater to sump and pump.

Heater assembly Remove heater screws Remove heater from sump/pump

NOTE: Heater assemblies are connected to circulation pumps with hose clamps which must be ordered separately:




- Have gasket assembled to heater and have a separate hose clamp (order # **172272**).



HINT: Heater assemblies contain NTC's, Hi-Limit's & flow switches (& hydrosensors where applicable). If heaters are replaced, these parts are replaced too.

Part # 4 -- Heater & NTC (6)

Removing & Installing NTC:

-  Remove heater assembly -- NTC is located on top of heater assembly.
-  Disconnect wires after noting connections (since NTC & Hi-Limit are included in the same part -- # 165281).
-  Remove NTC cover, pull NTC holding tabs apart and pull NTC out of heater.



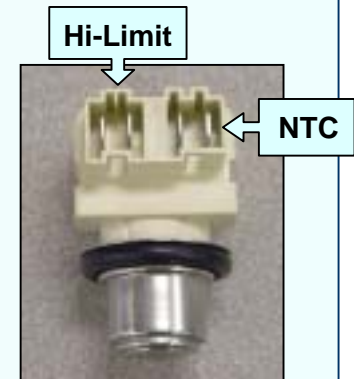
Disconnect wires



Remove cover & pull tabs



Remove NTC



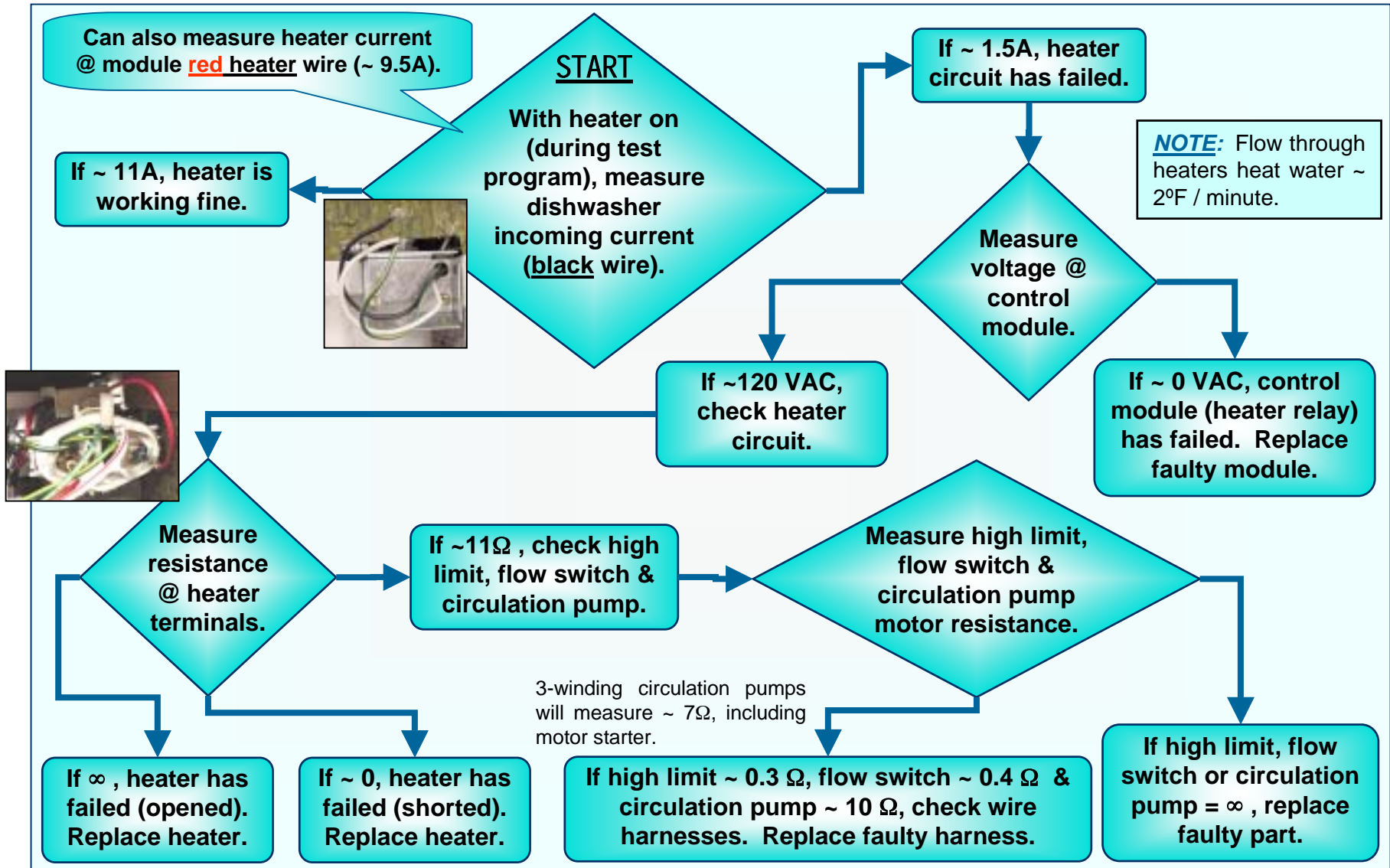
NTC w/ Hi-Limit

NOTE: To remove flow switch, carefully pry housing away from switch (until tabs clear switch), then snap switch out.



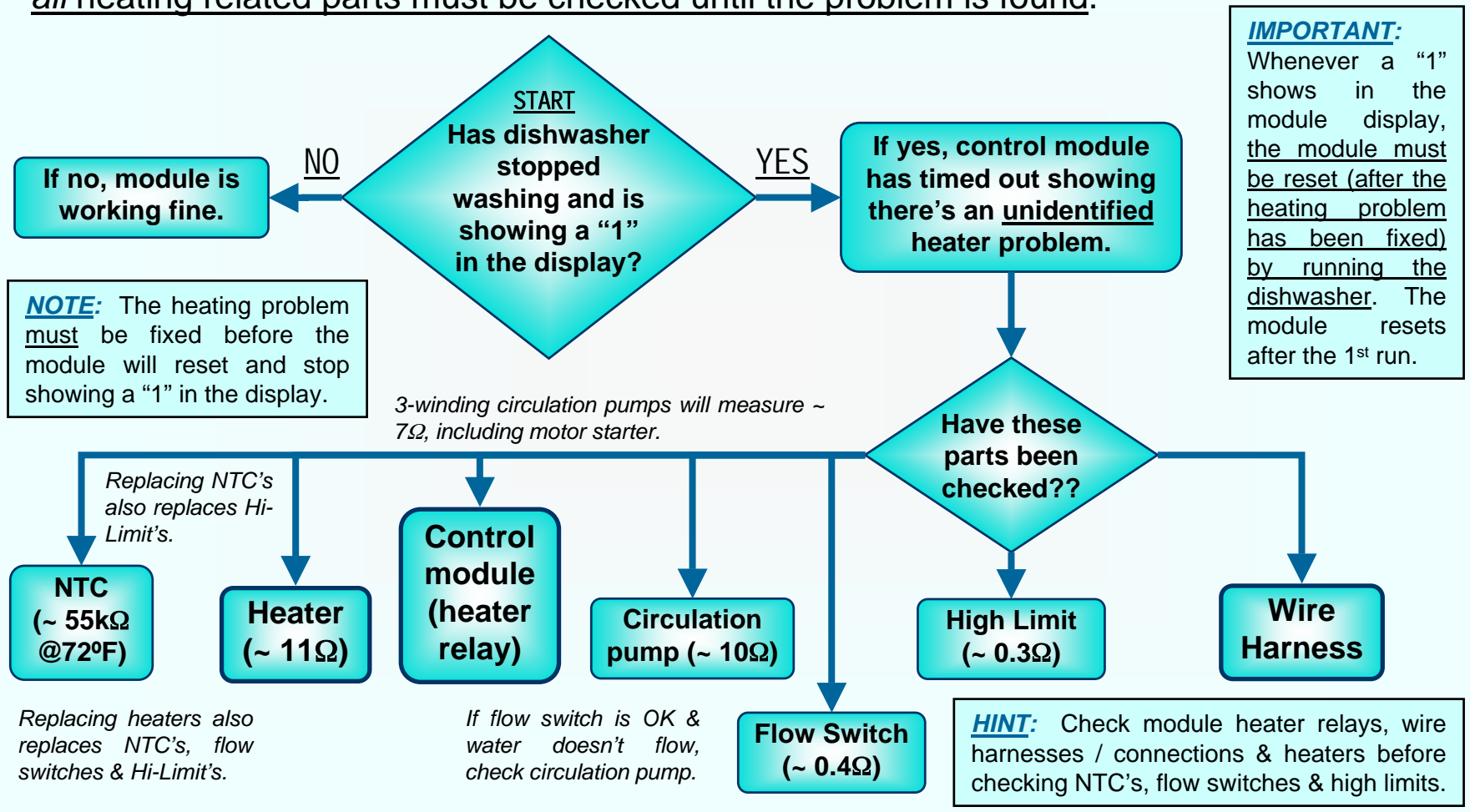
HINT: If needed, use rinse-aid to lubricate gaskets to make it easier to assemble heater to sump and pump.

Service Tips -- Heater Troubleshooting Flowchart



Service Tips -- Modules Displaying "1"

Occasionally dishwashers will run for hours, not finish washing & show a "1" in the display. This means the module has timed out due to an unidentified heating problem -- all heating related parts must be checked until the problem is found.

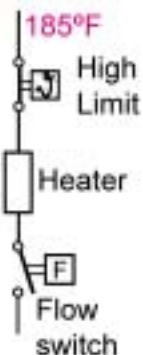




Service Tips -- Measuring Heater/NTC Resistances (1)

Example of a test Program (varies by model - SL95A shown)

TEST	TIME	NOTES
Entering test program	----	While pressing and holding Regular Wash & Quick Wash buttons (simultaneously), press On/Off button. Indicating lights (on button pads) will flash, indicating the test program has been entered.
Starting test program	----	Press Regular Wash & Quick Wash buttons a 2nd time (simultaneously).
Skipping a test	----	Press Delicate Wash button (except for filling stages which cannot be skipped).
Draining	15 seconds	Allow dishwasher to drain.
Initial water filling	Until water level switch closes.	Can't skip this test.
Final water filling	Until water level switch closes.	Can't skip this test.
Heating + Circulating + Detergent Dispenser	120 seconds	
Heating + Circulating	Until water reaches 140°F (rises ~ 2°F/minute)	To save time, don't run entire test. When water circulates, measure current in black power line to dishwasher, then skip test. <ul style="list-style-type: none"> ● If current ~ 11A, heater, flow switch & Hi-limit are OK. ● If ~ 1.5A, measure heater, Hi-limit & flow switch resistances to determine failed part.
Circulating + Rinse-aid Dispenser	120 seconds	
Hydrosensor calibration	50 - 250 seconds	Skip this test to save time.
Change draining sequence	30 seconds	
Draining	45 seconds	Last test. To end test program, press On/Off button.



NOTE: Once its found one of these parts is faulty (from incoming current being 1.5 - 2A), check each part (once tank has been removed or blocked up) by measuring its resistance at its terminals:

- Heater ~ 11 Ω
- Hi-Limit ~ .3 Ω
- Flow switch ~ .4 Ω — must remove microswitch from heater housing & close its contacts to measure this. A spring loaded plunger closes microswitch when water is flowing.

Use dishwasher test program to turn on heater, then measure dishwasher incoming current. If ~ 1.5A, heater, Hi-Limit, flow switch or circulation pump has failed. Check voltage @ module (or timer) -- if 0V, module (or timer) has failed.

For electronic models, current can also be measured in **red heater wire** at control module (~ 9.5A). Since there can be more than one **red** wire, check wiring diagram to select **heater wire**.

NOTE: Flow through heaters heat water ~ 2°F / minute.

NOTE: Open door to run test program for fully-integrated models.



HINT: Because the flow switch only closes when water is flowing, the heater resistance can only be measured at the heater terminals (not at the control module).



HINT: The NTC and High Limit are contained in the same part. When either fails, replace entire part # **165281**.



Service Tips -- Measuring Heater/NTC Resistances (2)

Using test programs for various models

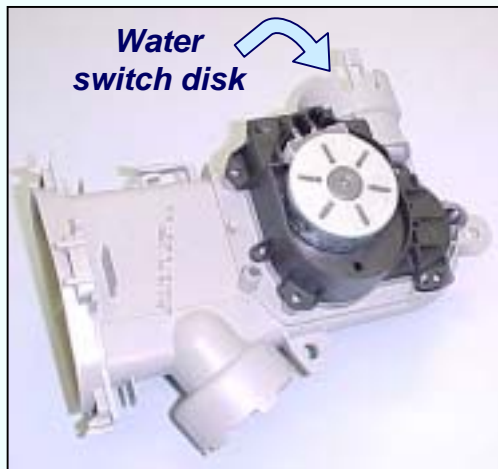
Models	Buttons to Enter Test Program
SL34A	<i>Regular Wash + Rinse & Hold</i>
SL84A	<i>Power Scrub + Delicate/Econo</i>
SL95A	<i>Regular Wash + Quick Wash</i>

- ◆ To enter test programs, hold down buttons above (2nd & 4th from left), then turn dishwasher on by pushing on/off button. Push buttons above a 2nd time to start test program. Allow program to finish to see fault codes. Turn dishwasher off to exit test program.

NOTE: Open door to run test program for fully-integrated models.

Service Tips -- Water Switch (“Flow Control”)(1)

All **SL95A** model heater assemblies have motor operated water switches inside them, with motors attached underneath heater assemblies. They consist of a motor-controlled disk (with 3 holes) which rotates to provide precise water flow control -- using both spray arms, upper spray arm only or lower spray arm only.



HINT: Models with water switches and *Top Rack Only* have the *Top Rack Only* parts integrated with the water switches. No separate actuators are needed.

HINT: Models with water switches require stronger circulation pumps (# 437345) with separate motor starters (# 182318). Circulation pumps, heaters & sumps for water switch and non-water switch models **cannot** be interchanged.

Part # 5 -- Drain Pumps

Drain pumps are mounted to sumps in the front of dishwashers -- they're easily accessible from the front of dishwashers by removing toe kicks.

Removing & installing drain pump:

- ✎ Remove toe kick, then pull up terminal cover and disconnect wires. For easier access, remove base cover 1st.
- ✎ To remove pump, push latch (on circular collar) & rotate pump clockwise (cw). To install new pump, insert @ 2:00 position & rotate counterclockwise (ccw).
- ✎ Clean water & debris from base, then check float operation.
- ✎ Connect wires, then install base cover & toe kick.

HINT: Improper installation issues causing dishwashers to not drain properly -- its usually not a drain pump problem:

- 💡 Drain hoses without high loops or drains without air gaps
- 💡 Drain hoses > 10' long (i.e. > 4' extension)
- 💡 Drain hoses kinked when dishwashers installed under cabinets

NOTE: Standard 6-vane drain pumps (# **167082**) are quieter and smoother than 4-vane pumps. Drain pumps used in installations (in Washington State) with Johnson Tees must use stronger 4-vane pumps (# **184178**). 4-vane pumps will be slightly noisier, which is normal.



NOTE: Drain pump is rated 120V, 60 Hz, 35W, 0.85A.

DRAIN HOSE INSTALLATION TIPS:

- ⚠ Must have drain hoses with high loops or drains with air gaps.
- ⚠ Drain hoses can be up to 10' long – can add up to 4' to dishwasher hose.
- ⚠ Secure drain hoses to rear of dishwashers with non-metal bands.

Part # 6 -- Dispensers (1)

Disassembly

CAUTION: Inner door edges are sharp! Cover door edges and remove dispenser carefully.



Disconnecting wire harness

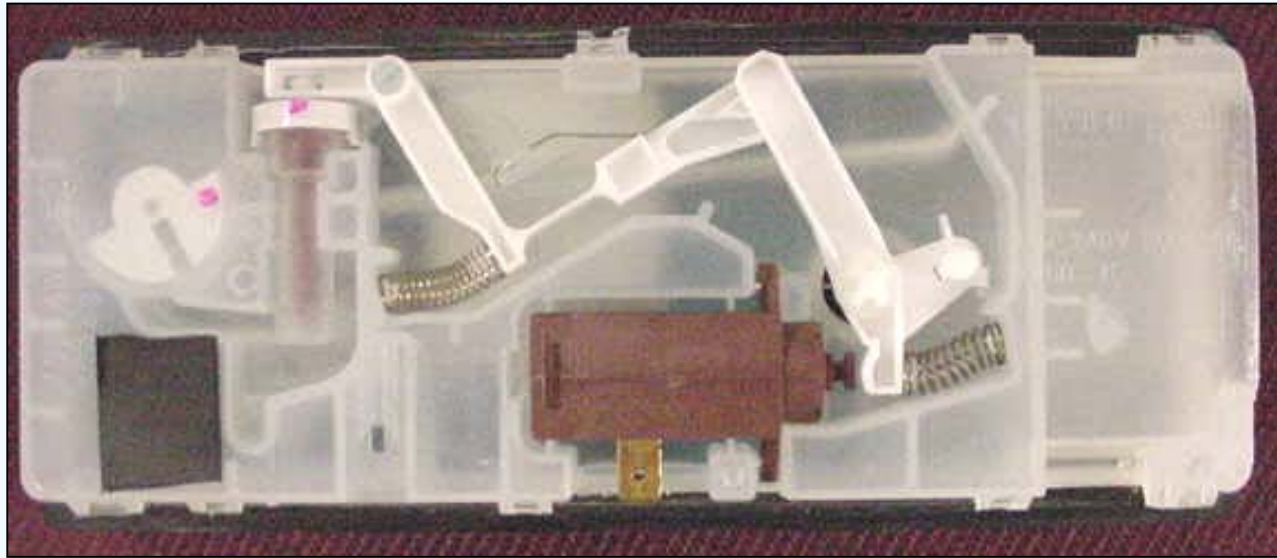
Bending retainer tabs

HINT: To remove/install dispensers:

- ✘ Remove outer door, remove fascia panel & disconnect wire harness from fascia panel.
- ✘ Disconnect wire harness from above dispenser, then remove wires to wax motor & reed switch.
- ✘ Disconnect condensation tube (for older models with condensation tubes in doors).
- ✘ Bend retainer tabs, then push dispenser inward toward tank. Protect hand with towel as edges are sharp.
- ✘ Replace from inside of tank -- position O-ring seal and bend tabs to secure. When replacing dispensers, lubricate O-rings with rinse-aid & support inner doors to avoid damage if O-rings stick.

Part # 6 -- Dispensers (2)

During each wash program, the wax motor opens twice -- once to dispense detergent and again to dispense rinse-aid. The wax motor opens the same way -- the linkages make the separate compartments open.



NOTE: The white plastic linkage 1st opens the detergent dispenser door, then cocks in place to dispense rinse-aid when the wax motor operates the 2nd time. After the 2nd operation, the linkage resets itself so it will open the dispenser detergent door for the next wash program.

Part # 6 -- Dispensers (3)/Condensation Tubes

Condensation tubes are located in the right side of tanks. All dishwashers use unvented dispensers.



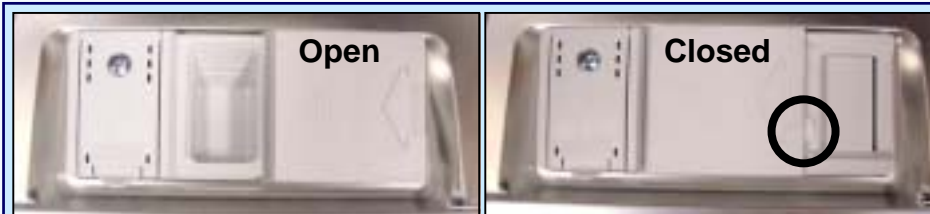
HINT: Condensation tubes exit in the base behind the sump. There is no drain connection for these tubes.

Service Tips -- Replacing Dispenser Doors

Most dispenser problems occur from dispenser doors being damaged or pulled off (due to misuse). Please follow the instructions below when replacing doors.



- ✘ Connect spring to door & dispenser housing posts.
- ✘ While keeping spring attached to posts, carefully slide door onto housing -- making sure door tabs engage dispenser door rails.
- ✘ Door levers don't need to be preset during installation.



HINT: To close dispenser doors, slide doors closed, then push white lever until lever locks (showing doors are closed). Levers don't need to be preset during installation.



HINT: Make sure door tabs engage dispenser door rails.

Part # 7 -- Top Ten Dishwasher Cosmetic/Customer Use/Installation Issues

Top Ten Cosmetic/Customer Use/Installation Issues:

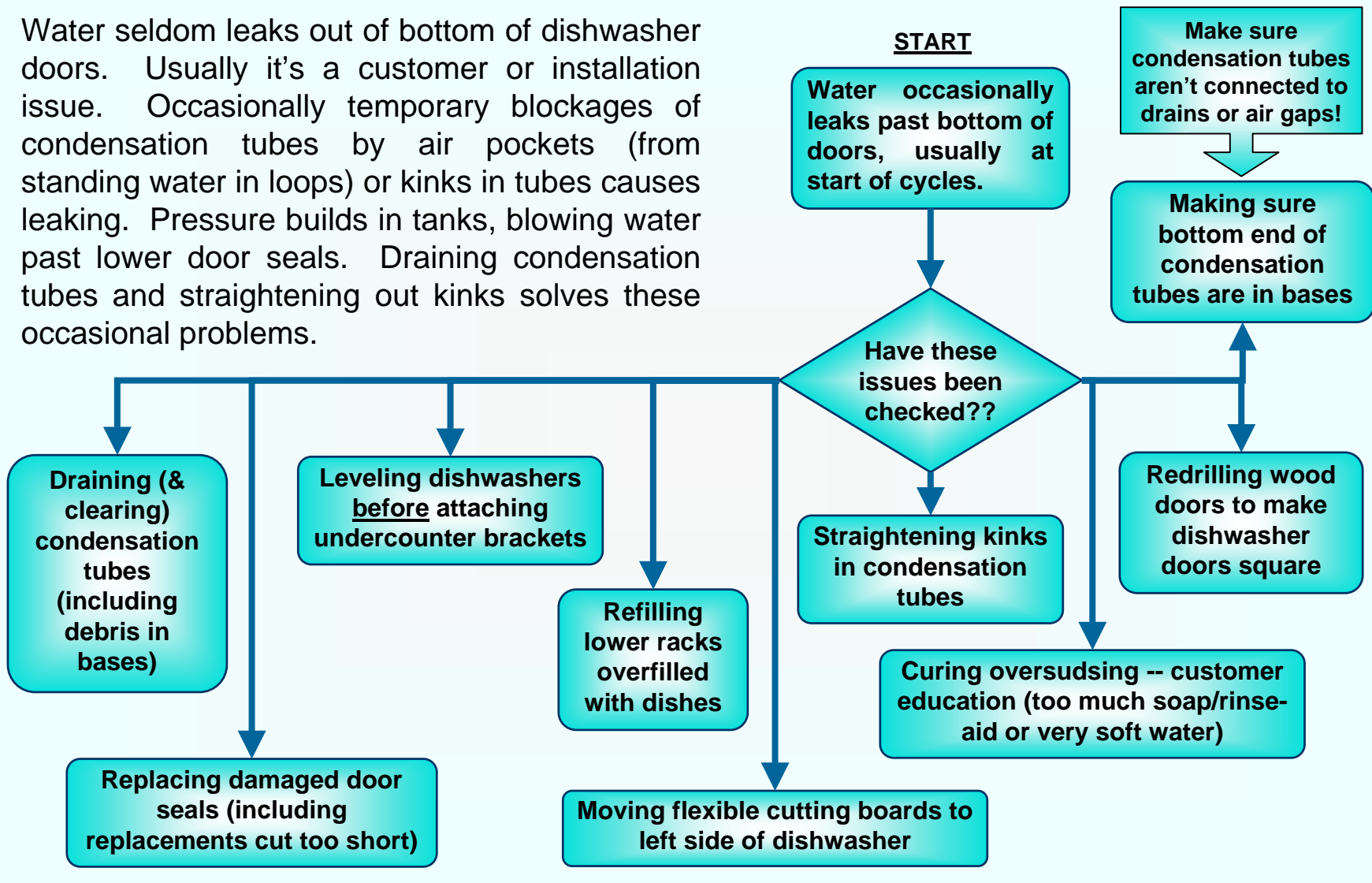
- ⑩ Not cleaning sump filters....Customers often don't know they exist.
- ⑨ Smelly dishwashers....Often occurs from filters not being cleaned, drain hose high loops missing or drain gases being present. If all else is OK, then problem can be preservative not purged from tank door gasket.
- ⑧ Doors leaking or not latching....Usually an installation issue (dishwasher brackets installed before dishwashers are leveled front to back, tanks & doors out of square, wooden doors not drilled accurately). Can be blockage in condensation tubes or having condensation tubes connected to drain hose air gaps.
- ⑦ Inner door damage....From upper rack during improper shipping and handling (dishwashers clamped on wrong sides or dropped).
- ⑥ Doors hit toe kicks....Toe kick installation issue.
- ⑤ Junction boxes....Comes from wires not being connected correctly during installation.
- ④ Dispensers....Customers using too much detergent, not using rinse-aid & not knowing how to close the door.
- ③ Drain hoses not installed properly....Often no air gap or high loop + pinched hoses -- causes poor draining & smelly dishwashers. Most drain pumps are mistakenly replaced for drain hose installation issues.
- ② Outer doors....Most are dinged during shipment.

...and the # 1 dishwasher cosmetic/customer use/installation issue is...

- ① **Damaged water valves**....Primarily from fittings being overtightened. A damaged valve can allow some water onto kitchen floors.

Service Tips -- Water Leaking Past Doors

Water seldom leaks out of bottom of dishwasher doors. Usually it's a customer or installation issue. Occasionally temporary blockages of condensation tubes by air pockets (from standing water in loops) or kinks in tubes causes leaking. Pressure builds in tanks, blowing water past lower door seals. Draining condensation tubes and straightening out kinks solves these occasional problems.



Part # 8 -- Door Latches (1)

Disassembly/ Installation

Other than occasional misalignment, the only door latch repairs will be replacing microswitches on fully integrated models (e.g. **SL84A/95A**). **SL34A** models also use these door latches.

To disassemble door latches for integrated models:

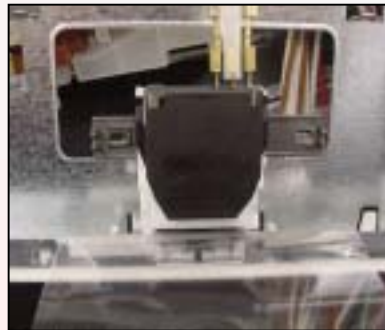
- ✘ Remove T-20 Torx fascia panel screws from inner door.
- ✘ Lower fascia panel from door.
- ✘ Locate door latch in console.
- ✘ Bend out console metal tabs to allow latch removal.



Remove panel screws



Lower fascia panel



Door latch in console







Tabs (inner view)



Bend out metal tabs

Part # 8 -- Door Latches (2)

To remove & install door latches for integrated models (continued):

-  Remove door latch from console.
-  Disconnect wire harness, then remove microswitch & cover.
-  Disconnect wires, then remove microswitch from cover.
-  Replace microswitch, then reassemble.

HINT: Make sure metal console tabs are bent back completely during reassembly.



Remove door latch



Remove microswitch



Microswitch



Replace cover (in slots)



Insert latch into tabs



Bend tabs back



Replace fascia panel



Replace screws

Part # 8 -- Door Latches (3)

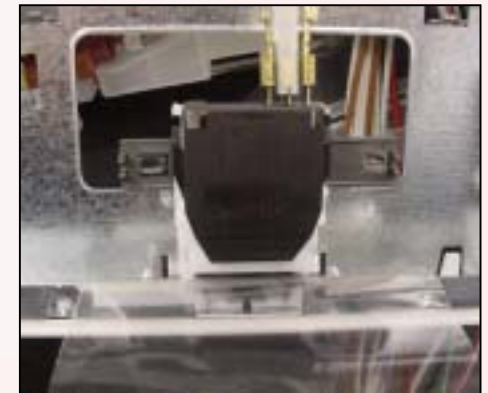
All SL dishwashers use electronic door switches (microswitches activated by door latches).



SL34A/95A

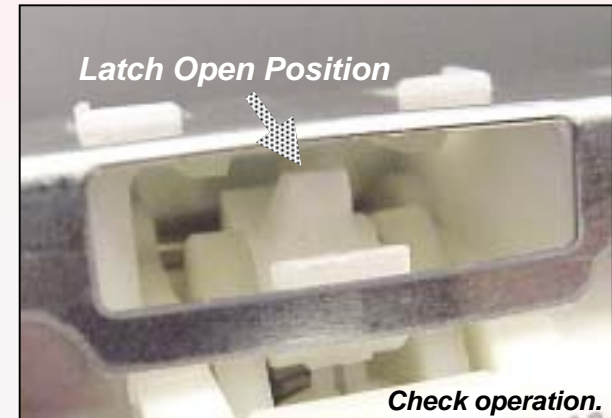
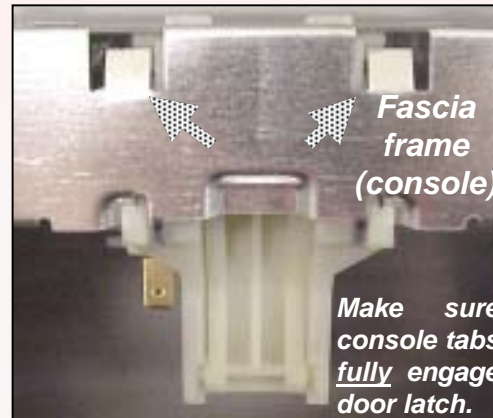


SL84A



Service Tips -- Misaligned latches

Occasionally integrated dishwasher door latches can be misaligned, causing doors to not close properly or dishwashers to run with doors open (when latches don't reset). Follow these steps to realign door latches.



Insert latch tabs into frame

Bend tabs down into latch

Reset latch to open position



419828 door latch with microswitch

HINT: Make sure latch tabs are seated, all fascia frame (console) tabs are bent completely, door strikes are aligned with latches and door latches get reset.



187184 ball bearing door latch with microswitch

NOTE: Integrated dishwashers include SL84A & SL/95A models.

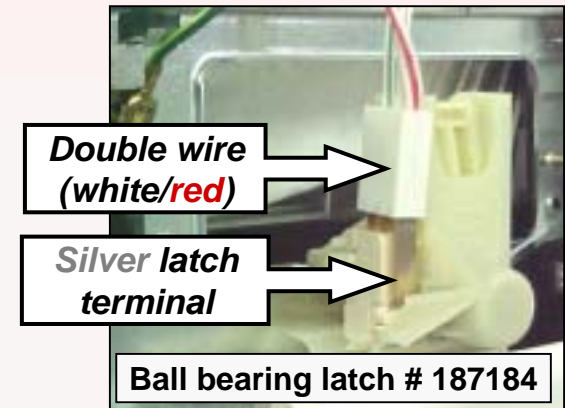
Service Tips -- Miswired latches

If replacement **SL95A** door latches/wire harnesses are miswired (with door latch terminals backwards), dishwashers run with doors open and lights won't turn on when doors are open. Control modules can be irreversibly damaged.



Rewiring door latches:

- Check wiring to photos at right – the double wire must be connected to the silver door latch terminal.
- With door open, turn on dishwasher – keep door open. If display doesn't turn on, immediately turn off dishwasher and reverse door latch terminal.

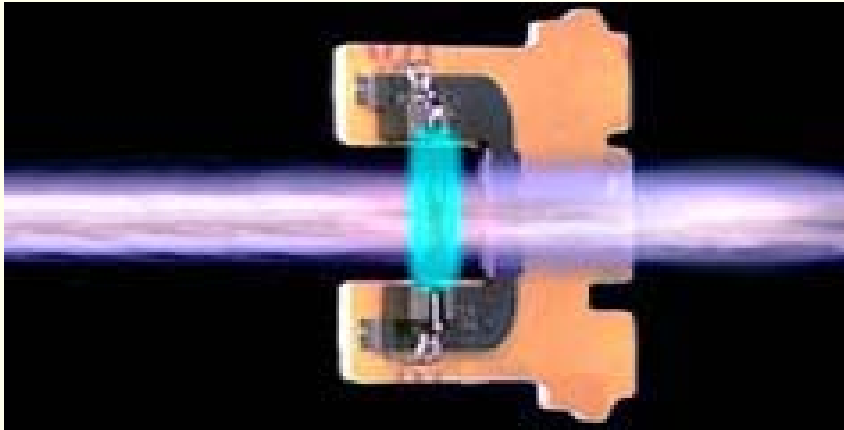


CAUTION: Operating dishwashers with miswired door latches will cause **irreversible** damage to control modules if doors have been closed and circulation pumps have started – modules must be replaced. Check door latch wiring whenever door latch terminals are changed or disconnected or when displays don't light up when dishwashers are turned on.

IMPORTANT: If dishwashers with miswired door latches are corrected before doors are closed and circulation pumps started, modules can still be used. If displays don't light up, turn off dishwashers and reverse door latch terminals before modules are damaged.

Part # 9 -- hydroSensors (1)

The hydrosensor only affects energy usage, eliminating a pre-wash and/or pre-rinse cycle if water is clean. Most customers won't notice the difference if an hydrosensor fails.



NOTE: hydrosensors provide ~ 20% energy savings.

HINT: Dishwashers still operate adequately when hydrosensors fail.

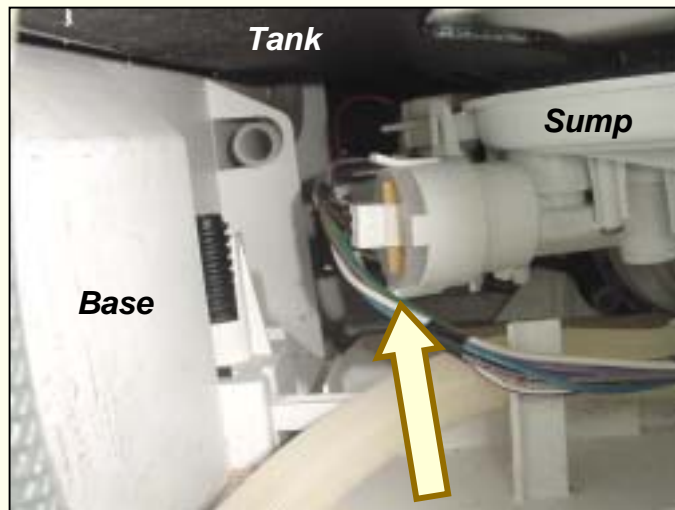
HINT: Customers will only notice hydrosensors failing if they see their dishwashers running slightly longer or their electric and water usage getting slightly higher.

NOTE: If water is clean enough, it will be kept for the wash cycle. If not, the hydrosensor directs the dishwasher to add an additional pre-rinse or pre-wash cycle.

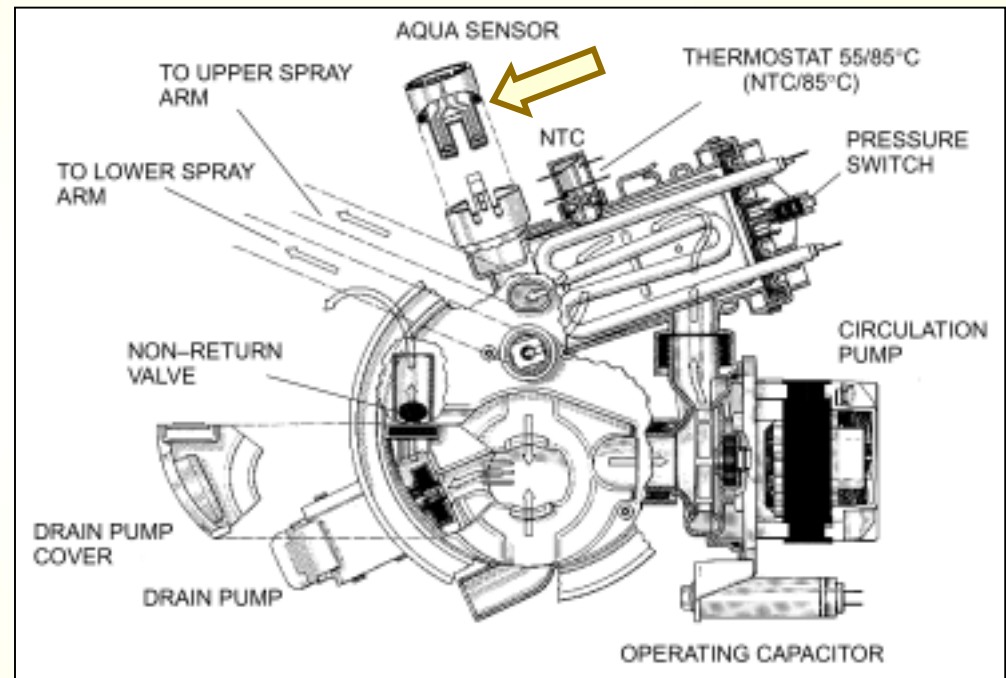


Part # 9 -- hydroSensors (2)

The hydrosensor is located on the rear of the sump. It can be reached through the left side of the dishwasher (after the left side panel is removed). Its not necessary to block up the tank to reach the hydrosensor.



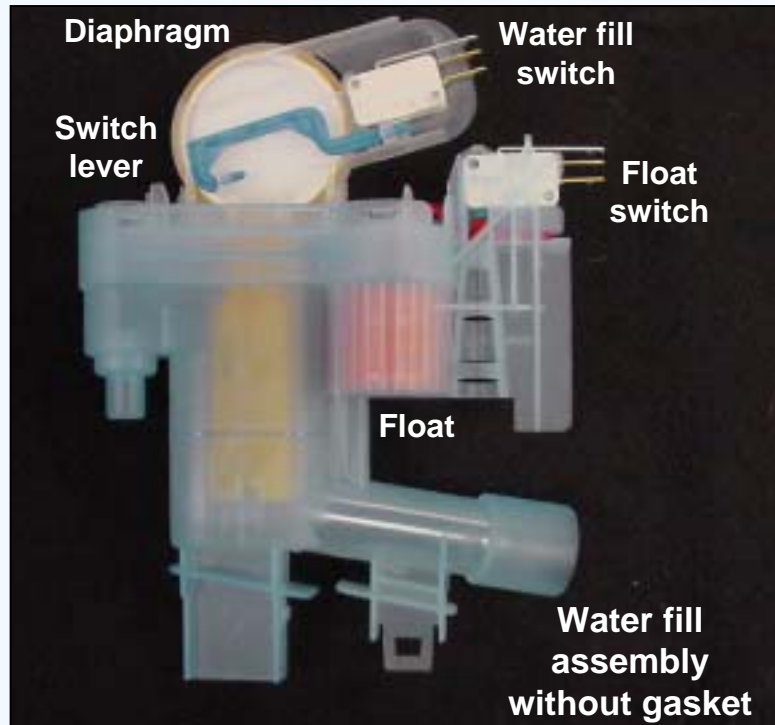
HINT: To change out the hydrosensor, pull off the connector and pull out the hydrosensor (toward the rear of the dishwasher).



HINT: The hydrosensor slides into slots in the sump. Make sure the hydrosensor is properly inserted into the slots.

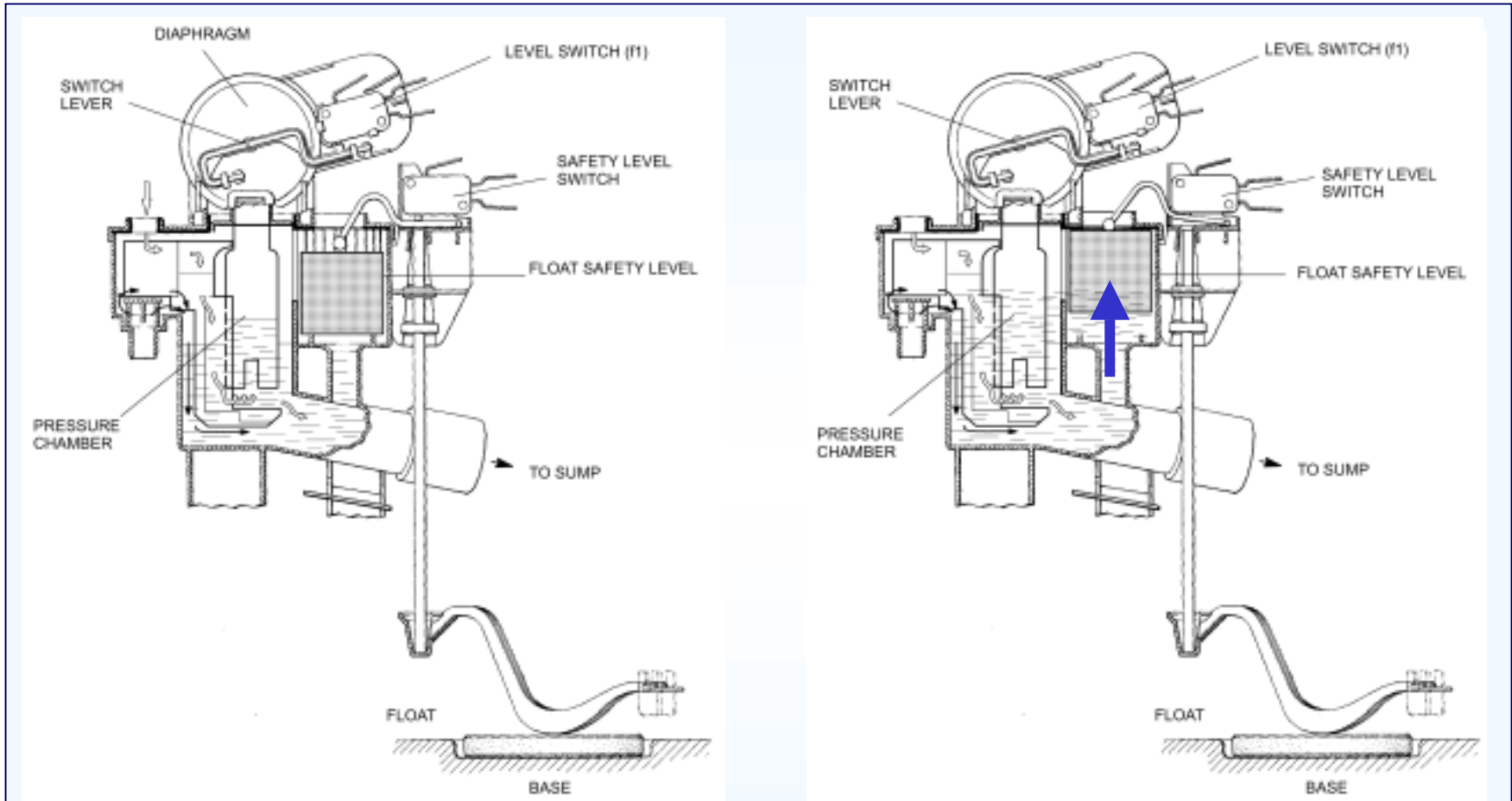
Part # 10 -- Water Fill Assembly (1)

Water fill assemblies insure dishwashers fill properly at various incoming pressures.



HINT: Floats should be checked and bases should be cleared of water & debris whenever water fill assemblies are worked on.

Part # 10 -- Water Fill Assembly (2)

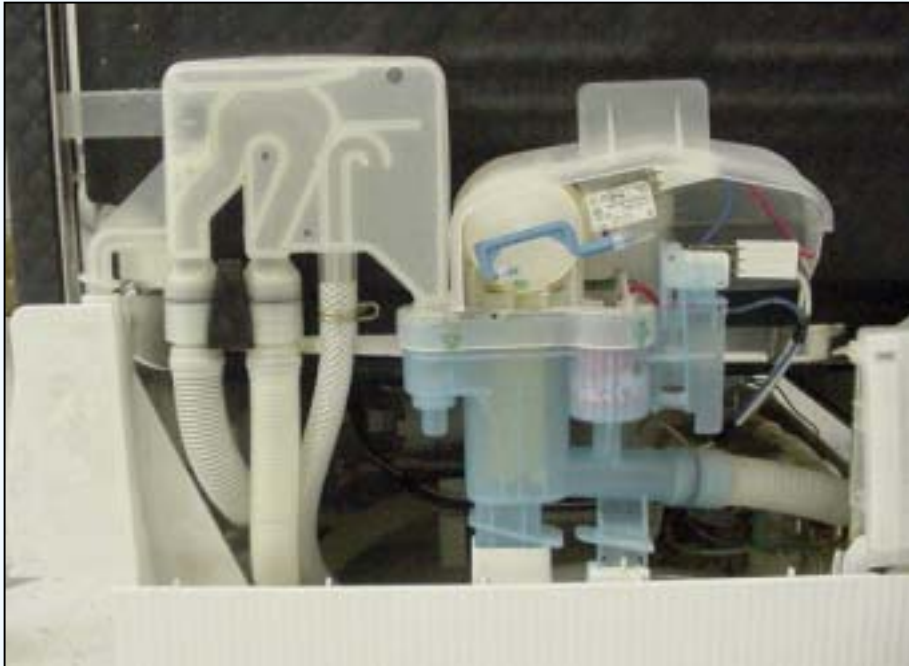


Normal fill: Water rises to proper level, pushing air in pressure chamber which operates diaphragm.

Overfill: Water rises too high & operates float switch, causing drain pump to remove water from sump.

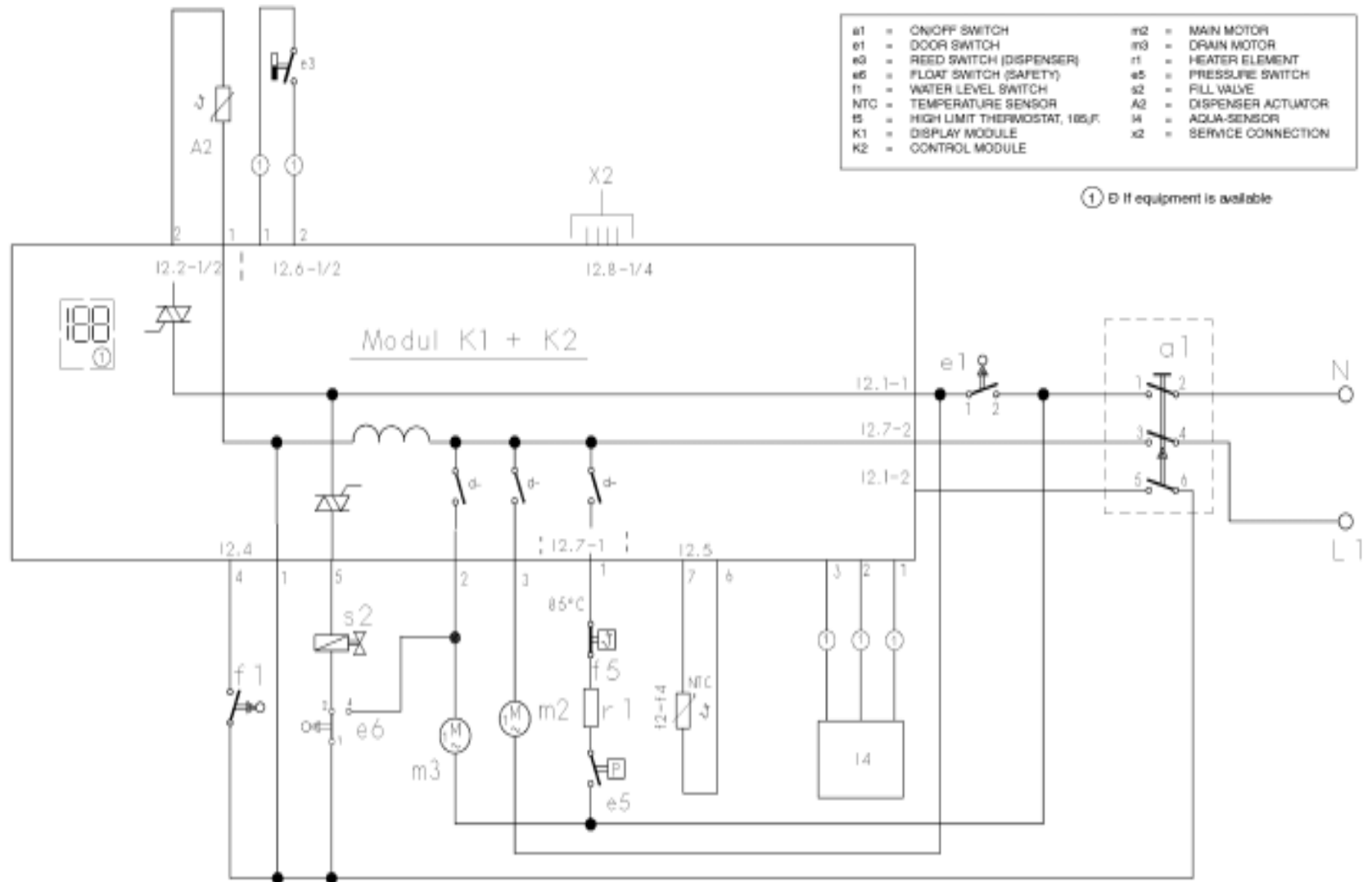
Part # 10 -- Water Fill Assembly (3)

The water fill assembly is easily accessed from the left side by just removing the left side panel.

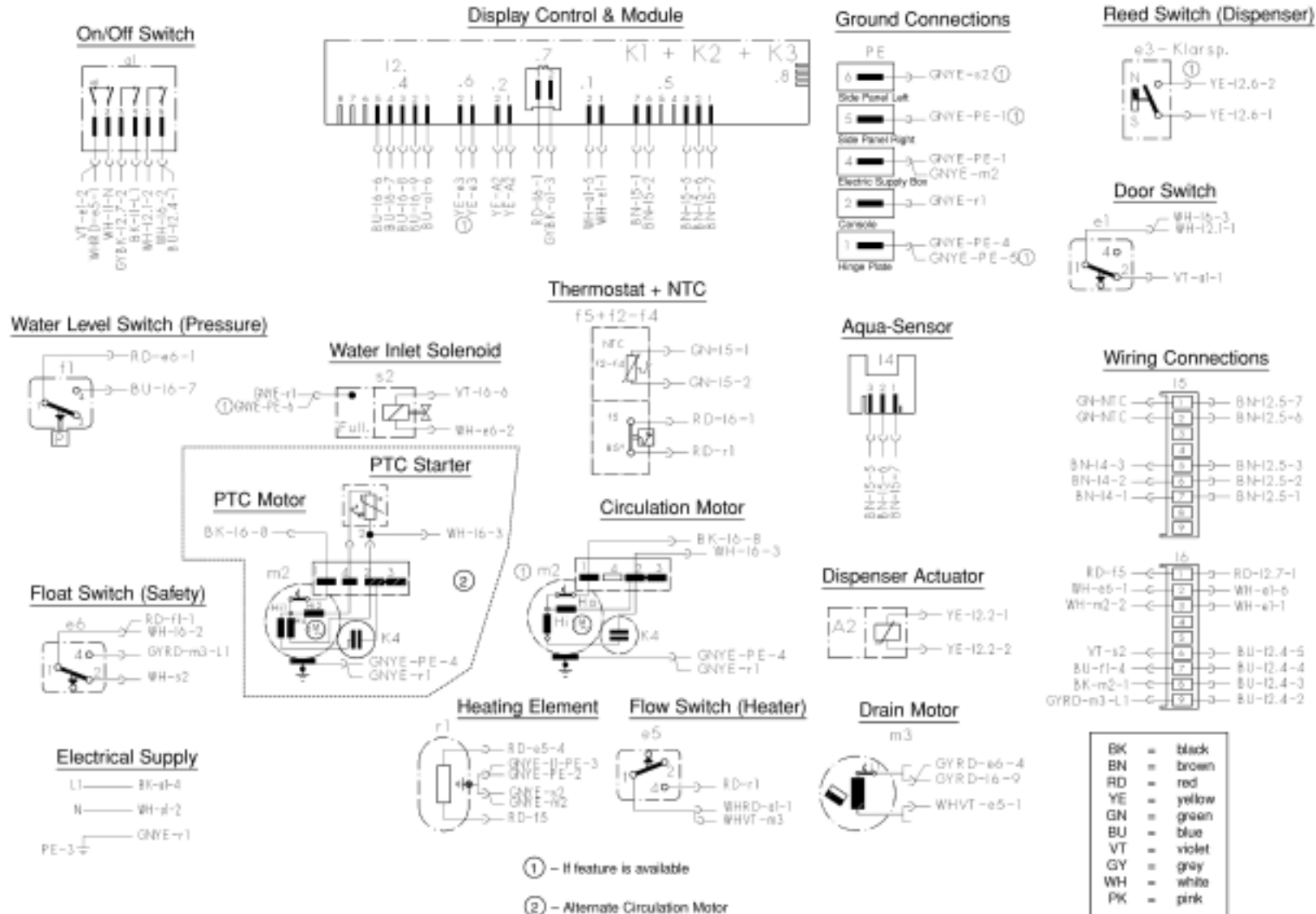


HINT: Most water fill assembly repairs will involve replacing microswitches. Occasionally tank insulation or other debris can prevent the diaphragm switch lever from operating, allowing overfilling.

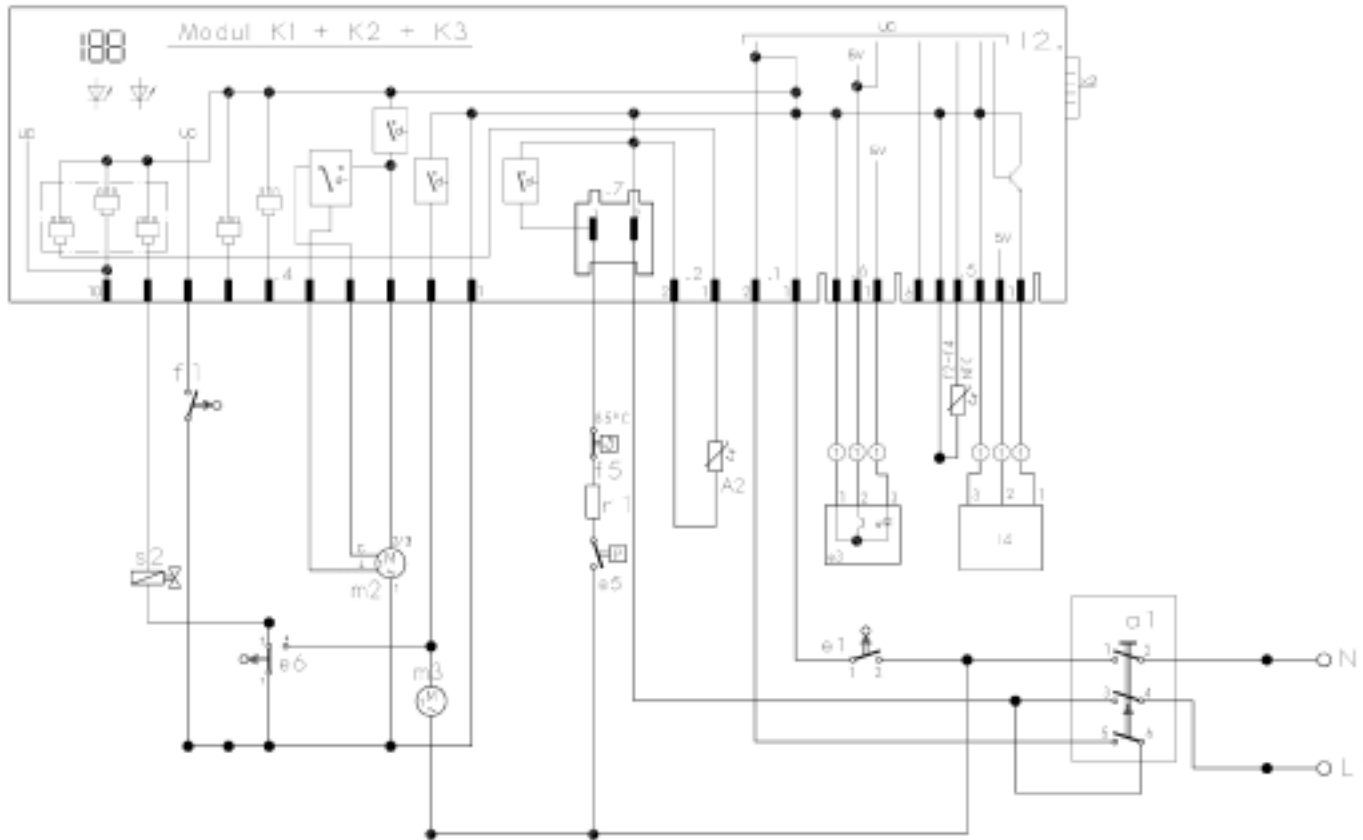
Service Tips – SL34A UC/01 Circuit Diagram



Service Tips – SL34A UC/01 Wiring Diagram



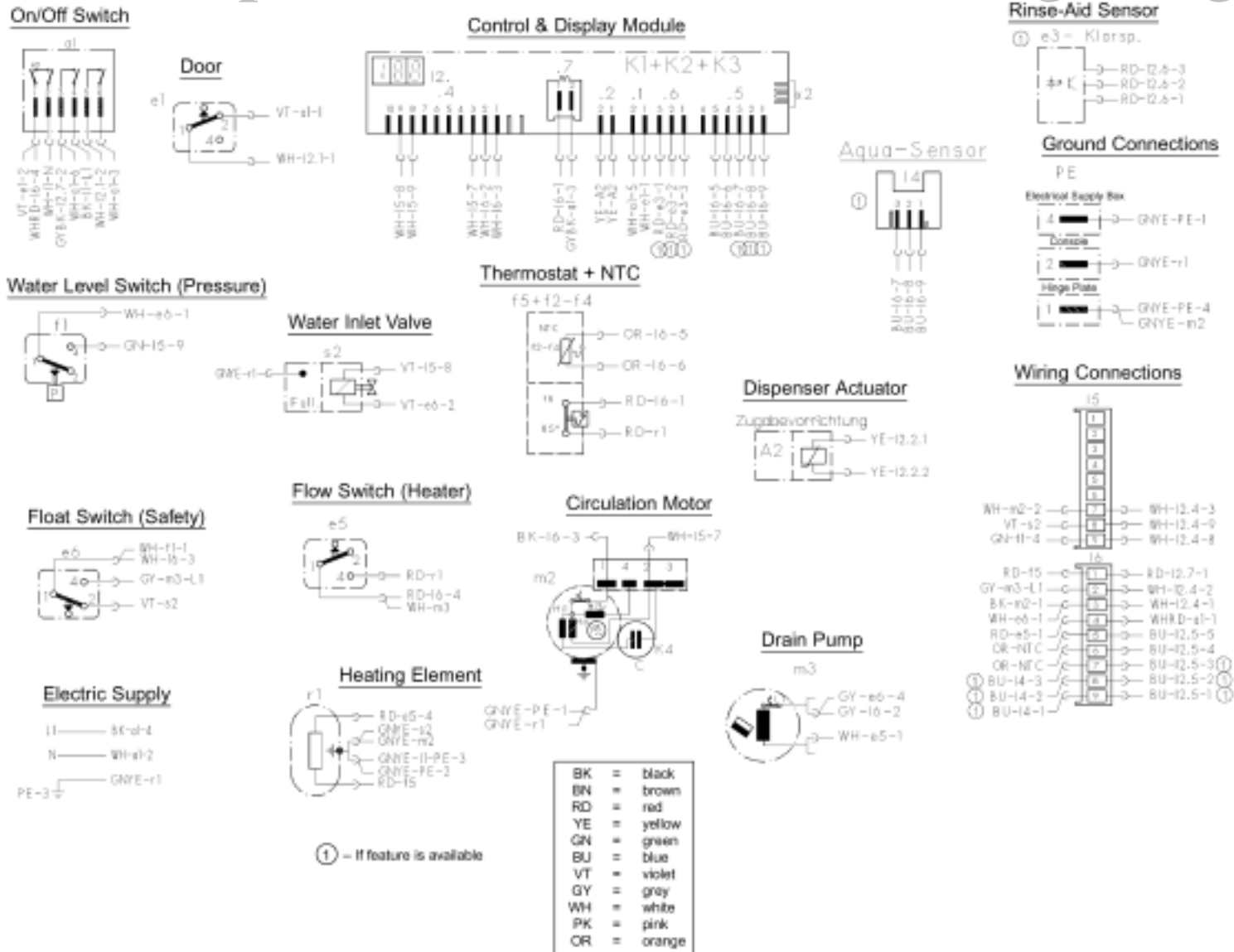
Service Tips – SL34A UC/02 Circuit Diagram



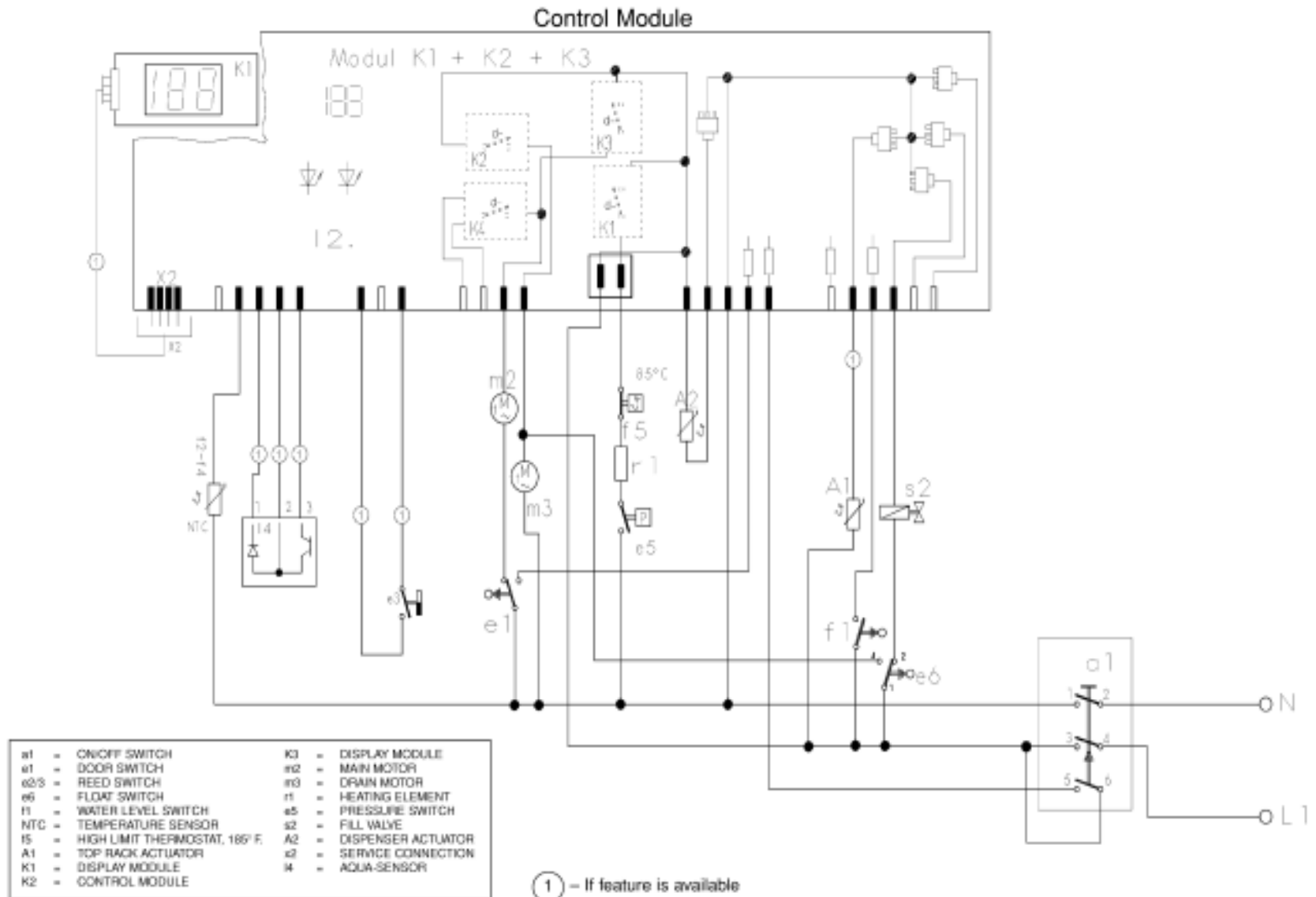
e1 = DOOR SWITCH	K3 = TIME DISPLAY
s1 = ON/OFF SWITCH	m2 = MAIN MOTOR
s3 = RINSE-AID SENSOR	m3 = DRAIN MOTOR
s4 = FLOAT SWITCH (Safety)	r1 = HEATER ELEMENT
f1 = WATER LEVEL SWITCH (Pressure)	s5 = PRESSURE SWITCH (Heater)
NTC = TEMPERATURE SENSOR	s2 = WATER INLET VALVE
t5 = HIGH LIMIT THERMOSTAT, (185°F)	A2 = DISPENSER ACTUATOR
K1 = DISPLAY MODULE	s2 = SERVICE CONNECTION
K2 = CONTROL MODULE	14 = AQUA-SENSOR

① – If equipment is available

Service Tips – SL34A UC/02 Wiring Diagram

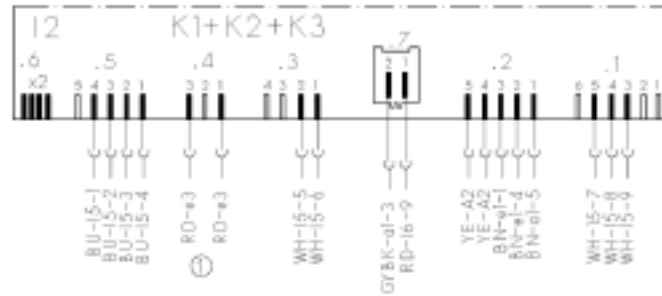


Service Tips – SL84A Circuit Diagram

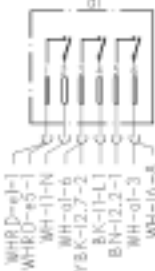


Service Tips – SL84A Wiring Diagram

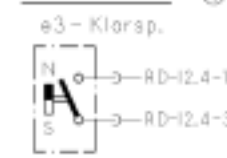
Control Module



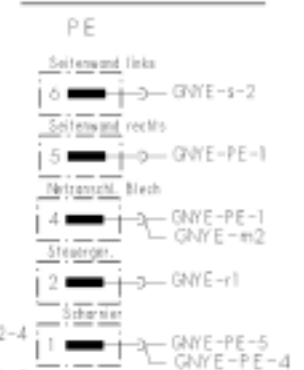
On/Off Switch



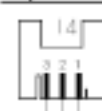
Reed Switch



Ground Connections



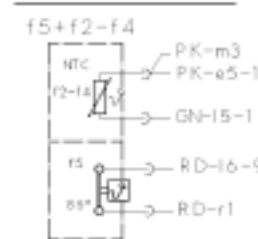
Aqua-Sensor



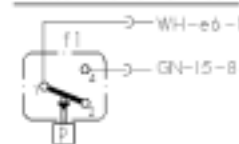
Dispenser



Thermostat + NTC



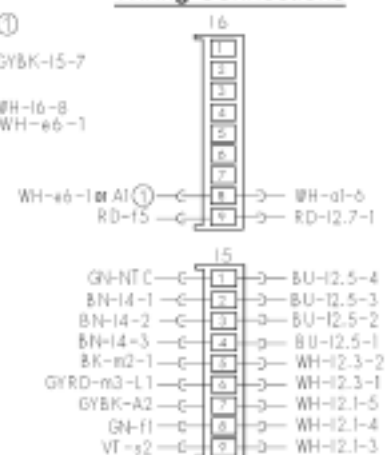
Water Level Switch



Top Rack



Wiring Connections



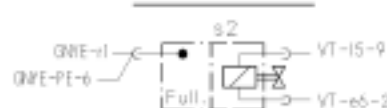
Float Switch



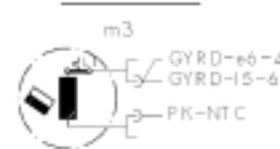
Flow Switch



Water Solenoid



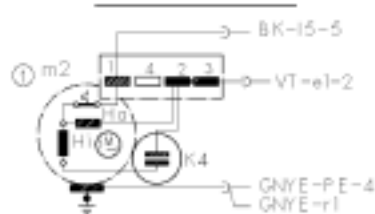
Drain Motor



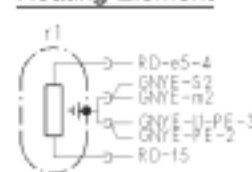
Door Switch



Circulation Motor



Heating Element



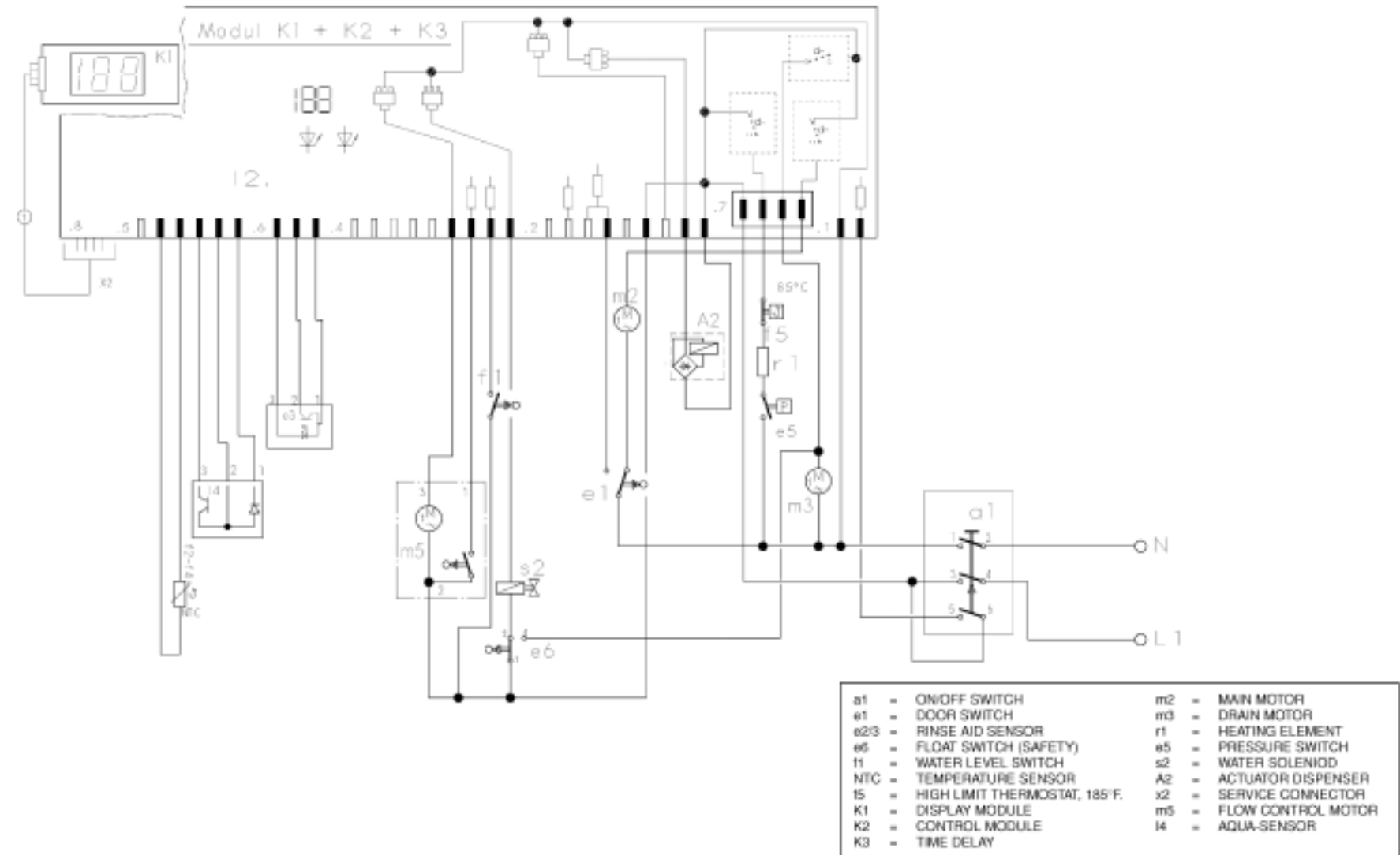
Electrical Supply



BK	=	black
BN	=	brown
RD	=	red
YE	=	yellow
GN	=	green
BU	=	blue
VT	=	violet
GY	=	grey
WH	=	white
PK	=	pink

① - If feature is available

Service Tips – SL95A Circuit Diagram



① – If feature is available

