Repair manual - Dishwasher

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Concerning this document

1.1 Important information

Read and observe chapter 2 "Safety" before performing any work!

1.1.1 Purpose

These repair instructions form the basis for a systematic and safety conscious procedure for the repair of domestic appliances.

These repair instructions include information about troubleshooting and repair.

1.1.2 Target group

These repair instructions are intended for persons who are familiar with equipment technology and were instructed by BSH or an authorised body:

- Service technicians for the repair of domestic appliances
- Pre-assemblers in the spare part stockroom when determining required spare parts
- Call centre employees during order acceptance

1.1.3 Other applicable documents

The following documents include additional relevant repair information:

- General repair instructions
- Error codes and service programs
- Circuit diagrams
- Exploded drawings
- Parts lists
- Repair videos

1.2 Explanation of symbols

1.2.1 Danger levels

The warning levels consist of a symbol and a signal word. The signal word indicates the severity of the danger.

Warning level	Meaning
Danger	Non-observance of the warning message will result in death or serious injuries.
Warning	Non-observance of the warning message could result in death or serious injuries.
Caution	Non-observance of the warning message could result in minor injuries.
Notice	Non-observance of the warning message could result in damage to property.

Table 1: Danger levels

1.2.2 Hazard symbols

Hazard symbols are symbolic representations which give an indication of the kind of danger.

The following hazard symbols are used in this document:

Hazard symbol	Meaning
	General warning message
	Danger from electrical voltage
	Risk of explosion
	Danger of cuts

Hazard symbol	Meaning
	Danger of crushing
	Danger from hot surfaces
	Danger from strong magnetic field
	Danger from non-ionizing radiation

Table 2: Hazard symbols

1.2.3 Structure of the warnings

Warnings in this document have a standardised appearance and a standardised structure.

⚠ Danger

Type and source of danger!
Possible consequences of ignoring the danger / warning.
- ▸ Measures and prohibitions for preventing the danger.

The following example shows a warning that warns against electric shock due to live parts. The measure for avoiding the danger is mentioned.

⚠ Danger

Risk of electric shock due to live parts!
Death by electrocution
- ▸ Disconnect appliances from electrical supply at least 60 seconds before starting repairs.

1.2.4 General symbols

The following general symbols are used in this document:

Gen. symbol	Meaning
	Identification of a special tip (text and/or graphic)
	Identification of a simple tip (only text)
	Identification of a link to a video tutorial
	Identification of required tools
	Identification of required preconditions
	Identification of a condition (if ..., then ...)
	Identification of a result
Start	Identification of a key or button
[00123456]	Identification of a material number
Status	Identification of displayed text / window (in the appliance's display)

Table 3: General symbols

2.1 Qualification

In Germany, only qualified electricians trained by BSH or an authorised body may perform any repair work.

In other countries, only similarly trained qualified personnel is permitted to perform the repair work.

Appliances must only be repaired by persons that are qualified, **approved** and trained by BSH or an authorised body as instructed.

2.2 General safety instructions

2.2.1 All domestic appliances

Risk of electric shock due to live parts!

- Disconnect the appliance from the mains for at least 60 seconds before starting work.
- Do not touch the housing, components and cables.
- For tests on an energised system, use a residual current circuit breaker.
- Discharge high-voltage capacitors.

Risk of injury from sharp edges!

- Wear protective gloves.

Risk of crushing during repair, maintenance, troubleshooting and service due to heavy and moving components

- Wear protective shoes.
- Secure heavy components from falling down.
- Do not stick body parts into moving components.

Risk of injury when dealing with harmful substances!

- Observe the associated safety data sheet!

Risk to the appliance's safety / function!

- Only use original spare parts.

Risk of damage to electrostatically sensitive components (ESDs)!

- Before touching ESDs, use an electrostatic protection system (wristband with earth safe plug).
- Do not touch connections and conductor paths of the modules.
- Only transport ESDs in conductive materials or original packaging.
- Keep ESDs clear of electrostatically chargeable materials (i.e. plastic).

2.3 Measures after each repair

If the appliance is functional:

- Check according to VDE 0701 or country-specific regulations.
- Check external appearance, function and tightness.
- Document repair work, measured values and functional reliability.

If the appliance is **not** functional:

- Identify the appliance as “not functionally reliable”.
- Warn customers of commissioning and notify them in writing .

3.1 Operating and power modules

Dishwashers have two control modules, an operating module in the fascia (control) panel and a power module in the base on the right side.

3.1.1 Operating modules

Operating modules provide a user interface with displays, lights and buttons / touch pads. They control info lights and process rinse aid sensor signals.

Fig. 1: Operating module (in fascia panel)

The wire harness connected to the operating module (1) is a separate harness.

3.1.2 Power modules

Power modules control and power dishwashers, containing all operating software, self diagnostics, error codes and power relays.

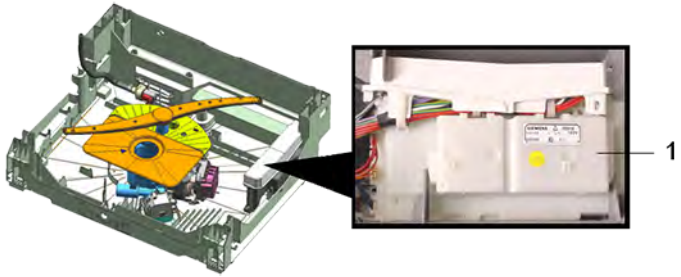


Fig. 2: Power module (in base)

Power modules (1) control BLDC (Brushless DC) heat and drain pumps, all parts (other than info lights) and read all sensors (other than rinse aid sensors).

Although they don't read rinse aid sensors, they process the signals and direct wash programs to default to longest times when there's no rinse aid.

3.1.3 Adding PTC to power module pc boards

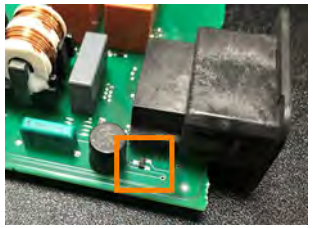


Fig. 3: On-board power module PTC

Starting FD9903, power modules have an on-board PTC to measure the temperature where power cords plug into them, as required by UL. If temperatures exceed a preset level, the power module software ends the wash cycle and generates an E:03 error code.

3.2 Dispensers

The dispenser, located in the middle of the inner door, reliably dispenses detergent and rinse aid.

- Detergent covers (lids) are closed by pressing down on them until they "click".
- Dispensers allow rinse aid dosages to be controlled by dishwasher control codings / settings.

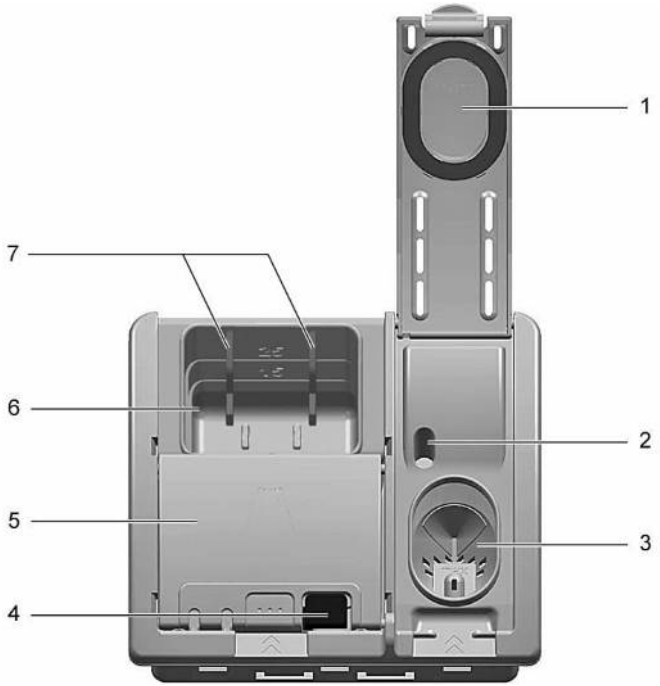


Fig. 4: Dispenser detail

1 Rinse aid cover with seal
2 Rinse aid outlet
3 Rinse aid filler opening
4 Detergent cover lock
5 Detergent cover
6 Detergent dispenser
7 Plastic ribs (keeping tabs from sticking)

- A vent equalizes internal pressure to dispense rinse aid accurately.
- The actuator is reset when the detergent door is opened so the detergent cover opens first the next time the coil is activated.
- Detergent tablets dissolve more slowly if there's moisture left in the detergent dispenser. Two plastic ribs in the detergent cup prevent detergent tablets from "sticking" to the cup.

3.2.1 Dispenser operation

During each wash cycle, the dispenser operates twice, once to dispense detergent and again to dispense rinse aid.

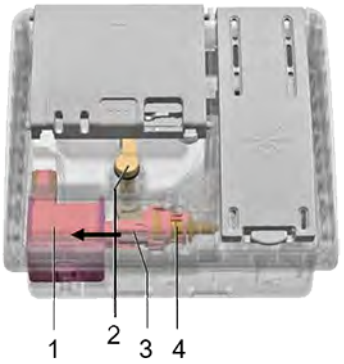


Fig. 5: Dispenser internal operating parts (front view)

1 Coil
2 Cover release lever
3 Actuator
4 Rinse aid pump

Coil operation:

- The coil (1), powered by 165 VDC pulses from the control, moves the detergent cover actuator (3) to the left. A plastic link turns, rotating the detergent cover release lever (2), which opens the detergent cover.
- A mechanical link between the coil actuator and rinse aid valve prevents rinse aid from being dispensed when the coil is first actuated. After the detergent cover has opened, the link moves and locks in place, allowing the rinse aid pump to dispense rinse aid.

Rinse aid dosage:

- Rinse aid is dispensed at 1 ml per dose, with the # of doses equal to the rinse aid setting (e.g. setting 5 provides five 1 ml doses and setting 1 provides one 1 ml dose).
- Each 165 VDC control pulse dispenses 1 ml of rinse aid.

- The rinse aid chamber holds around 90 ml of rinse aid, depending on how it's filled, and triggers the "Add rinse aid" LED when 45 ml is left.
- Without rinse aid, whether rinse aid has run out or the setting had been set to "0" (r:00), wash cycles default to the longest time with most washes and rinses to make sure dishes are clean.

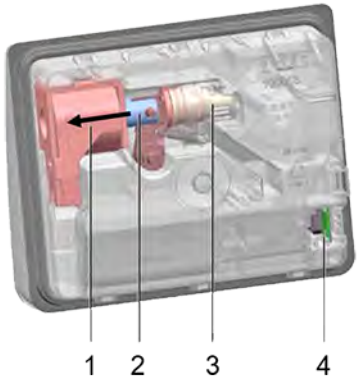


Fig. 6: Dispenser cutaway showing internal parts (rear view)

1 Coil
2 Actuator
3 Rinse aid pump
4 Optical rinse aid sensor

	If customers complain of long wash times, check rinse aid settings and levels.

3.2.2 Rinse aid sensor

Dispensers have an optical rinse aid sensor to alert customers they need to refill their dispensers with rinse aid.

- A transmitter diode (3) sends a beam of light through a prism (2) in the rinse aid reservoir to a receiver diode (1), which sends a signal showing rinse aid is present or absent.
- With rinse aid present (left), the receiver diode (1) senses a weak, diffused light beam through the prism (2) from the transmitter diode (3).
- When rinse aid has run out (right), the receiver diode (1) senses a strong light beam through the prism (2) from the transmitter diode (3).

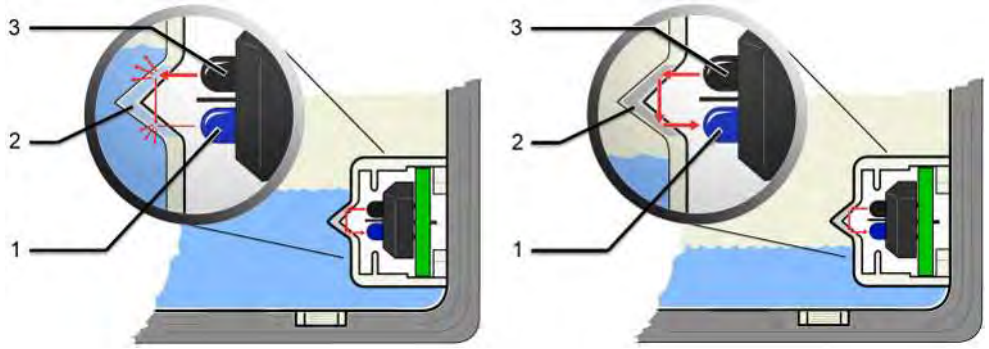


Fig. 7: Dispenser rinse aid sensor detail (with rinse aid (left) and without rinse aid (right))

1 Receiver diode
2 Prism
3 Transmitter diode

3.3 Heat pump

3.3.1 Heat pump basics

The heat pump contains the heating element, motor speed sensor, two temperature sensors (NTC's), motor and pump (head). The component parts aren't available separately.

Fig. 8: Heat pump

The heat pump uses a 1200 W flow-through heated cylinder, which provides plenty of heating surface area and heats water quickly (about 2ºF / minute).

The pump impeller is driven by a 3-pole BLDC motor controlled by the power module.

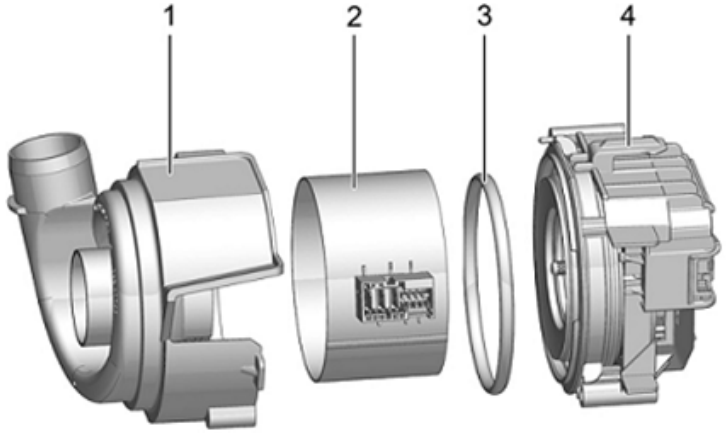


Fig. 9: Heat pump construction

1	Pump
2	Heating element
3	O-ring
4	Motor

The heat pump (7), attached to the sump to the right of the drain pump (1), is accessible from the right side of the dishwasher.

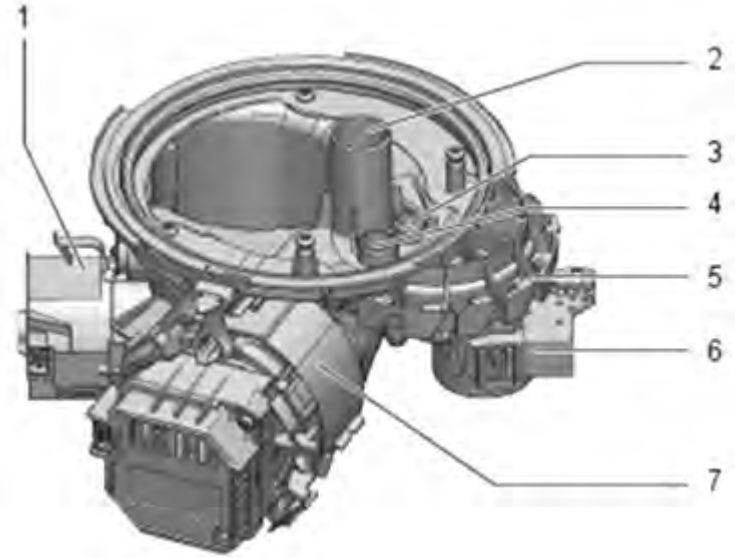


Fig. 10: Heat pump location

1	Drain pump
2	Outlet to lower spray arm
3	Outlet to top sprinkler
4	Outlet to upper spray arm
5	Water switch
6	Water switch motor
7	Heat pump

- The dishwasher won't run if the heat pump is disconnected or disabled.
- The heat pump is best accessed by pulling out the dishwasher and placing it on its back or by blocking up the right side of the tub.
- The motor and pump are isolated from each other to eliminate leaking or binding and the need for a shaft seal.
- Depending on the model and wash cycle, heat pumps speed up to provide more water pressure (for intensive cycles) or slow down to provide less water pressure (for delicate cycles). This is determined by the wash cycle software, not the aqua sensor, so it doesn't matter how clean or dirty the water is.

There are two terminal connectors:

- 6-pin heater terminal on the side of the pump.

- 3-pin motor terminal at the end of the motor.

Fig. 11: Heat pump terminals

1 6-pin heater terminal
2 3-pin motor terminal

Ratings: 3-pole BLDC, 110 - 120 VAC, 150 Hz, 1200 W thick film heater, < 80 W motor, class F insulation, 5-blade impeller with guide wheel.

3.3.2 Heat pump operation

The impeller draws water into the pump and circulates it inside the cylindrical heating element. The guide wheel directs the water through the pump outlet to the water switch to be directed to the spray arms.

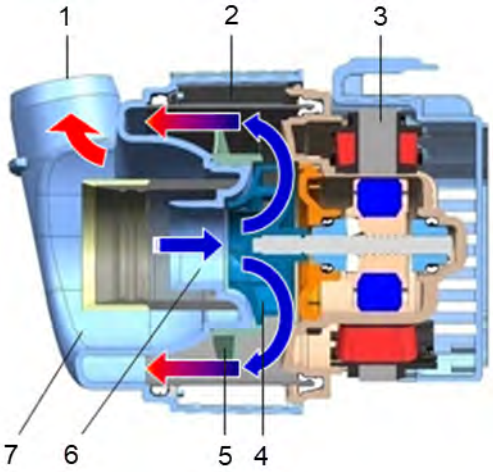


Fig. 12: Heat pump detail

1 Outlet to water switch
2 Heating cylinder w/ NTC's
3 BLDC motor
4 Impeller
5 Guide wheel
6 Inlet from sump
7 Pump housing

While water is being circulated, the BLDC (Brushless DC) motor senses the pump status based on the current (amp) draw of the motor windings:

- No water
- Too little water (cavitating)
- Proper water level
- Pump blockage

Safety-related issues, such as “heating without water” or “water too hot”, are detected and evaluated.

If the pump is blocked, the pump tries several times to loosen the blockage. If unsuccessful, the wash cycle ends and an error code is stored in memory.

3.3.3 Heat pump heater terminal cover

Starting FD 0004 (April, 2020), all dishwashers include heat pump heater terminal covers to meet new UL requirements. If lost, they are available separately and are easily snapped onto heat pump heater terminals.

Fig. 13: Heater terminal cover (top view)

Fig. 14: Heater terminal cover (bottom view)

Being due to a new requirement, heater terminal covers don't need to be added to older units.

3.4 Drain pump

3.4.1 Drain pump basics

The BLDC (Brushless DC) 9-vane drain pump has variable speed and direction. The power control module controls pump speed and direction, detects end of draining and blocked rotor and corrects locked rotor conditions.

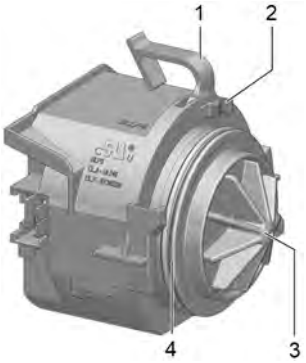


Fig. 15: Drain pump detail

1 Cable guide
2 Lock (latch)
3 Impeller
4 Seal

- The dishwasher won’t run if the drain pump is disconnected or disabled.
- The drain pump is best accessed from the front, but can be accessed by pulling out the dishwasher and placing it on its back (except for zeolite dishwashers).

Resistances as follows:

- 1 – 2: 130 Ω (@ 68 ºF)
- 2 – 3: 130 Ω (@ 68 ºF)
- 3 – 1: 130 Ω (@ 68 ºF)

Ratings: 3-pole BLDC, 54 VAC, 55 Hz, 2500 – 3500 RPM, 0.15 - 0.25 A, 10 – 25 W, class F insulation, 9-vane impeller.

3.4.2 Drain pump operation

The impeller draws water from the sump and pumps it through the drain check valve into the drain hose.

While water is being pumped, the BLDC (Brushless DC) motor senses the pump status based on the current (amp) draw of the motor windings:

- No water (idle – not pumping)
- No pressure build-up (missing pump cover)
- Pump blockage
- Blocked or kinked drain hose

Drain pump diagnostics:

- If there is too little water in the sump, pumping is stopped.
- If there is no drain pump cover in the sump, water pressure cannot build up and the pump cannot pump. An error code is stored in memory.
- The motor senses if the pump is blocked. Using brief, intermittent bursts, the pump tries several times to loosen the blockage.
- If draining is disrupted by a blockage or kink in the drain hose, draining is stopped and an error code is stored in memory.

3.4.3 Solving installation issues

Often improper installations, not drain pump issues, cause dishwashers to not drain properly:

- Must have drain hoses with high loops (min. 33” high) or drains with air gaps.
- To avoid damaging drain hoses, place high loops inside cabinets near customer drain connections, not next to dishwasher tubs.
- Drain hoses are 92” long and can be up to 150” long (with [SGZ1010UC] / service # [00663105]) extension.
- Make sure drain hoses aren't too long.
- Make sure drain hoses aren’t kinked.
- Make sure drain hoses are pointed toward customer drains and are supported by dishwasher base straps.

3.4.3.1 Cavitating

Cavitating can occur in pumps of all types when impellers spin faster from low inlet / outlet pressure, creating air pockets around impellers.

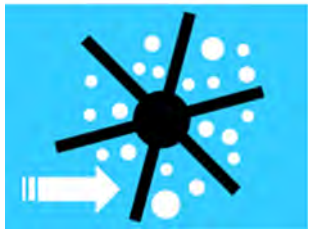


Fig. 16: Cavitating

Cavitating pumps can be noisy. Air gaps / high loops keep water contacting pump outlets, preventing air pockets from forming.

3.4.3.2 Siphoning

Siphoning may occur in any type of drain pump when low water flow allows a siphon (suction) to develop, pulling waste water back into the pump.

Fig. 17: Siphoning

Drain check valves along with air gaps / high loops prevent siphons from being created.

3.4.3.3 Johnson Tee applications

For installations with a Johnson Tee, the Johnson Tee must be installed in the wall behind the dishwasher, no more than 50” (at its maximum height) above the floor.

- The connection must be ¾” minimum – ½” must not be used.
- Dishwasher drain hose extensions must not be used.

Fig. 18: Johnson Tee

Johnson Tee's are primarily used in Washington State, although some are used in California.

3.5 Door latches

Door latches consist of two parts - a door latch and a Hall Effect sensor. The latch securely holds doors closed and the sensor senses when doors are open or closed.

3.5.1 General information

The door latch on top of the tub has a magnet sensed by a Hall Effect sensor in the door to determine if the door is open or closed. The Hall Effect sensor is held by two T10 Torx screws and the door latch is held by two crimped tub tabs.

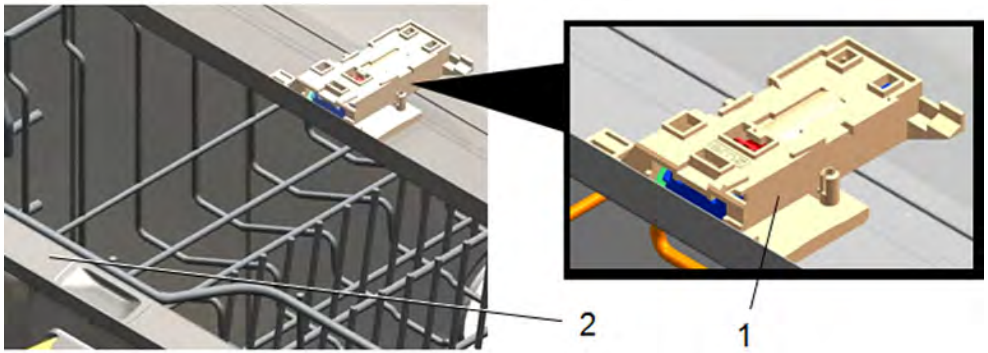


Fig. 19: Door latch and sensor location

1 Door latch
2 Hall Effect sensor

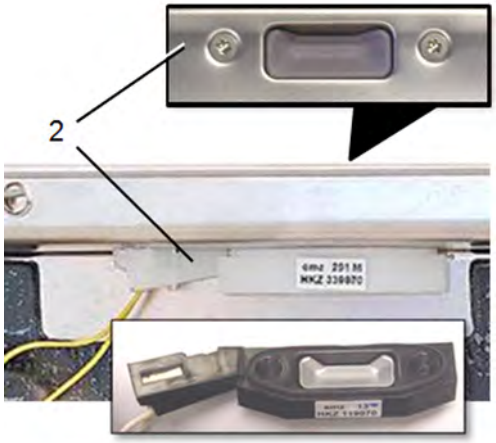


Fig. 20: Hall effect sensor location

2 Hall Effect sensor

3.5.2 Hall effect door sensor

The Hall Effect sensor is a proximity sensor. When the door is about to latch, it moves into the door latch magnetic field, causing positive (“+”) and negative (“-“) charges to move to opposite sides of it, creating a small voltage. This voltage increases until it reaches a preset value when the sensor gets close enough to the door latch magnet, signifying the door is closed.

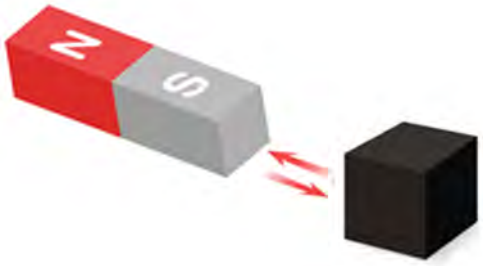


Fig. 21: Hall Effect

3.5.3 Unintentional operation

The dishwasher is protected from "unintentional operation" (i.e. accidently resuming a wash cycle after the door has been opened). After the door has been opened for more than 4 s, the dishwasher will be paused, requiring customers to deliberately resume the wash cycle by pressing Start (Resume) before closing the door.

	If customers complain their dishwashers won't restart once the door has been opened, advise them to open the door and press Start (Resume) before closing the door.

3.6 Door springs

3.6.1 Door spring operation

Fig. 22: Door spring system

The door spring mechanism uses a “sliding” pulley and cord to provide proper tension and enable self-closing.

- The fixed sliding pulley slides onto the base and is held in position in tension by a spring. The cord slides on the pulley, using the friction between it and the cord to provide better control.
- The back of the spring slides into a slotted pocket in the side of the base and the front of it connects to the cord. Springs are color coded for specific tensions.
- Bases and cords are new and aren't backward compatible (i.e. with older dishwashers).

	Service calls have occurred from customers with dishwasher doors without wooden panels installed. Door springs are chosen to support the weight of most wooden panels – doors without panels are too light and close on their own.

3.6.2 Door spring changes for Push to Open / Auto Door Open

To add Push to Open and Auto Door Open (to some models), changes were made to the door spring system for all dishwashers.

- Hinge cords (4) and door springs (2) are longer.
- The base (6) is new to allow for the longer hinge cords and door springs.
- New hinge cords, door springs and bases aren't backward compatible (i.e. with older dishwashers).
- There is a new spring guide (3).
- Hinge levers were changed where hinge cords are attached.

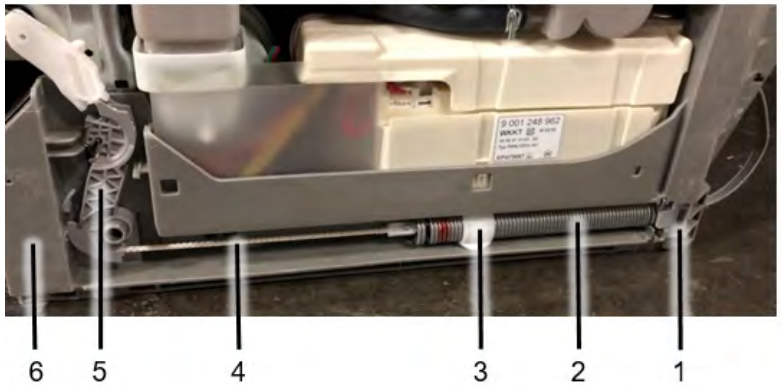


Fig. 23: Changes to door springs for Push to Open

1 Spring clip
2 Longer door spring
3 New spring guide
4 Longer hinge cord
5 Spring-loaded hinge pulley
6 New base

A new spring-loaded pulley and hinge lever improve door spring operation for Push to Open / Auto Door Open models. Other models get new hinge levers, but use existing pulleys.

Fig. 24: Spring-loaded hinge pulley

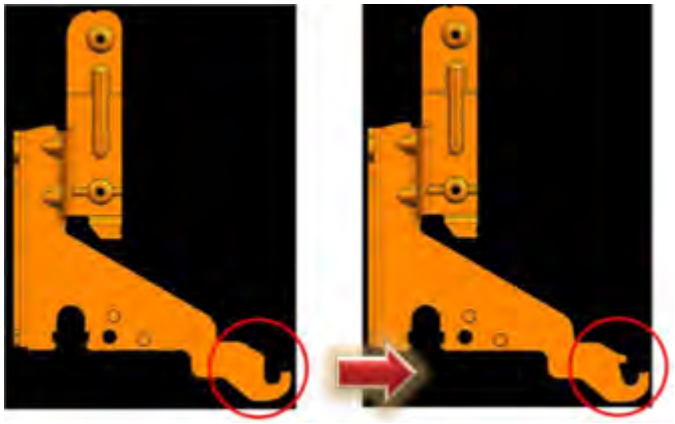


Fig. 25: New hinge lever

3.6.3 Using wrong toe panel screws

Some installers have used long wood or drywall screws instead of the supplied toe panel screws.

- Long, sharp screws cut hinge cords (see below).
- Use the supplied toe panel screws.

Fig. 26: Consequences of not using supplied toe panel screws

- All toe panel screws are included in the installation parts bag included with dishwashers and are available for service.
- Starting FD 9906, toe panels with brackets were used to prevent improper installations.

3.7 Water inlet - condensation system

3.7.1 Water inlet system

The water inlet system lies next to the left side of the tub, filling water into the bottom left side of the tub. A vent above the water inlet aids water flow and allows condensation to exit during drying.

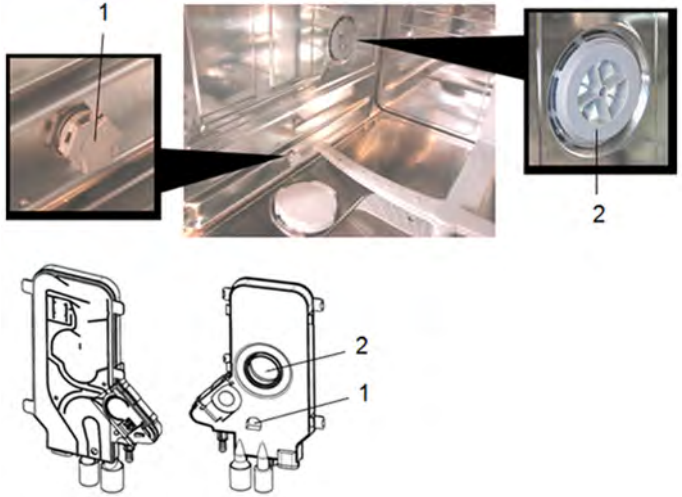


Fig. 27: Water inlet system (without softener)

1 Water inlet (to tub)
2 Vent (to tub)

There are two hoses connected to it, the water inlet hose (from the water inlet valve) and drain hose. The total drain hose length is 92” (~ 7.67’), including the portion inside the dishwasher.

3.7.2 Water valve

Inlet valves have a flow limiter to keep the incoming water pressure to specified levels, regardless of the water supply pressure.

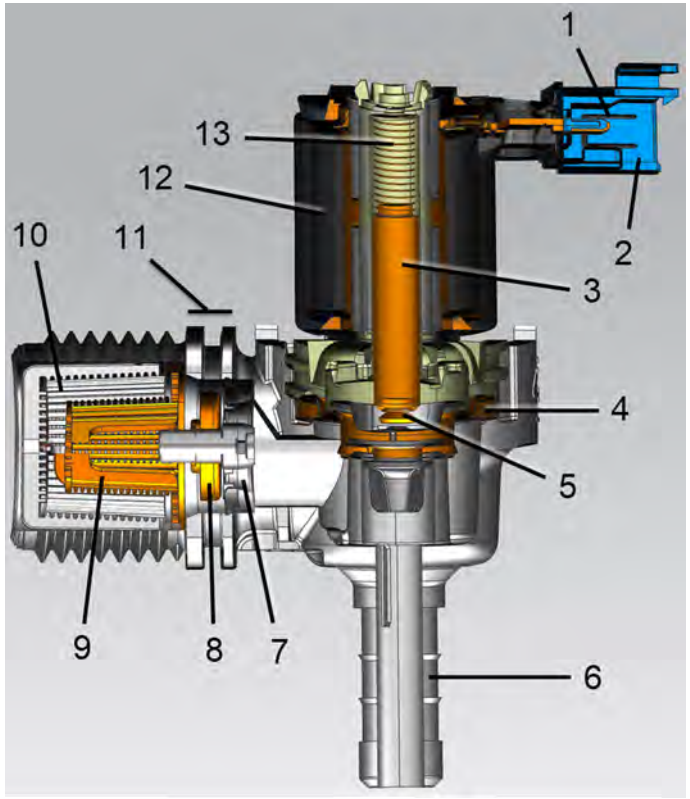


Fig. 28: Water valve detail (640A US valve, with dual filter)

1 Terminals
2 Terminal housing
3 Plunger
4 Diaphragm
5 Plunger seal
6 Water outlet
7 Flow limiter support
8 Flow limiter
9 2nd (inner) inlet filter
10 1st (outer) inlet filter
11 Mounting flange
12 Coil (solenoid)

13 Spring

Water inlet valves use a double inlet filter to help prevent clogging.

Fig. 29: Water valve double filter

Ratings:

- 110 - 127 VAC, 60 Hz, 4.7 W, 990 Ω
- 0.2 - 10 bar, 2.5 l/min. (0.66 gal/min.), 70 ºC (158 ºF) max.

3.7.3 Valve holder

A plastic holder secures hot water inlet valves onto the rear of bases.

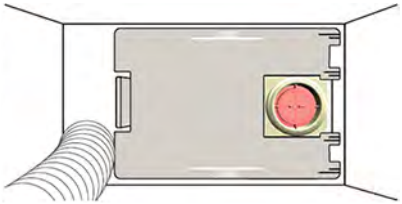


Fig. 30: Water inlet valve and valve holder

Water inlet valves have grooved plastic flanges which slide into the right side of holders until they lock. Three springs molded into holders securely hold valves into place - no screws are needed.

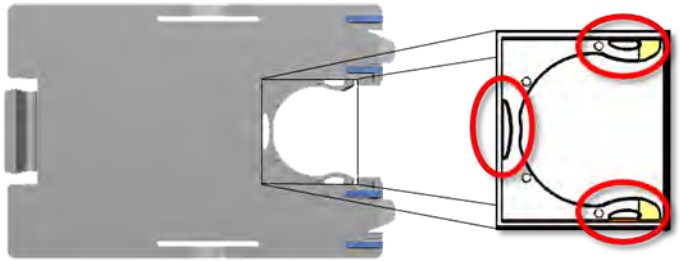


Fig. 31: Valve holder spring detail

3.7.4 Water valve installation issues

Some installation issues have occurred with water inlet valves.

3.7.4.1 Cross-threaded or stripped threads

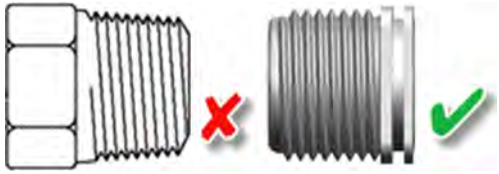


Fig. 32: NPT threads (wrong, left) compared with hose threads (correct, right)

Some installers / customers have cross-threaded / stripped valve threads or used wrong connectors (e.g. ¾" NPT instead of ¾" hose fittings), resulting in E:15 error codes from leaking.

- When customers complain of water leaking from tubs, check water inlet valves for cross-threaded / stripped threads - don't assume leaks are due to leaky tubs.
- Replace water inlet valves with cross-threaded or stripped threads.
- Instruct installers / customers to use ¾" garden hose connectors / fittings, not ¾" NPT, as NPT threads can cross-thread / strip plastic water valve threads. NPT fittings have fine, tapered threads designed to wedge / grind together to prevent leaking without gaskets and are often used in automotive / hydraulic applications.

3.7.4.2 Plastic filters removed

Fig. 33: Water valve with missing filter and loose flow restrictor

Some installers / customers have removed water valve filters, thinking they were removable plugs / caps, dislodging or losing water flow restrictors, generating E:17 error codes from excessive inlet water pressure.

- Plastic filters hold flow restrictors in place - when filters are removed, flow restrictors come loose.
- There are **no** covers or parts to be removed from water inlet valves.
- Replace water inlet valves with missing plastic filters.

Fig. 34: Intact water valve with filter

3.7.4.3 Substituting inlet hose gaskets

Rigid plastic gaskets / washers / seals in many (braided) inlet hoses are meant for metal water inlet valves, not plastic valves.

- Some installers / customers have overtightened hoses, causing leaking by cracking water valves.
- Some installers / customers have overtightened hoses, causing leaking by damaging rigid plastic hose gaskets.
- Replace original rigid plastic gaskets (in inlet hoses) with soft rubber gaskets and don't overtighten hoses onto water valves.
- Replace cracked water valves and damaged gaskets.

Fig. 35: Damaged rigid plastic gasket

Fig. 36: Replacement soft rubber gasket

3.8 Sump

3.8.1 Sump basics

Filtered water drains into the sump, where it is pumped through the water switch into the spray arms or drained out. The sump provides mounts for the heat pump, drain pump, water switch, aqua sensor and drain check valve.

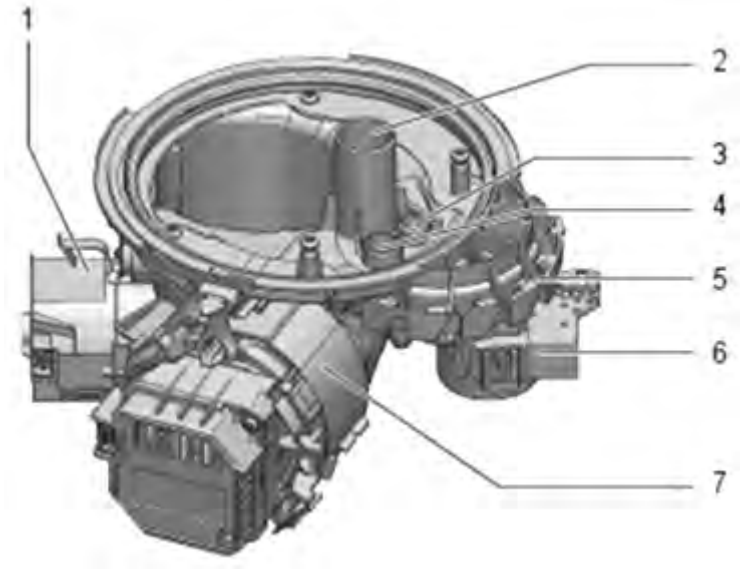


Fig. 37: Sump parts

1 Drain pump
2 Outlet to lower spray arm
3 Outlet to top sprinkler
4 Outlet to upper spray arm
5 Water switch
6 Water switch motor
7 Heat pump

The inside of the sump has a couple of caps/covers to enhance water flow.

Fig. 38: Sump interior with drain pump cover and suction cap

1 Aqua sensor
2 Drain pump cover
3 Suction cap

	For proper draining and pumping, the drain pump cover and suction cap must be securely snapped into place.

3.8.2 Suction cap

The suction cap provides proper water flow through the sump when the heat pump is running, prevents air or dirt from being drawn into the pump and provides access to the heat pump impeller. It should not be removed.

3.8.3 Drain pump cover

The drain pump cover directs waste water through the drain pump. Without it, the drain pump cannot build up any pressure.

Customers may remove the drain pump cover for cleaning, but must reinstall it. If the cover is not correctly attached, water cannot be pumped out.

	Snap in the drain pump cover tightly to avoid drain pump cavitating and to provide proper draining.

3.8.4 Drain check valve

The drain check valve is located inside the sump at the outlet to the drain hose. It allows waste water to exit the sump and prevents it from entering the sump.

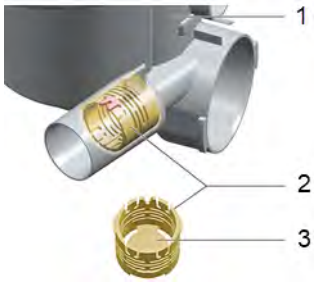


Fig. 39: Drain check valve detail

1 Sump
2 Drain check valve
3 Flap

3.8.5 Sump filters

The sump has several filter types: a fine filter screen, coarse filter and micro filter.

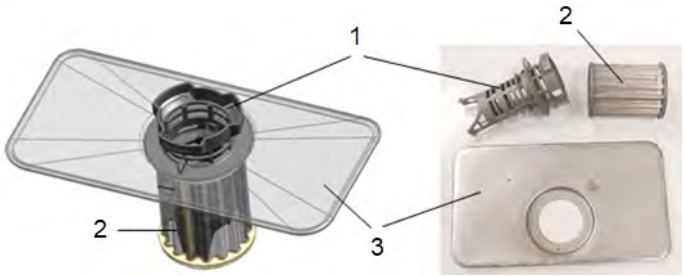


Fig. 40: Sump filters

1 Coarse filter
2 Micro filter
3 Fine filter screen

3.9 Water switch

Mounted to sumps, water switches consist of a motor-operated disk with seven holes, which rotates under three sump ports (upper / lower spray arms, top sprinkler) to provide precise water control.

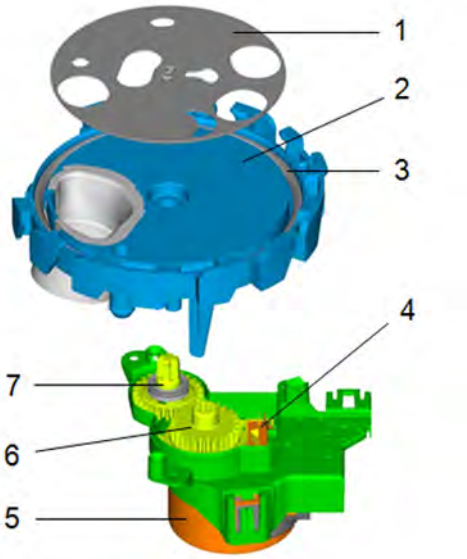


Fig. 41: Water switch detail

1 Disk
2 Housing
3 Seal (to sump)
4 Pulse generator
5 Drive motor
6 Gear with cam
7 Gear with shaft

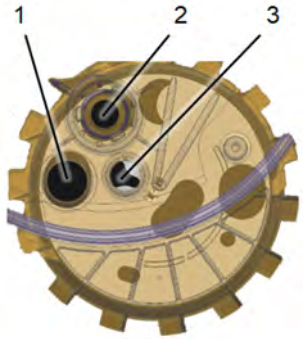


Fig. 42: Water directed to both spray arms / top sprinkler

1 To upper spray arm
2 To lower spray arm
3 To top sprinkler

Water switch disks do **not** rotate continually, but counterclockwise (ccw) based on the wash program and water clarity (i.e. directed by the power module and aqua sensor). When water is clear, the water switch directs water to the upper or lower spray arm. When water is dirty, the switch directs water to both spray arms.

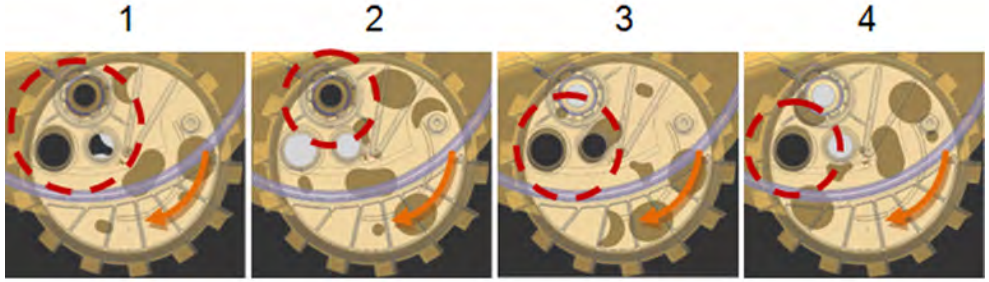


Fig. 43: Water switch rotation

1 To both spray arms / top sprinkler
2 To lower spray arm
3 To upper spray arm / top sprinkler
4 To upper spray arm

Motor ratings: 110 - 127 VAC, 60 Hz, synchronous, 4.8 RPM (ccw), class E insulation.

3.10 Safety systems

Several safety systems in dishwashers guard against leaking. Leaking water is directed into the base where it's detected by the float switch, which stops the wash cycle, turns off the water valve (if it's on) and turns on the drain pump.

Even when the dishwasher is off, the float switch detects water, turning on the drain pump and generating an error code (e.g. E:15). The dishwasher cannot be run until the leaky part is fixed, the water is removed from the base and the control is reset.

3.10.1 Float

The float is a safety device, located next to the sump, which activates if there's too much water in the base. If water collects in the base, a styrofoam float rises and engages a microswitch, stopping the wash program and starting the drain pump.

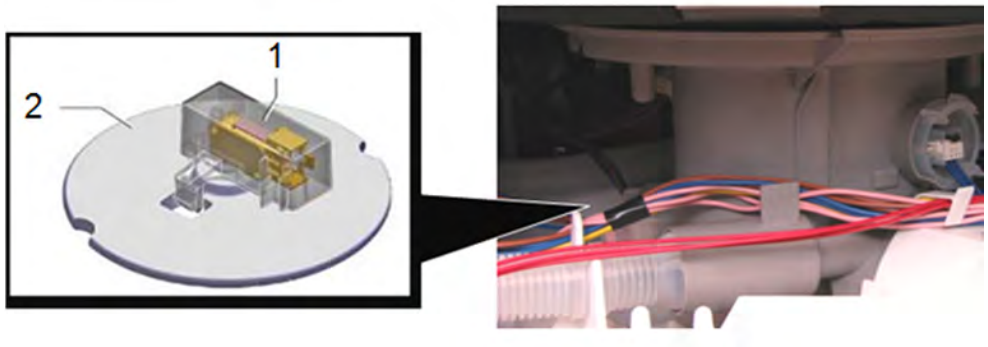


Fig. 44: Float and float switch location and details

1 Float assembly with float switch
2 Float

3.10.2 Overflow channel

The overflow channel (gutter) directs any water escaping past the door into the base where it's detected by the float switch.

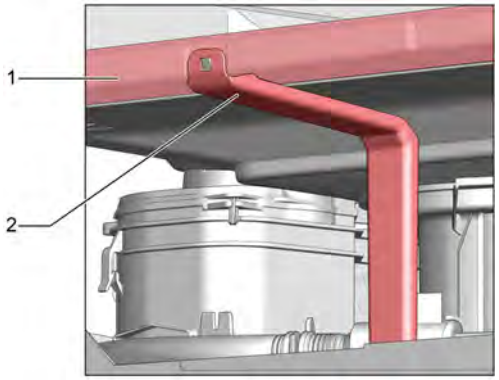


Fig. 45: Overflow channel

1 Overflow channel
2 Support / drain tube

3.10.3 Water inlet valve

Starting FD 9807, water inlet valve holders were changed to remove drains, providing better protection from leaking since its better clearances allowed water inlet hoses to be more securely connected.

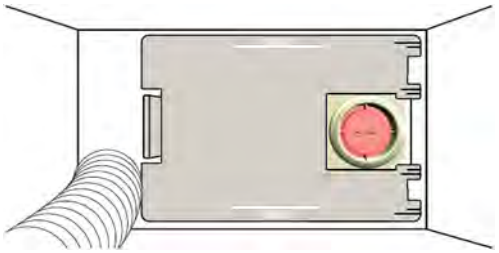


Fig. 46: Water valve holder w/o drain

Before FD 9807, water inlet valve holders had a drain channel to direct any leaking water to the base to be detected by the float switch.

Fig. 47: Water valve safety drain

3.11 Aqua sensor

The aqua sensor, located above the drain pump, senses water cleanliness, allowing the power module to shorten wash / rinse cycles to save energy.

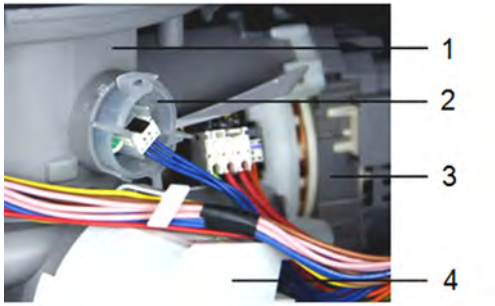


Fig. 48: Aqua sensor in sump

1 Sump
2 Aqua sensor
3 Heat pump
4 Drain pump

If the water is clean, the aqua sensor shortens wash and rinse cycles. If not, the aqua sensor keeps the original cycles.

Dishwashers still operate if aqua sensors fail, defaulting to the longest / hottest wash cycle with longer wash times and reduced water savings.

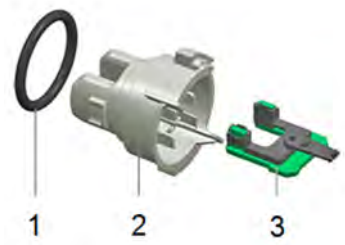


Fig. 49: Aqua sensor parts

1 O-ring
2 Housing
3 Circuit board with LED and sensor

The circuit board has an LED and sensor. The LED sends light across to the sensor - dirty water blocks the light and clean water allows the light to pass through. The sensor signal varies depending on how clean the water is and the power module adjusts wash cycles accordingly.

3.12 Drain hose

The drain hose is connected to the water level control, exiting the rear of the dishwasher near the water inlet valve.

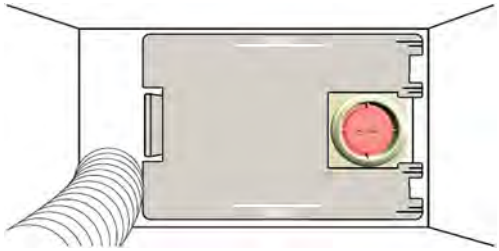


Fig. 50: Drain hose exiting rear of dishwasher base

The drain hose connects directly to the customer drain without an adapter.

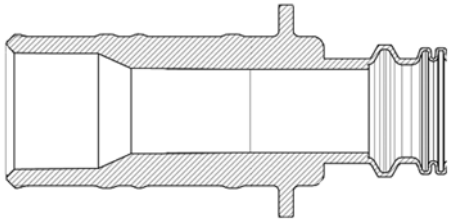


Fig. 51: Drain hose end detail

Straps in the rear corners of the base hold drain and inlet hoses in place so dishwasher racks can be deeper, while still allowing dishwashers to mount against walls and dishwasher doors to be flush with cabinets.

Fig. 52: Base strap holding drain hose and supply lines

3.13 Toe panels

Depending on the model, dishwashers can come with 1-piece or 2-piece toe panels with holes or slots, with or without mounting brackets. The panel for your model is shown below.

3.13.1 1-piece slotted toe panels

1-piece slotted toe panels were used until around FD 9906, depending on the model, replaced by 1-piece toe panels with brackets.

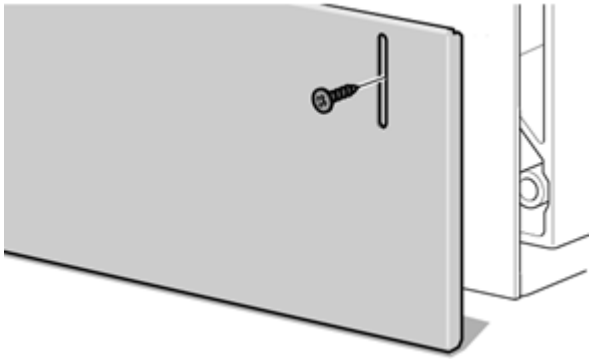


Fig. 53: 1-piece slotted toe panel

1-piece slotted toe panels were screwed directly into bases.

- 1-piece slotted steel toe panels didn't need mounting brackets, didn't have them and didn't fit them.
- Slotted toe panels could've had vertical slots or five horizontal slots aligned vertically.
- Installation instructions covered many models and could've listed toe panel brackets as "model dependent" or "for selected models" - customers have mistakenly asked for brackets for their 1-piece slotted toe panels.

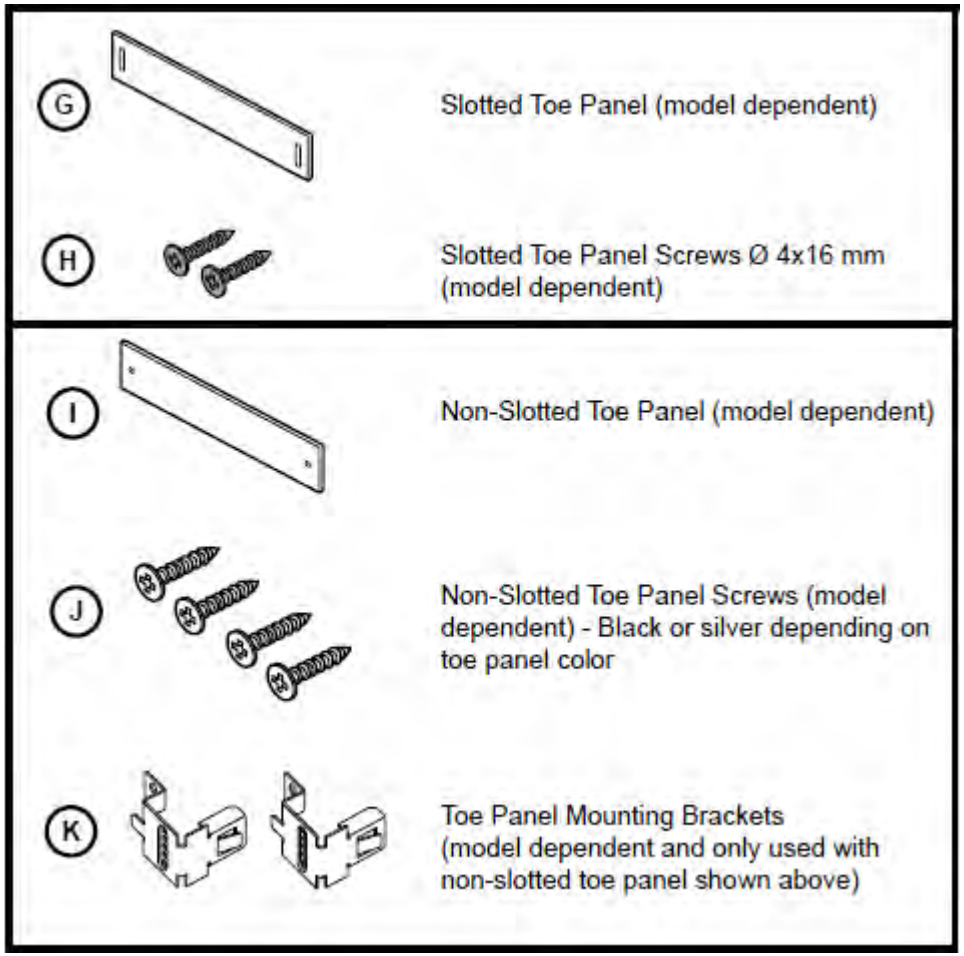


Fig. 54: Model dependent toe panels

3.13.2 1-piece toe panels with brackets

Starting around FD 9906, depending on the model, 1-piece toe panels with brackets were used on most models.

On or before FD 9905, some models came with 1-piece toe panels with brackets, used with rubber "aprons" between outer doors and toe panels to make dishwashers quieter.

- These panels have a single hole on each side to be used with mounting brackets supplied with dishwashers.
- The mounting brackets provided space to mount rubber aprons.

- Models without rubber aprons used 1-piece slotted toe panels.

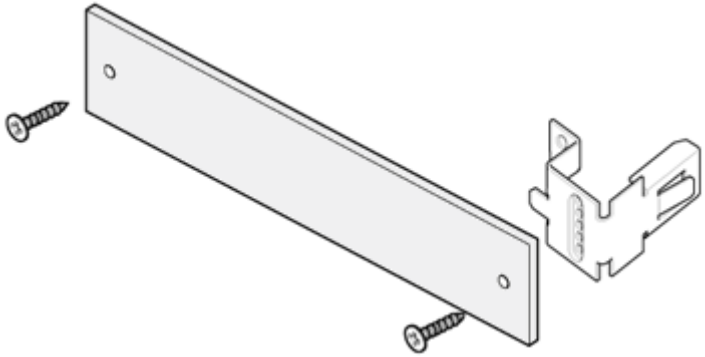


Fig. 55: 1-piece toe panels with brackets

3.13.3 Using wrong toe panel screws

Some installers have used long wood or drywall screws instead of the supplied toe panel screws.

- Long, sharp screws cut hinge cords (see below).
- Use the supplied toe panel screws.

Fig. 56: Consequences of not using supplied toe panel screws

- All toe panel screws are included in the installation parts bag included with dishwashers and are available for service.
- Starting FD 9906, toe panels with brackets were used to prevent improper installations.

3.14 Base

The plastic base assembly is cast into one piece and contains mounting provisions for all parts mounted to it.

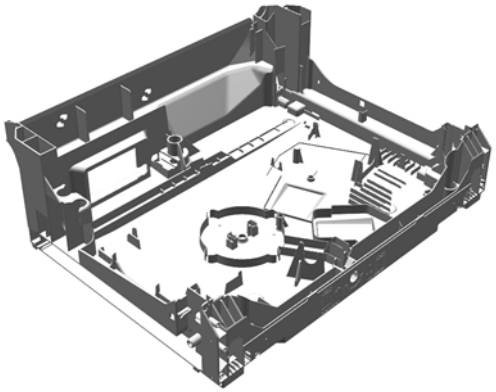


Fig. 57: Base detail

3.15 Tub

The ss tub isn’t available as a service part. The top, bottom and sides are made from 304 ss alloy and the back is made from 430 ss alloy.

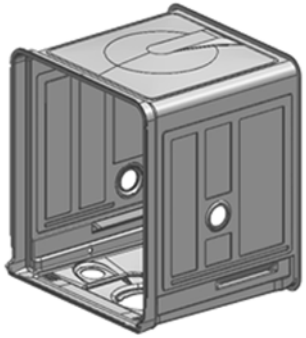


Fig. 58: Tub detail

3.16 Water spray system

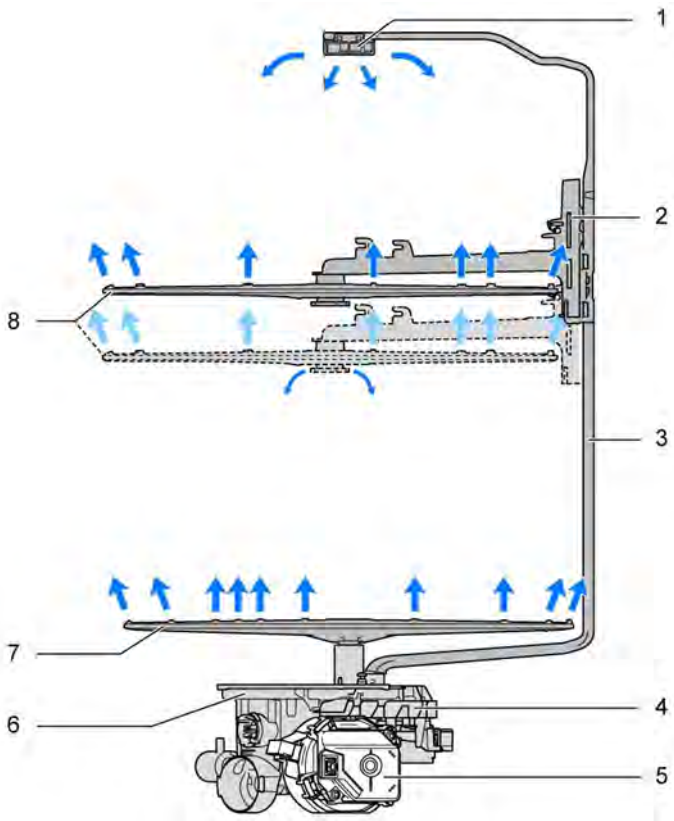


Fig. 59: 3-level water spray system

1 Top sprinkler
2 Upper spray arm coupling
3 Feed tube
4 Water switch
5 Heat pump
6 Sump
7 Lower spray arm
8 Upper spray arm

3-level water spray system:

- It consists of lower / upper spray arms and a top sprinkler. Water is supplied to the upper spray arm and top sprinkler by a fill tube at the rear of the tub.
- The fill tube has 2 separate water channels so the upper spray arm and top sprinkler can be operated separately.
- The upper spray arm feed tube attaches directly to the upper rack. The feed tube has an adjustable coupling for it to move up and down as the upper rack is raised or lowered.
- The lower spray arm connects directly to the sump. It has a nozzle underneath it to clean sump filters and to rinse food debris into them.

3.17 Serial label location and information

3.17.1 Locating and using serial labels

The serial label, located on the right side of the inner door, contains the dishwasher model, KI (index), FD and 18-digit serial #'s used for repairs.

The FD #, located under the model / KI #'s, is the serial # commonly used for repairs and in service documentation.

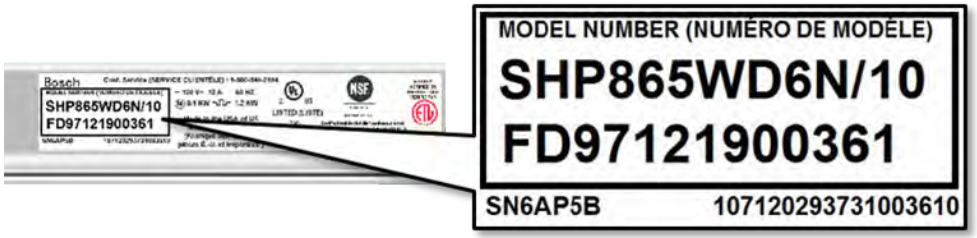


Fig. 60: Serial label location and detail

FD9712 19 00361

The production date can be obtained from the FD # as follows:

- The first 2 digits represent the year: 97 = 2017.
- The next 2 digits represent the month: 12 = December.
- The next 2 digits represent the day: 19 = 19th. This is **not** to be included in FD #'s used in service documentation.
- The next 5 digits represent the unit made that month: 00361 = 361st dishwasher made that month.

	The 2-digit "day" from the FD # **isn't** used in service documentation: use the FD **year**, **month** and **unit built** (e.g. use FD9712 00361, not FD9712 19 00361).
	To find the year from the FD #, add 20. For example, 99 + 20 = 119, which is the 19th year after 2000, namely 2019. Similarly, FD # 80 + 20 = 100, namely 2000, and FD # 86 + 20 = 106, the 6th year after 2000, namely 2006.

3.17.2 Understanding the 18-digit factory serial

This is a more detailed serial # used by the factory for analysis of returned units, located in the bottom right corner of the label.

10 7 12 0293731 00361 0

This serial # aids the factory in researching how and when the dishwasher was built:

- The first 2 digits represent a factory code: 10 = New Bern dishwasher plant.
- The 3rd digit represents the last digit of the year: 7 = 2017.
- The next 2 digits represent the month: 12 = December.
- The next 7 digits represent the model: 0293731 = SHP865WD6N.
- The next 5 digits represent the unit made that month: 00361 = 361st dishwasher made that month.
- The last digit represents a computer generated check digit = 0 (which is dependent on all preceding #'s).

3.17.3 Using rear labels when door labels are missing

When inner doors have been replaced without copying model and serial #'s, the only way to identify dishwashers is to pull them out and look at rear labels, attached to the center rear of bases, above the drain hose.

Fig. 61: Rear serial label location and detail

When inner door serial labels are missing, use the rear serial label to identify dishwashers as follows (e.g. SHP865ZD5N/01):

- Copy the model # from the top of the label (under the brand): SHP865ZD5N.
- Use the 18-digit serial # to determine the FD # for service documentation since it's not listed directly on the rear label (e.g. FD 9903 00019):
  - Locate the 18-digit serial # "under" (to the right of) the bar code: 10 9 03 0514493 00019 1.
  - The 3rd digit represents the last digit of the year: 9 = 2019. To get the 1st 2 digits of the FD #, subtract 20 from the production year and use only the last 2 digits (2019 - 20 = 99, not 1999).
  - For the next 2 (3rd & 4th) digits of the FD #, copy the next 2 digits (4th & 5th) of the 18-digit serial #, representing the month: 03 = March.
  - Copy the next 5 digits after the 7-digit model # (0514493), representing the unit made that month: 00019 = 19th dishwasher made that month. This # is also printed under the model # and can be copied directly from the label (00019).
  - Ignore the last digit (check digit 1).
- To get the KI #, look it up in our parts look up system based on the 1st 4-digits of the FD # (i.e. FD 9903 occurred during KI # /01).

When you determine the model, KI and FD #'s, record them for future repairs:

- Instruct customers to write their model and serial #’s in their Use & Care manuals.
- Order blank service replacement serial label [00618453], legibly write the model / serial #’s and ratings on it using permanent ink and affix it to the inner door (on the right side where production labels are affixed).

Fig. 62: Replacement serial label [00618453]

Fault Diagnosis

Error code / fault display / signal

Fault	Possible cause	Troubleshooting
E:01 error code ■ Wash cycle completed prematurely ■ Far right LED flashes and E:01 shows on display	Faulty relay to heat pump heater	▸ Run test program - if E:01 error code reoccurs, replace power module.
	Heat or drain pump disconnected or faulty	1. Check wire harness / terminals between power module and heat / drain pumps - replace faulty main harness. 2. Check heat / drain pumps - replace faulty heat or drain pump. 3. If pumps / harnesses check out OK, run CS test program - if E:01 error code reoccurs, replace power module.
	Low supply voltage / excessive voltage drop	▸ Check power cord plug connections at power module and customer outlet - plug cord in securely or replace it if faulty.
E:02 error code ■ Far right LED flashes and E:02 shows on display ■ Dishwasher runs without heating	Faulty heat pump heater relay	▸ Replace power module.
	Ground fault at heat pump heater	▸ Replace heat pump.
	Ground fault at zeolite heater	▸ Replace zeolite container.
	Faulty zeolite heater relay	▸ Replace power module.
E:03 error code Far right LED flashes and E:03 shows on display	Overheated power module / power cord connection	▸ Replace power module and power cord.
E:04 error code Far right LED flashes and E:04 shows on display	Faulty safety heater relay (power module)	▸ Replace power module.
	Ground fault at heat pump heater	▸ Replace heat pump.
	Ground fault at zeolite heater	▸ Replace zeolite container.
E:05 error code ■ Far right LED flashes and E:05 shows on display ■ Dishwasher drains and finishes cycle ■ Water switch runs continually	Faulty water switch relay (power module)	▸ Replace power module.
E:06 error code ■ Wash cycle abruptly stops ■ Sanitized LED flashes and E:06 shows on display	Door ajar or not properly latched	▸ *Advise customer:* *On closing door securely (until door latch "clicks").*
	Door popped open	1. Clean debris caught in door seal and check door alignment. 2. Re-level dishwasher front to back / side to side and adjust mounting brackets so tank and door are square.
	Faulty or loose door latch Hall sensor harness	▸ Check harness -- replace faulty harness or tighten connector.

Fault Diagnosis

Fault	Possible cause	Troubleshooting
	Door latch Hall sensor not detected	▸ Align door latch above Hall sensor.
	Faulty door latch Hall sensor	1. Check connections between door switch and power module. 2. Close door and measure voltage across door latch sensor. 1. If > 10 V, replace Hall sensor. 2. If < 10 V, replace power module.
E:07 error code Far right LED flashes and E:07 shows on display.	Faulty zeolite fan	▸ Check zeolite fan / harness - replace faulty zeolite fan or harness.
E:08 error code ■ E:08 error code won't show during wash cycle ■ Heat pump detects low water level	Leaking heat exchanger valve (EU) Preventing water from entering sump	▸ Replace heat exchanger.
	Miscellaneous leaking Leaking water inlet / kinked hose, pots / bowls collecting water	▸ Correct source of leaking.
E:09 error code Far right LED flashes and E:09 shows on display	Faulty heater circuit (open-circuited)	1. Check harness between heat pump heater and power module. Replace if faulty. 2. Measure heat pump heater resistance. 1. If correct for your pump, replace power module. 2. If not correct for your pump, replace heat pump.
E:10 error code ■ Far right LED flashes and E:10 shows on display ■ The zeolite heater is inside of the zeolite container and cannot be replaced in the field	Faulty or blocked zeolite fan	▸ Check heating element resistance. If it's wrong, the heating element has failed - replace faulty zeolite container.
	Faulty or loose zeolite heater harness	▸ Check harness to zeolite container. Replace if faulty.
E:11 error code Far right LED flashes and E:11 shows on display	Heat pump NTC resistances out of range	1. Measure heat pump NTC resistances between terminals 4 - 5 or 5 - 6. If either NTC is faulty, replace heat pump. 2. Check wire harness to NTC's - replace harness if faulty or connections are loose.
E:12 error code ■ Far right LED flashes and E:12 shows on display ■ Dishwasher runs without heating	Heat pump heater calcified	1. Clean and descale dishwasher. 2. Check water hardness and make sure water softener is correctly set.
E:13 error code E:13 error code won't show during wash cycle	Water heater turned up too high > 75 ºC / 167 ºF	1. Run test program to check error codes for an E:13 error code. 2. Make sure water inlet temperature is < 75 ºC / 167 ºF.
E:14 error code ■ Far right LED is lit and E:14 shows on display ■ Dishwasher switches to time filling	Faulty flow meter Water flow is detected by heat pump	1. Check wire harness - replace faulty or loose harness. 2. Check flow meter - replace heat exchanger (EU) / water inlet system (US) if flow meter is faulty.

Fault Diagnosis

Fault	Possible cause	Troubleshooting
E:15 error code ■ Far right LED flashes and E:15 shows on display ■ Dishwasher abruptly stops and can't be shut off	Water in base activated float switch	1. Remove debris / obstructions from drain pump / drain hose. 2. Make sure float and float switch aren't stuck. If float switch is faulty, replace it. 3. Check float switch wire harness (to power module). If wire harness is loose or damaged, replace it. 4. Make sure water inlet valve isn't stuck open. If water valve is faulty, replace it. 5. Make sure water inlet valve threads aren't stripped / cross-threaded and correct water supply fittings are used. 6. Check inlet hoses for leaks. Replace leaky hoses. 7. Remove water from base.
E:16 error code ■ Far right LED is lit and E:16 shows on display ■ Flow meter senses water flow with closed inlet valve	Faulty water inlet valve	▸ Check water inlet valve - replace if faulty.
E:17 error code ■ Far right LED flashes and E:17 shows on display ■ Dishwasher drains continually and abruptly stops ■ Heat pump measures water flow and generates an error code	Inlet pressure too high	1. Check water supply inlet pressure and make sure it follows local codes. 2. Check water inlet valve - replace if faulty.
E:18 error code ■ Far right LED flashes and E:18 shows on display ■ Dishwasher waits for water filling, then wash cycle abruptly stops ■ Heat pump measures water flow and which generates an error code	Inlet water pressure too low	1. With power off, measure valve resistance - if wrong, replace water inlet valve. 2. With power off, check wire harness between inlet valve and power module - if it's faulty, replace it. 3. Measure voltage across valve terminals: 1. If it's correct, replace water inlet valve. 2. If it's not correct, replace power module.
E:19 error code Far left / far right LED's flash and E:19 shows on display	Loose / faulty harness to detergent actuator	▸ Check wire harnesses between rinse aid dispenser, dispenser actuator and power module - replace any loose or faulty wire harness.
	Faulty dispenser actuator	▸ ⓘf Wire harnesses are OK, check dispenser actuator operation: 1. If actuator operates, but doesn't open detergent dispenser cover, replace dispenser. 2. If actuator doesn't operate, replace power module.
E:20 error code ■ Far right LED flashes and E:20 shows on display ■ Wash cycle completed prematurely	Faulty heat pump motor winding	▸ Measure heat pump motor resistance over any 2 terminals: 1. If correct for your pump, replace power module. 2. If wrong for your pump, replace drain pump.

Fault Diagnosis

Fault	Possible cause	Troubleshooting
	Pumps disconnected or harnesses are faulty Far right LED flashes and E:01, E:20 (heat pump harness) or E:23 (drain pump harness) shows on display	▸ Check wire harnesses and connectors between power module and heat / drain pumps - if any harness or connector is faulty, replace main wire harness.
E:21 error code Far right LED flashes and E:21 shows on display	Heat pump is blocked / clogged	▸ Remove debris / obstructions from heat pump.
E:22 error code Far right LED is lit and E:22 shows on display	Water in sump	1. Drain water from sump. 2. Clean fine filter screen and coarse multi-filter. 3. Find and correct cause of leaking so it doesn't repeat.
E:23 error code Far right LED flashes and E:23 shows on display	Faulty drain pump	▸ Measure drain pump motor resistance between any 2 terminals. 1. If it's correct for your pump, replace power module. 2. If it's not correct for your pump, replace drain pump.
E:24 error code ■ Far right LED is lit and E:24 shows on display ■ Dishwasher won't drain ■ Wash cycle completed prematurely	Leaky or faulty drain check valve	▸ ⓘf Drain check valve leaks or doesn't close, replace it.
	Kinked drain hose	▸ Straighten out drain hose - if hose is faulty, replace it.
	Clogged drain line, drain hoses or drain check valve	▸ Unclog house drain line, drain hoses and drain check valve.
	Missing or loose drain pump cover ■ Far right LED is lit and E:24 or E:25 shows on display ■ Need drain pump cover for drain pump to develop pressure to pump properly	▸ ⓘf Drain pump cover isn't seated properly or is missing: 1. Replace missing drain pump cover. 2. Snap unseated / missing drain pump cover securely into place.
	Incorrect drain hose installation No high loop in drain hose or drain hose connection too high	1. Make sure drain hose isn't too long, has a high loop and isn't too high above the floor. 2. For installations with a drain hose extension, make sure the proper drain hose extension was used.
E:25 error code ■ Far right LED is lit and E:25 shows on display ■ Wash cycle completed prematurely ■ Dishwasher won't drain	Missing or loose drain pump cover ■ Far right LED is lit and E:24 or E:25 shows on display ■ Need drain pump cover for drain pump to develop pressure to pump properly	▸ ⓘf Drain pump cover isn't seated properly or is missing: 1. Replace missing drain pump cover. 2. Snap unseated / missing drain pump cover securely into place.
	Drain pump blocked Far right LED is lit and E:25 shows on display	▸ Remove debris / obstructions from drain pump and loosen impeller.
E:26 error code E:26 error code won't show during wash cycle	Faulty water switch harness	1. Run test program to check error codes for an E:26 error code. 2. Check harness between water switch and power module - if wire harness is faulty, replace it.

Fault Diagnosis

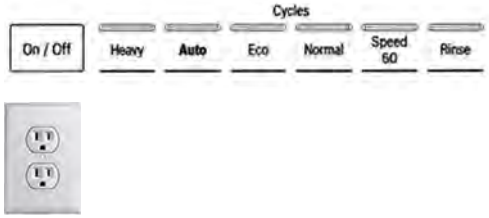
Fault	Possible cause	Troubleshooting
	Faulty water switch or water switch motor	1. Run test program to check error codes for an E:26 error code. 2. - Measure your water switch resistance - if it's not correct, replace water switch or motor. 3. Measure voltage to water switch: 1. If it's correct, replace water switch or water switch motor. 2. If it's not correct, replace power module.
E:27 error code Wash cycle completes prematurely, far right LED is lit and E:27 shows on display	Low supply voltage Is continuously < 85 VAC US / 170 VAC EU	▸ Check house wiring connections.
E:28 error code ■ E:28 error code won't show during wash cycle ■ Aqua sensor not properly calibrated	Faulty, missing or dirty aqua sensor	1. Run test program to check error codes for an E:28 error code. 2. ⓘf Aqua sensor is faulty or missing, replace aqua sensor. 3. Clean aqua sensor where it enters the sump.
	Faulty harness	1. Run test program to check error codes for an E:28 error code. 2. Check harness between aqua sensor & power module - replace if faulty.
E:29 error code Dishwasher runs a long time, doesn't rinse / dry properly or abruptly stops - E:29 error code won't show during wash cycle	Low supply voltage < 85 VAC US / 170 VAC EU	1. Run test program to check error codes for an E:29 error code. 2. Check house wiring connections.
E:30 error code Dishwasher turns off and E:30 error code won't show during wash cycle	High supply voltage > 140 VAC US / 290 VAC EU	1. Run test program to check error codes for an E:30 error code. 2. Check house wiring connections.
E:31 error code ■ Far right LED flashes and E:31 shows on display ■ Water ruins zeolite granules - must replace zeolite container ■ The zeolite water sensor is assembled inside the zeolite container and cannot be replaced in the field	Water in zeolite container	1. Replace faulty zeolite container. 2. ⓘf Water overfilled, check water inlet valve - replace if faulty. 3. Water not removed by shop vacuum and dishwasher tilted or placed onto back / upside-down for repairs. When working with zeolite dishwashers, vacuum out all water and only block up right side of tub to access zeolite parts. 4. ⓘf Too much foam in dishwasher, clean dishwasher and advise customer on proper detergents to use.
	Dirty zeolite water sensor	▸ Replace faulty zeolite container.
E:32 error code ■ E:32 error code won't show during wash cycle ■ Internal error (reserved)	Not relevant for Customer Service Not an error.	1. Run test program to check for other error codes. 2. Check all harness connections for loose connections.

Fault Diagnosis

Condensation / Humidity / Leakage

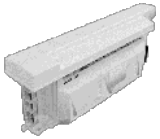
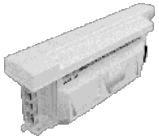
Fault	Possible cause	Troubleshooting
Suds	Wrong detergent used (i.e. liquid dish detergent)	▸ *Advise customer:* *Use only dishwasher detergent, not liquid dish detergent.*
Water leaks from top or sides of door	Door seal misaligned or pulled from tub track	▸ Reposition door seal.
	Dishwasher isn't level and door isn't square with tub	▸ Correct the installation, including re-leveling dishwasher and reinstalling mounting brackets.
Excess pressure forces water past door	Condensation vent is blocked	▸ Make sure condensation vent isn't blocked.
Leakage on dispenser when using liquid dishwasher detergent	Dispenser cover not intended for liquid dishwasher detergent	▸ Replace dispenser cover with part # [10009014].

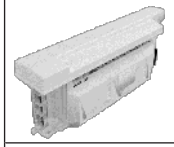
Malfunction

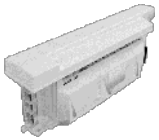
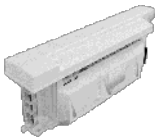
Fault	Possible cause	Troubleshooting
Dishwasher won't run *Customer use issues* 	No power to dishwasher ■ House circuit breaker has tripped or power cord is unplugged ■ Display won't light up	▸ Check house wiring connections. Make sure supply voltage is 98 - 120 VAC (L to N, not L to ⏚) to power module.
	Dishwasher not turned on Display won't light up	▸ Press On/Off to turn dishwasher on.
	Water supply not turned on Display is on	▸ Turn on water supply.
	No wash cycle selected ■ With dishwasher on and door closed ■ Dishwasher beeps	▸ *Advise customer:* *Select a wash cycle and start dishwasher.* Close door to start it if it has hidden controls on top of door.
	Previous wash cycle not completed or dishwasher control not reset Display is on	▸ Press and hold Start/Reset for at least 3 s to reset dishwasher.
	Delay Start or Child Lock functions turned on	▸ Turn off Delay Start or Child Lock functions.
	Door ajar or not properly latched Far right LED flashes and E:06 shows on display	▸ *Advise customer:* *Close door securely (until door latch clicks).*

Fault Diagnosis

Fault	Possible cause	Troubleshooting
Dishwasher issues  	Supply voltage drops due to bad connections ■ Far right LED flashes and E:01 shows on display ■ Loose power cord plug at power module or customer outlet. ■ Loose wiring to terminal block when optional junction box [SMZPCJB1UC] was used (instead of the supplied power cord) 	1. When the supplied power cord was used, make sure it's securely plugged in at both ends. If it's faulty, replace it. 2. When a junction box kit was used, check wiring and tighten terminal block screws. Make sure wires are inserted **above** terminal clamps, with wire insulation ~ 1 - 2 mm from clamps (i.e. **don't** insert wire insulation into terminal clamps).
	Open On / Off or Start switch 	1. Check On / Off switch and power module connections. Replace any faulty wire harness. 2. Turn off power, press On / Off switch (on) and measure switch resistance. ➔ If On / Off switch resistance = ∞ Ω when switch is on, replace On / Off switch. 3. Turn on power, open door and press On / Off switch (on). ➔ If no LED's flash, replace operating module (in fascia panel).
Door closing / alignment issues Dishwasher didn't sense door had been closed properly upon start up (i.e. Hall sensor didn't detect door latch magnet during start up test).  	Door popped open Far right LED flashes and E:06 shows on display 	1. Clean debris caught in door seal. Make sure door seal is fully seated into tub. 2. Check door alignment and closure. 3. Re-level dishwasher front to back / side to side and reattach mounting brackets so tub and door are square.
	Door latch Hall sensor not detected Far right LED flashes and E:06 shows on display 	1. Check continuity / connections between door switch and power module. Replace any faulty harnesses. 2. Hold a magnet over the Hall sensor (with the door open), just to the left of the left sensor screw. If the dishwasher runs, the sensor is faulty or isn't aligned with the door latch.  3. Align door latch above Hall sensor.

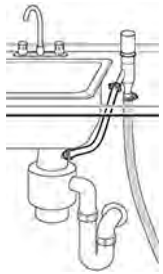
Fault	Possible cause	Troubleshooting
	Faulty door latch Hall sensor Far right LED flashes and E:06 shows on display 	1. Check continuity / connections between door switch and power module. Replace any faulty harnesses. 2. Hold a magnet over the Hall sensor (with the door open), just to the left of the left sensor screw. If the dishwasher runs, the sensor is faulty or isn't aligned with the door latch.  3. Remove outer door. With door closed, measure voltage across Hall sensor connector: 1. If voltage > 10 V, replace Hall sensor. 2. If voltage < 10 V, replace power module.
Dishwasher failed start up test Dishwasher checks if door is closed properly, checks heat / drain pumps and calibrates aqua sensor upon start up. Dishwasher won't start if door isn't closed properly or if heat / drain pumps, associated harnesses or power module have failed.   	Faulty heat pump / harness / relay ■ Connections between heat pump and power module have been interrupted ■ Far right LED flashes and E:01 shows on display  	1. Check harness connections between heat pump heater, motor, NTC's and power module. If main harness is faulty, replace it. 2. If harness is OK, check heat pump. 1. With power off, check heat pump heating element resistance. If resistance isn't ~ 9.3 Ω at room temperature, replace heat pump. 2. With power off, check heat pump motor winding resistances. If motor winding resistances between terminals 1 - 2, 2 - 3 and 3 - 1 aren't 14.7 Ω, replace heat pump. 3. With power off, check NTC resistances. If NTC resistances between terminals 4 - 5 or 5 - 6 aren't 10 kΩ, replace heat pump. 3. If harnesses and heat pump are OK, run CS test program to check power module. If E:01 error code reoccurs, replace power module.
	Faulty drain pump / harness ■ Connections between drain pump and power module have been interrupted ■ Far right LED flashes and E:01 shows on display 	1. Check harness connections between drain pump and power module. If main harness is faulty, replace it. 2. If harness is OK, check drain pump heating element resistance. If resistance isn't ~ 130 Ω at room temperature, replace drain pump.

Fault	Possible cause	Troubleshooting
	Faulty pump relay Far right LED flashes and E:01 shows on display 	▸ Replace power module.
	Pumps disconnected or faulty harnesses Far right LED flashes and E:01, E:20 (heat pump harness) or E:23 (drain pump harness) shows on display	1. Check continuity / condition of wire harnesses and connectors between power module and heat / drain pumps. 2. ⓘf A harness or terminal connector is faulty, replace main wire harness.
Dishwasher won't restart after door has been opened	Dishwasher didn't restart because of Unintentional Operation safety feature	▸ *Advise customer:* *Re-open door and press Start (Resume) before re-closing door.*
Wash cycle abruptly stops *Customer use and installation issues*  	Door ajar or not properly latched Far right LED flashes and E:06 shows on display	▸ *Advise customer:* *Close door securely (until door latch clicks).*
	Door popped open Far right LED flashes and E:06 shows on display 	1. Clean debris caught in door seal. Make sure door seal is fully seated into tub. 2. Check door alignment and closure. 3. Re-level dishwasher front to back / side to side and reattach mounting brackets so tub and door are square.
	Low supply voltage ■ < 85 VAC ■ Wash cycle runs a long time, doesn't rinse / dry properly or abruptly stops, but E:29 error code won't show	1. Run test program to check error codes for an E:29 error code. 2. Check house wiring connections. Make sure supply voltage is 98 - 120 VAC to power module (L to N, not L to ⏚).
Faulty or damaged parts  	Door latch Hall sensor not detected Far right LED flashes and E:06 shows on display 	1. Check continuity / connections between door switch and power module. Replace any faulty harnesses. 2. Hold a magnet over the Hall sensor (with the door open), just to the left of the left sensor screw. If the dishwasher runs, the sensor is faulty or isn't aligned with the door latch.  3. Align door latch above Hall sensor.

Fault	Possible cause	Troubleshooting
	Faulty door latch Hall sensor Far right LED flashes and E:06 shows on display 	1. Check continuity / connections between door switch and power module. Replace any faulty harnesses. 2. Hold a magnet over the Hall sensor (with the door open), just to the left of the left sensor screw. If the dishwasher runs, the sensor is faulty or isn't aligned with the door latch.  3. Remove outer door. With door closed, measure voltage across Hall sensor connector: 1. If voltage > 10 V, replace Hall sensor. 2. If voltage < 10 V, replace power module.
	Faulty water inlet valve Dishwasher waits for water filling, then: ■ Wash cycle abruptly stops ■ Far right LED flashes and E:18 shows on display 	Since the water valve doesn't have a flow meter, heat pump measures water flow and generates an error code. 1. With power off, measure valve resistance. - If resistance isn't ~ 990 - 995 Ω, replace water inlet valve. 2. With power off, check continuity between valve and power module. - If wire harness is faulty, replace it. 3. With power on, measure voltage across valve terminals: 1. If voltage ~ 120 VAC, replace water inlet valve. 2. If voltage isn't ~ 120 VAC, replace power module.
Wash cycle completed prematurely *Faulty or damaged parts*   	Faulty pump relay Far right LED flashes and E:01 shows on display 	▸ Replace power module.
	Overheating where power cord plugs into power module Far right LED flashes and E:03 shows on display. 	 On-board PTC in power module detected high temperature at power receptacle. ▸ Replace power module and power cord.

Fault	Possible cause	Troubleshooting
	Pumps disconnected or faulty harnesses Far right LED flashes and E:01, E:20 (heat pump harness) or E:23 (drain pump harness) shows on display	1. Check continuity / condition of wire harnesses and connectors between power module and heat / drain pumps. 2. ⓘf A harness or terminal connector is faulty, replace main wire harness.
	Faulty heat pump motor winding Far right LED flashes and E:20 shows on display 	▸ Measure heat pump motor winding resistance between any 2 terminals. 1. If winding resistance is 14.7 Ω, replace power module. 2. If winding resistance is not 14.7 Ω, replace heat pump.
	Faulty drain pump Far right LED flashes and E:23 shows on display 	▸ Measure drain pump motor winding resistance between any 2 terminals. 1. If winding resistance is 130 Ω at room temperature, replace power module. 2. If winding resistance is not 130 Ω at room temperature, replace drain pump.
	Kinked drain hose ■ Wash cycle completed prematurely ■ Far right LED is lit and E:24 shows on display 	1. Straighten out drain hose. 2. ⓘf Drain hose is damaged, replace it.
	Leaky or faulty drain check valve ■ Wash cycle completed prematurely ■ Far right LED is lit and E:24 shows on display 	▸ ⓘf Drain check valve leaks or doesn't close, replace it.

Fault Diagnosis

Fault	Possible cause	Troubleshooting
Installation issues  	Low voltage / excessive voltage drop Far right LED flashes and E:01 shows on display	▸ Check house wiring connections. Make sure supply voltage is 98 - 120 VAC (L to N, not L to ⏚) to power module.
	Incorrect drain installation ■ Garbage disposal plug wasn't removed ■ Wash cycle completed prematurely ■ Far right LED is lit and E:24 shows on display	▸ Remove garbage disposal plug.
	Incorrect drain hose installation ■ No high loop in drain hose or drain hose connection too high ■ Wash cycle completed prematurely ■ Far right LED is lit and E24 shows on display	1. Make sure drain hose is < 150" (12.5') long, has a 33" high loop and is installed ≤ 50" above the floor. 2. For installations with drain hose extensions, make sure only [SG-Z1010UC] drain hose extension was used.
	Low supply voltage ■ Is continuously < 85 VAC ■ Wash cycle completes prematurely, far right LED is lit and E:27 shows on display	▸ Check house wiring connections. Make sure supply voltage is 98 - 120 VAC to power module (L to N, not L to ⏚).
	Low supply voltage ■ < 85 VAC ■ Wash cycle runs a long time, doesn't rinse / dry properly or abruptly stops, but E:29 error code won't show	1. Run test program to check error codes for an E:29 error code. 2. Check house wiring connections. Make sure supply voltage is 98 - 120 VAC to power module (L to N, not L to ⏚).

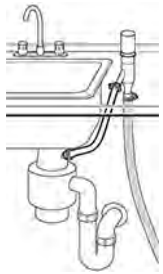
Fault Diagnosis

Fault	Possible cause	Troubleshooting
Maintenance issues     	Heat pump is blocked / clogged Far right LED flashes and E:21 shows on display	▸ Remove debris / obstructions from heat pump.
	Water in sump Far right LED is lit and E:22 shows on display	1. Drain water from sump. 2. Clean fine filter screen (above sump) and coarse multi-filter (inside sump). 3. Find and correct cause of leaking water so it doesn't repeat.
	Clogged drain line, drain hoses or drain check valve ■ Wash cycle completed prematurely ■ Far right LED is lit and E:24 shows on display	▸ Unclog house drain line, drain hoses and drain check valve.
	Missing or loose drain pump cover ■ Wash cycle completed prematurely ■ Far right LED is lit and E:24 or E:25 shows on display 	▸ ⓘ Drain pump cover is necessary for drain pump to develop pressure to pump properly. ⓘf Drain pump cover isn't seated properly or is missing. 1. Snap unseated drain pump cover securely into place. 2. Replace missing drain pump cover, snapping it securely into place.
	Tight heat pump impeller ■ Wash cycle completed prematurely ■ Far right LED is lit and E:24 shows on display	1. Check if drain pump cover is installed correctly. - If drain pump cover isn't snapped in securely, reinstall it. 2. Check heat pump impeller. - If heat pump impeller is tight, replace heat pump.
	Drain pump blocked ■ Wash cycle completed prematurely ■ Far right LED is lit and E:25 shows on display	1. Remove debris / obstructions from drain pump. 2. Remove drain pump cover and confirm drain pump impeller rotates freely.
Dishwasher doesn’t rinse or dry properly 	Low supply voltage ■ < 85 VAC ■ Wash cycle runs a long time, doesn't rinse / dry properly or abruptly stops, but E:29 error code won't show	1. Run test program to check error codes for an E:29 error code. 2. Check house wiring connections. Make sure supply voltage is 98 - 120 VAC to power module (L to N, not L to ⏚).
	Little or no water spray Clogged spray arms or filters	▸ Remove debris / obstructions from filters and spray arms.

Fault Diagnosis

Fault	Possible cause	Troubleshooting
Dishwasher shuts off  	Supply voltage drops due to bad connections ■ Far right LED flashes and E:01 shows on display ■ Loose power cord plug at power module or customer outlet. ■ Loose wiring to terminal block when optional junction box [SMZPCJB1UC] was used (instead of the supplied power cord) 	1. When the supplied power cord was used, make sure it's securely plugged in at both ends. If it's faulty, replace it. 2. When a junction box kit was used, check wiring and tighten terminal block screws. Make sure wires are inserted **above** terminal clamps, with wire insulation ~ 1 - 2 mm from clamps (i.e. **don't** insert wire insulation into terminal clamps).
	Open [On / Off] or [Start] switch 	1. Check [On / Off] switch and power module connections. 2. Measure [On / Off] switch resistance. ➡ If [On / Off] switch resistance = ∞ Ω when switch is in on position, replace [On / Off] switch. 3. Open door and press [On / Off] switch. ➡ If no LED's flash, replace operating module (in fascia panel).
	High supply voltage ■ > 140 VAC ■ Dishwasher turns off and E:30 error code won't show during wash cycle	1. Run test program to check error codes for an E:30 error code. 2. Check house wiring connections. Make sure supply voltage is 98 - 120 VAC to power module (L to N, not L to ⏚).
Can't select wash cycle	Previous wash cycle hasn't completed or current wash cycle was interrupted	▸ *Advise customer:* *To complete wash cycle or reset dishwasher.*
Dishwasher won't drain *Faulty or damaged parts*  	Kinked drain hose ■ Wash cycle completed prematurely ■ Far right LED is lit and E:24 shows on display 	1. Straighten out drain hose. 2. ⓘf Drain hose is damaged, replace it.
	Leaky or faulty drain check valve ■ Wash cycle completed prematurely ■ Far right LED is lit and E:24 shows on display 	▸ ⓘf Drain check valve leaks or doesn't close, replace it.

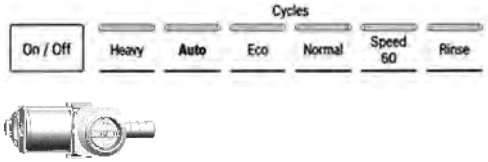
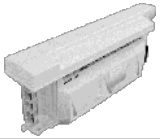
Fault Diagnosis

Fault	Possible cause	Troubleshooting
Installation issues 	Incorrect drain installation ■ Garbage disposal plug wasn't removed ■ Wash cycle completed prematurely ■ Far right LED is lit and E:24 shows on display	▸ Remove garbage disposal plug.
	Incorrect drain hose installation ■ No high loop in drain hose or drain hose connection too high ■ Wash cycle completed prematurely ■ Far right LED is lit and E24 shows on display	1. Make sure drain hose is < 150" (12.5') long, has a 33" high loop and is installed ≤ 50" above the floor. 2. For installations with drain hose extensions, make sure only [SG-Z1010UC] drain hose extension was used.
Maintenance issues    	Clogged drain line, drain hoses or drain check valve ■ Wash cycle completed prematurely ■ Far right LED is lit and E:24 shows on display	▸ Unclog house drain line, drain hoses and drain check valve.
	Missing or loose drain pump cover ■ Wash cycle completed prematurely ■ Far right LED is lit and E:24 or E:25 shows on display 	▸ ⓘ Drain pump cover is necessary for drain pump to develop pressure to pump properly. ⓘf Drain pump cover isn't seated properly or is missing. 1. Snap unseated drain pump cover securely into place. 2. Replace missing drain pump cover, snapping it securely into place.
	Tight heat pump impeller ■ Wash cycle completed prematurely ■ Far right LED is lit and E:24 shows on display	1. Check if drain pump cover is installed correctly. - If drain pump cover isn't snapped in securely, reinstall it. 2. Check heat pump impeller. - If heat pump impeller is tight, replace heat pump.
	Drain pump blocked ■ Wash cycle completed prematurely ■ Far right LED is lit and E:25 shows on display	1. Remove debris / obstructions from drain pump. 2. Remove drain pump cover and confirm drain pump impeller rotates freely.
	Overloaded drain pump due to kinked or clogged drain hose E:32 error code won't show during wash cycle	1. Run test program to check error codes. 2. Straighten out and unclog drain hose. Replace hose if faulty.

Fault Diagnosis

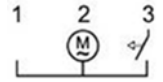
Fault	Possible cause	Troubleshooting
Dishwasher drains intermittently 	Water in base activated float switch ■ Dishwasher can’t be shut off ■ Wash cycle abruptly stops ■ Far right LED flashes and E:15 shows on display 	1. Remove debris / obstructions from drain pump / drain hose. 2. Make sure float and float switch aren't stuck. If float switch is faulty, replace it. 3. Check float switch wire harness (to power module). If wire harness is loose or damaged, replace it. 4. Make sure water inlet valve isn't stuck open. If water valve is faulty, replace it. 5. Make sure water inlet valve threads aren't stripped / cross-threaded and correct water supply fittings are used.  – Some installers / customers have cross-threaded / stripped valve threads or used wrong connectors (e.g. ¾" NPT instead of ¾" hose fittings), causing E:15 error codes from leaking. – When customers complain of water leaking from tubs, check water inlet valves for cross-threading or stripped threads - don't assume leaks are due to leaky tubs. – Instruct installers to use ¾” garden hose connectors / fittings, not ¾” NPT. NPT fittings have tapered, fine threads and can damage water inlet valve threads. – Replace water inlet valves with cross-threaded / stripped threads. 6. Check inlet hoses for leaks. Replace leaky hoses. 7. Remove water from base.
	Suds from wrong detergent used (i.e. liquid dish detergent)	▸ *Advise customer:* *To use only dishwasher detergent, not liquid dish detergent.*
Dishwasher drains continually 	Inlet water flow rate too high ■ Wash cycle abruptly stops ■ Far right LED flashes and E:17 shows on display 	Heat pump measures water flow and generates an error code.  Some installers / customers have removed water valve filters, thinking they were removable plugs / caps, dislodging or losing water flow restrictors, generating E:17 error codes from excessive inlet water pressure. ■ Plastic filters hold flow restrictors in place - when filters are removed, flow restrictors come loose. ■ There are no parts to be removed from water inlet valves. ▸ Check water flow restrictor in water inlet valve. If water valve has missing filters / flow restrictor, replace it.

Fault Diagnosis

Fault	Possible cause	Troubleshooting
	Inlet water flow rate too low ■ Dishwasher waits for water filling, then wash cycle abruptly stops ■ Far right LED flashes and E:18 shows on display	▸ Check water supply. Incoming pressure must be between 15 - 145 psi (1 - 10 bar).
Dishwasher won't fill with water 	Water supply is restricted Check water supply shows on display	▸ Make sure customer water supply valve is open and supply line has no kinks or clogs.
	Previous wash cycle hasn't completed or current wash cycle was interrupted	▸ *Advise customer:* *To complete wash cycle or reset dishwasher.*
	Delay Start has been turned on	▸ To cancel Delay Start or wait for dishwasher to start.
	Faulty water inlet valve Dishwasher waits for water filling, then: ■ Wash cycle abruptly stops ■ Far right LED flashes and E:18 shows on display 	Since the water valve doesn't have a flow meter, heat pump measures water flow and generates an error code. 1. With power off, measure valve resistance. - If resistance isn't ~ 990 - 995 Ω, replace water inlet valve. 2. With power off, check continuity between valve and power module. - If wire harness is faulty, replace it. 3. With power on, measure voltage across valve terminals: 1. If voltage ~ 120 VAC, replace water inlet valve. 2. If voltage isn't ~ 120 VAC, replace power module.
Dishwasher runs without heating *Power module issues* 	Faulty heater relay Far right LED flashes and E:02 shows on display	▸ Replace power module.
	Faulty safety heater relay Far right LED flashes and E:04 shows on display	▸ Replace power module.
Heat pump issues 	Ground fault at heater Far right LED flashes and E:04 shows on display	▸ Replace heat pump.
	Heat pump NTC resistances out of range Far right LED flashes and E:11 shows on display	1. Measure heat pump NTC resistances (~ 10 kΩ), between terminals 4 - 5 or 5 - 6. 2. If either NTC is faulty, replace heat pump.
	Heat pump NTC's disconnected	▸ Check wire harness to heat pump NTC's: 1. Check harness between heat pump NTC's and power module. 2. Make sure wire harness is securely connected. 3. If harness is faulty, replace it.
	Heat pump heater calcified	1. Clean and descale dishwasher. 2. Check water hardness and make sure water softener is correctly set.

Fault	Possible cause	Troubleshooting
Power module or heat pump issues  	Faulty heater circuit ■ Open - circuited ■ Far right LED flashes and E:09 shows on display	1. Check continuity between heat pump heating element and power module. If harness is faulty, replace it. 2. Measure heat pump heating element resistance. 1. If resistance is ~ 9.3 Ω at room temperature, replace power module. 2. If resistance isn't ~ 9.3 Ω at room temperature, replace heat pump.
Customer issues	Heat pump detects low water level E:08 error code won't show during wash cycle	Heat pump measures water flow and generates an error code. 1. Run test program to check error codes for an E:08 error code. 2. Check water supply and repair any leaks. 3. Check for kinks in inlet hoses. 4. Turn over pots / bowls collecting water. 5. Check continuity between water inlet valve and power module. 1. If wire harness is faulty, replace it. 2. If wire harness is OK, check water inlet valve and power module as follows: Measure voltage across water inlet valve terminals during step 1 of customer service test program. – If voltage is ~ 120 VAC, replace water inlet valve. – If voltage isn't ~ 120 VAC, replace power module.
	Incoming water too hot ■ > 75 °C / 167 °F ■ E:13 error code won't show during wash cycle	1. Run test program to check error codes for an E:13 error code. 2. Make sure water inlet temperature is < 75 °C / 167 °F.
Water switch runs continually 	Faulty water switch relay ■ Far right LED flashes ■ E:05 shows on display ■ Dishwasher will drain ■ Wash cycle will finish	▸ Replace power module.
	Faulty water switch harness E:26 error code won't show during wash cycle	1. Run test program to check error codes for an E:26 error code. 2. Check wire harness. 1. Check continuity of harness between water switch and power module. 2. If wire harness is faulty, replace it.

Fault Diagnosis

Fault	Possible cause	Troubleshooting
	Faulty water switch or water switch motor E:26 error code won't show during wash cycle	1. ⓘ Run test program to check error codes for an E:26 error code. 2. With power off, measure water switch motor resistance (between terminals 1 – 2).  - If resistance isn't ~ 1400 Ω, replace water switch or motor. 3. Measure voltage to water switch. 1. If voltage is ~ 120 VAC, replace water switch or water switch motor. 2. If voltage isn't ~ 120 VAC, replace power module.
Aqua sensor doesn't run during wash cycle Customer may complain wash cycles takes too long 	Faulty harness ■ Aqua sensor not properly calibrated ■ E:28 error code won't show during wash cycle	1. Run test program to check error codes for an E:28 error code. 2. Check wire harness. 1. Check continuity between aqua sensor and power module. 2. If wire harness is faulty, replace it.
	Dirty aqua sensor ■ Aqua sensor not properly calibrated ■ E:28 error code won't show during wash cycle	1. Run test program to check error codes for an E:28 error code. 2. Clean aqua sensor where it enters the sump.
	Faulty or missing aqua sensor ■ Aqua sensor not properly calibrated ■ E:28 error code won't show during wash cycle	1. Run test program to check error codes for an E:28 error code. 2. ⓘf Aqua sensor is faulty or is missing, replace aqua sensor.
Dispenser not operating *Customer use issues*	Dispenser detergent cover blocked by items inside upper rack handle	1. Remove all items from upper rack handle. 2. *Advise customer:* *Not to place items inside upper rack handle.*
	Dispenser detergent cover blocked by detergent tab improperly inserted into dispenser	▸ *Advise customer:* *How to properly insert detergent tabs into dispensers.*
	Previous wash cycle hasn't completed or current wash cycle was interrupted	▸ *Advise customer:* *To complete wash cycle or reset dishwasher.*
Faulty or damaged parts 	Dispenser detergent cover is jammed or doesn't open	1. Free up detergent dispenser cover so it isn't jammed. 2. ⓘf Detergent cover is still jammed, won't close or won't open, replace dispenser.
	Loose / faulty harness to dispenser actuator ■ Far left / far right LED's flash and E:19 shows on display ■ Some dispensers may be interfering with harnesses	1. Check wire harness between dispenser actuator and power module, especially to dispenser actuator. 2. ⓘf Dispenser isn't properly seated, reseat it so the harness can be reconnected. 3. ⓘf The wire harness is loose, securely reconnect it. 4. ⓘf The wire harness is faulty, replace it.

Fault Diagnosis

Fault	Possible cause	Troubleshooting
	Faulty dispenser actuator Far left / far right LED's flash and E:19 shows on display	▸ ⓘf Wire harnesses are OK, check dispenser actuator operation: 1. If actuator operates, but doesn't open detergent dispenser cover, replace dispenser. 2. If actuator doesn't operate, replace power module.
Rinse aid LED is lit 	Rinse aid dispenser is empty	1. Refill rinse aid dispenser. 2. *Advise customer:* *To check rinse aid level, make sure rinse aid dispenser is full and to add rinse aid when Rinse aid LED is lit.*
	Loose rinse aid sensor wire harness	1. Check connections of harness between rinse aid sensor and operating module. If wire harness is faulty, replace it. 2. Measure voltage between outer most dispenser terminals. 1. If voltage is ~ 13 VDC, replace dispenser. 2. If voltage isn't ~ 13 VDC, replace operating module.
Supply voltage issues 	Supply voltage drops due to bad connections ■ Far right LED flashes and E:01 shows on display ■ Loose power cord plug at power module or customer outlet. ■ Loose wiring to terminal block when optional junction box [SMZPCJB1UC] was used (instead of the supplied power cord) 	1. When the supplied power cord was used, make sure it's securely plugged in at both ends. If it's faulty, replace it. 2. When a junction box kit was used, check wiring and tighten terminal block screws. Make sure wires are inserted **above** terminal clamps, with wire insulation ~ 1 - 2 mm from clamps (i.e. **don't** insert wire insulation into terminal clamps).
	Low supply voltage ■ Is continuously < 85 VAC ■ Wash cycle completes prematurely, far right LED is lit and E:27 shows on display	▸ Check house wiring connections. Make sure supply voltage is 98 - 120 VAC to power module (L to N, not L to ⏚).
	Low supply voltage ■ < 85 VAC ■ Wash cycle runs a long time, doesn't rinse / dry properly or abruptly stops, but E:29 error code won't show	1. Run test program to check error codes for an E:29 error code. 2. Check house wiring connections. Make sure supply voltage is 98 - 120 VAC to power module (L to N, not L to ⏚).
	High supply voltage ■ > 140 VAC ■ Dishwasher turns off and E:30 error code won't show during wash cycle	1. Run test program to check error codes for an E:30 error code. 2. Check house wiring connections. Make sure supply voltage is 98 - 120 VAC to power module (L to N, not L to ⏚).

Fault Diagnosis

Mechanical damage

Fault	Possible cause	Troubleshooting
Fascia panel is discolored or scratched Includes missing or smeared printing	Bleach based wipes, abrasive pad or harsh cleanser used to clean panel	▸ *Advise customer:* *To use mild detergents with a soft damp cloth.*
Rust spots on stainless steel (ss) *On outer door*	Bleach or bleach based wipes used to clean door	1. *Advise customer:* *Bleach can cause surface rust to form on any ss surface.* 2. *Advise customer:* *To use an ss cleaner or mild detergent with a soft damp cloth.*
On inside of tub or inner door	Steel or ss items allowed to rest against tub walls or inner door	1. Clean off rust stains. 2. *Advise customer:* *To not allow steel or ss items to contact tub walls.*
On inside of tub	Cast iron items washed in dishwasher	▸ *Advise customer:* *To wash cast iron items by hand.*

Noise

Fault	Possible cause	Troubleshooting
Dishes rattling	Dishes not loaded properly into dishwasher racks Dishes hit each other or spray arms	▸ *Advise customer:* *Load dishes into racks properly.*
Dishwasher “beeps” during wash cycle 	Wash cycle has completed	▸ None. No error has occurred.
	No wash cycle selected (with dishwasher turned on and door closed)	▸ *Advise customer:* *Select a wash cycle and close the door to start the dishwasher (for hidden controls on top).*
	Wash cycle was interrupted by door being opened	▸ *Advise customer:* *Press Start (Resume) and close the door to resume the wash cycle.* ⓘ Must press Start (Resume) first because of the Unintentional Operation feature.
	Error	▸ Run CS test program to check error codes.

Odour

Fault	Possible cause	Troubleshooting
Food debris	Food debris in filters and sump	1. Clean filters and sump as needed. 2. *Advise customer:* *Filters need to be cleaned.*

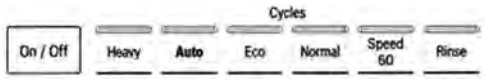
Fault Diagnosis

Fault	Possible cause	Troubleshooting
	Food debris near door seal	1. Clean food debris from door seal. 2. *Advise customer:* *Door seals need to be cleaned.*
Standing water in bottom of dishwasher	Previous wash cycle stopped before it finished	1. Press Start-reset to reset and drain dishwasher. 2. *Advise customer:* *To wait for wash cycles to finish.*
	Blocked or kinked drain hose or blocked customer drain line	1. Press Start-reset to reset and drain dishwasher. 2. Check for blockages or kinks in drain hose or customer drain line.

Other

Fault	Possible cause	Troubleshooting
Door doesn't open or close properly *Door opens on its own or won't shut*	Broken door springs / cords	▸ Replace door springs / cords. Replace both sides (left / right) at the same time.
Door stays open or drops open For fully integrated units	Door spring tension too weak	▸ Replace door springs with stronger ones. Must replace both sides (left / right) at the same time.
Door won't stay open, is hard to open or closes on its own For fully integrated units	Door spring tension too strong	▸ Replace door springs with weaker ones. Must replace both sides (left / right) at the same time.

Result problem

Fault	Possible cause	Troubleshooting
Wash cycle runs a long time    	Rinse aid setting is "0" or rinse aid dispenser is empty 	▸ *Advise customer:* *To use rinse aid, refill rinse aid dispenser and set rinse aid setting to "4" if it's set at "0".* ⓘ Without rinse aid, wash cycle defaults to longest time with most washes and rinses to make sure dishes are clean.
	Intensive wash cycle chosen with heavily soiled dishes	▸ *Advise customer:* *More intensive wash cycles with dirtier dishes will take longer.* ⓘ Cycle times depend on wash cycle chosen and amount of soil on dishes.
	Incoming water is too cold	▸ *Advise customer:* *To turn up water heater to 120 °F or run water until it heats up before starting a wash cycle.*

Fault Diagnosis

Fault	Possible cause	Troubleshooting
	Dishwasher is connected to cold water supply	▸ *Advise customer:* *To connect dishwasher to hot water supply.*
	Low supply voltage ■ < 85 VAC ■ Wash cycle runs a long time, doesn't rinse / dry properly or abruptly stops, but E:29 error code won't show	1. Run test program to check error codes for an E:29 error code. 2. Check house wiring connections. Make sure supply voltage is 98 - 120 VAC to power module (L to N, not L to ⏚).
Dishes still dirty 	Improper / ineffective detergent or wash cycle used	▸ *Advise customer:* *Use proper detergents, amount of detergents and wash cycles.*
	Little or no water spray Clogged spray arms or filters	▸ Remove debris / obstructions from filter and spray arms.
	Spray arms not rotating Spray arms are misaligned or blocked	▸ Make sure spray arms are properly attached with supply tube and rotate freely.
	Dishes nested or loaded too closely together	▸ *Advise customer:* *To load dishes properly into racks.*
Dishes aren’t dry	Extra Dry option not on	▸ *Advise customer:* *To activate Extra Dry option, if it's available.*
	Door opened before wash cycle completed Causing steam to escape	▸ *Advise customer:* *Not to open door until wash cycle has finished.*
	Rinse aid setting is "0" or rinse aid dispenser is empty 	▸ *Advise customer:* *To use rinse aid, refill rinse aid dispenser and set rinse aid setting to “4” if it's set at “0”.* ⓘ Without rinse aid, wash cycle defaults to longest time with most washes and rinses to make sure dishes are clean.
	Dishes nested or loaded too closely together	▸ *Advise customer:* *To load dishes properly into racks.*

Fault Diagnosis

Fault	Possible cause	Troubleshooting
Plastic items aren't dry or have water stains	Plastics don’t dry as well as cutlery or dishes Water is left on items or evaporates slowly, leaving mineral deposits 	1. *Advise customer:* *Plastics don't dry as well as metals, china or glass.* – Plastics don’t dry well since they don’t absorb heat, unlike metals, china and glass. – This happens with all dishwashers, regardless of brand. 2. *Advise customer:* *To activate Extra Dry Heat option, if it's available.* 3. *Advise customer:* *To use a more intensive wash cycle.* – More intensive wash cycles have a hotter rinse temperature, allowing more water vapor to evaporate. – More intensive wash cycles have more water changes allowing less minerals to be dissolved, reducing water spots. 4. *Advise customer:* *To load plastic items (upside-down) so they can’t hold water.* 5. *Advise customer:* *To use rinse-aid, refill rinse aid dispenser and set rinse aid setting to “4” if it's set at “0”.* Without rinse-aid, wash cycle defaults to longest time with most washes and rinses to make sure dishes are clean.
Water stains on glassware	Spots on glassware Rinse-aid setting too low or lack of rinse-aid	▸ *Advise customer:* *To use rinse-aid, refill rinse aid dispenser and set rinse aid setting to “4” if it's set at “0”.* Without rinse-aid, wash cycle defaults to longest time with most washes and rinses to make sure dishes are clean.
	Spots on glassware Due to hard water	▸ *Advise customer:* *Install water softener in home.*
	Streaks on glassware Rinse-aid setting too high	▸ *Advise customer:* *To reduce rinse-aid setting.*
	Drips on glassware or dishes Water from upper and cutlery (top) rack drips on racks below	▸ *Advise customer:* *To unload lower rack 1st, upper rack 2nd and cutlery (top) rack 3rd.*

Fault Diagnosis

Fault	Possible cause	Troubleshooting
Cloudy glasses 	Glasses not dishwasher safe Soft water replaces minerals in glasses ■ Process is irreversible - cloudiness can't be removed or wiped off ■ Process is aided by hotter water, longer wash cycles and softer water ■ Chemical process depends on type of glass, not dishwasher or detergent brands	▸ *Advise customer:* *To reduce causes of glassware demineralization:* 1. Use only dishwasher-safe glasses. 2. Use shorter, less intensive and lower temperature wash cycles. 3. Use dishwasher detergents with glass protection. 4. Set dishwasher or home water softener at a lower setting (i.e. slightly harder water) than normally called for. 5. Remove glasses promptly after wash cycles end. 6. Don't use Sanitized, Pure Dry or Extra Dry options.
Rust spots on stainless steel (ss) items Including cutlery (silverware) and steel items such as cookie / baking sheets	Cutlery of different metals loaded together	▸ *Advise customer:* *To separate items made from different metals.* Stainless steel, silver and steel items should be separated so they don't contact each other.
Detergent residue	Dispenser detergent cover blocked by items inside upper rack handle	1. Remove all items from upper rack handle. 2. *Advise customer:* *Not to place items inside upper rack handle.*
	Dispenser detergent cover blocked by detergent tab improperly inserted into dispenser	▸ *Advise customer:* *How to insert detergent tabs into dispensers.*
	Dispenser detergent cover is jammed or doesn’t open Due to faulty actuator	1. Free up detergent dispenser cover so it isn't jammed. 2. ⓘf Detergent cover is still jammed, won't close or won't open, replace dispenser.
	Detergent tabs don’t dissolve due to short wash cycles	▸ *Advise customer:* *To use a longer wash cycle when using detergent tabs or a powdered detergent when using short wash cycles.*
	Detergent is lumpy, doesn’t clean well or doesn’t dissolve From sitting in dispenser too long	▸ *Advise customer:* *To insert detergent tab just before running a wash cycle.*
	Detergent residue in final rinse Due to inadequate draining	1. ⓘf Drain check valve is faulty, replace it. 2. ⓘf Drain line installation is improper, correct it. 3. ⓘf Drain hose is kinked or plugged, replace it.
Residue on tub	Colored (yellow / orange / brown) soapy, easily removable residue Mixture of food and mineral deposits	Hard water prevented (“3 in 1” / “Eco”) detergent from cleaning properly. ▸ *Advise customer:* *To (preferably) change detergents or increase water softening setting regardless of detergent package instructions.*

Fault Diagnosis

Fault	Possible cause	Troubleshooting
	Residue in upper / top (cutlery) rack rails / slides	Mixture of food and mineral deposits not flushed out with dishwasher use. ▸ Remove and clean rack rails / slides.
	White residue on tub Rack wheels can squeak	Mineral (lime) film due to government mandated removal of phosphates from dishwasher detergents. ▸ *Advise customer:* *To use a dishwasher cleaner every few months.*

5.1 Testing components

These 8 to 9 tests (depending on the model) turn components on to test them.

- Components are tested in sequence (i.e. cannot be turned on individually).
- Heat pump test "S:03" runs for 10 minutes, enough time to check heater voltages. You can skip the test when you're done or don't need to run it.

	To save time, end CS test program early by pressing and holding the "Start" button for 3 seconds (to reset dishwashers) and then turning dishwashers off.

Prerequisite:

- Dishwasher had been reset and turned off

1. While pressing and holding buttons "B" and "C", turn the dishwasher on. Release buttons after "P0" is displayed.

Fig. 63: Entering CS program mode

2. Press button "B" once to select viewing error / fault codes. To select CS test program, press button "B" repeatedly to scroll through selection(s) until "P1" is displayed.
3. After making your selection, press button "C" to start it, whether viewing error codes or running tests.

Fig. 64: Starting test sequence

Notes for running the first 8 to 9 tests (depending on the model) of the CS test program:

- Test sequences start at S:00 and scroll through to the end, often through S:72.
- Press button "B" to skip heat pump heater test S:03 - can't skip other tests.
- To resume test sequences after they've been skipped (for heat pump test S:03), press and hold "Start" button for 3 seconds (resetting dishwashers).
- Depending on model features, water softener regeneration test S:05, emotion light test S:06 and / or door opening test S:10 could be omitted.

4. Check component operation by running the first 8 to 9 tests (depending on the model) of the CS test program below:

Test	Display	Duration	Action	Notes
Preparing dishwasher	S:00	60 s	-	Drains all water and stops water switch at lower rack
Filling	S:01	3.5 l	-	Heat pump runs slightly to purge air
Heat pump motor	S:02	10 s	-	Runs at 3000 RPM
Heat pump heater	S:03	600 s	Can skip test	Heats at 2°F / minute for 10 minutes
Water inlet valve	S:04	2 s	-	Turns valve on and off
Dispenser	S:07	2 s	-	-
Water switch	S:08	~ 15 s	-	Stops at upper rack
Drain pump	S:09	60 s	-	Drains all water

5. To stop or exit tests:
   1. To stop or exit viewing error codes, simply turn the dishwasher off.
   2. To stop running tests or exit the test mode after tests have ended, press and hold the "Start" button for 3 seconds (to reset dishwashers) and then turn dishwashers off.

5.2 Identifying flashing LED error codes

This can help you quickly identify flashing error codes LED's found in published error code lists.

	Flashing LED's differ when occurring during wash cycles or generated by CS test programs!

1. Run CS test program to check / generate error / fault codes.
2. Diagnose exact failure by making voltage / resistance measurements, viewing error / fault code charts and by reviewing fault diagnosis charts.

5.2.1 Clarifying LED positions

- **Flashing LED error / fault codes are identified by LED position, not by name** (i.e. fascia panel printing), **running from left to right** (or top to bottom). Printing can change from model to model, although most are Sanitized - Clean - Add Rinse Aid (e.g. Sanitized LED is the far left on many models and was the far right on others).

	When communicating flashing LED error / fault codes, provide LED positions as well as names (e.g. Sanitized LED flashing; Sanitized - Clean - Add Rinse Aid left to right).
	○ ○ ✸ Most customers will see the Add Rinse Aid (far right) LED flashing - **it merely means a problem has occurred and doesn't designate any specific error / fault code**.

5.2.2 Flashing Add Rinse Aid (far right) LED

○ ○ ✸

Power module

- Customers see and CS test programs show flashing Add Rinse Aid (far right) LED ○ ○ ✸.
- Possible voltage, heat pump heater, zeolite heater, power module temperature, power module relay or water switch issues.
- Possible error / fault codes: E:01 - E:05.

5.2.3 Flashing Clean (middle) LED

○ ✸ ○

(Hall) door latch sensor

- Customers see flashing Add Rinse Aid (far right) LED ○ ○ ✸, but CS test program shows flashing Clean (middle) LED.
- Faulty (Hall) door latch sensor or harness.
- Probable error / fault code: E:06.

5.2.4 Flashing Clean & Add Rinse Aid LED's

○ ✸ ✸

Heater (heat pump or zeolite)

- Customers see flashing Add Rinse Aid (far right) LED ○ ○ ✸, but CS test program shows flashing Clean and Add Rinse Aid LED's.
- Faulty heater or harness, water level too low, faulty NTC's or harnesses, calcified heater or water temperature too high.
- Possible error / fault codes: E:07 - E:13. Error / fault codes E:08 and E:13 only show on digital displays after running CS test program.

5.2.5 Flashing Sanitized (far left) LED

✸ ○ ○

Water filling

- Customers see flashing or lit Add Rinse Aid (far right) LED ○ ○ ✸, but CS test program shows flashing Sanitized (far left) LED.
- Faulty flow meter or harness, float switch operated (check for water in base), faulty water valve or harness or insufficient water supply.
- Possible error / fault codes: E:14 - E:18.

5.2.6 Flashing Sanitized & Add Rinse Aid LED's

✸ ○ ✸

Dispenser or heat pump (pump, not heater)

- Customers see flashing Add Rinse Aid (far right) LED ○ ○ ✸, but CS test program shows flashing Sanitized and Add Rinse Aid LED's.
- Faulty dispenser actuator or harness, faulty water inlet control, faulty heat pump motor winding or harness or heat pump blocked.
- Possible error / fault codes: E:19 - E:21.

5.2.7 Flashing Sanitized & Clean LED's

✸ ✸ ○

Drain pump

- Customers see lit (or flashing) Add Rinse Aid (far right) LED ○ ○ ● or ○ ○ ✸, but CS test program shows flashing Sanitized and Clean LED's.
- Faulty drain pump or harness, dirty sump filters, blocked drain pump, blocked / kinked drain hose, blocked or faulty drain check valve, no high loop, drain hose too long, Johnson Tee present or loose drain pump cover.
- Possible error / fault codes: E:22 - E:25.

5.2.8 All three LED's flashing

✸ ✸ ✸

Water switch or low voltage

- Customers see nothing or lit Add Rinse Aid (far right) LED ○ ○ ●, but CS test program shows all three LED's flashing.
- Faulty water switch or harness or low input voltage.
- Possible error / fault codes: E:26 - E:27. Error / fault code E:26 only shows on digital displays after running CS test program.

5.2.9 Other flashing LED's

Zeolite container

- Customers see flashing Add Rinse Aid (far right) LED ○ ○ ✸, but CS test program doesn't generate flashing LED's.
- Water in zeolite container or sensor is dirty.
- Probable error / fault code: E:31.

5.2.10 Flashing Rinse Aid and Add Salt displays

Lack of communication between operating and power modules

- Add Salt and Rinse Aid text displays flash, whether or not the dishwasher has a water softener.
- Power module has lost communication with the operating module.
- No other error codes or displays will occur - buttons may not respond. If other error codes appear, this isn't the issue - look up error codes elsewhere in this list.
- Check in order - before replacing parts and causing multiple trips: operating module - fascia panel (D-bus) harness - main harness - ground terminals - power module. Power modules usually aren't faulty - often loose connections or damaged harnesses are the cause.
- If needed, check customer power supply (receptacle) for 120 VAC, floating neutral, switched polarity (line - neutral prongs), loose ground connections, etc.

5.3 Customer diagnosing information

Sometimes customers will mention tones they've heard or error codes they've seen.

5.3.1 Reasons for end of cycle tone (“beep”)

The end of cycle tone (‘beep”) doesn’t only sound at the end of wash cycles. It can mean an error has occurred, but doesn’t have to – if an error has occurred, the tone does not identify the error, just that an error has occurred.

The end of cycle tone can sound for the following reasons:

- Door closed with no cycle selected.
- Cycle interruption (i.e. door opened during cycle).
- Error.

The end of cycle tone will rarely mean an error has occurred, especially before a cycle started and as a cycle ended.

- If a tone sounded during a wash cycle, it may not mean an error has occurred and doesn’t indicate what type of error could have occurred.
- Not all error codes show during wash cycles.

1. ⓘf A tone sounded during a wash cycle.
   1. Ask the customer if a wash cycle was completed, the door was closed without selecting a wash cycle or the door was opened during a wash cycle.
   2. Run the customer service test program to check error codes.
2. ⓘf A tone sounded during a wash cycle and there are no error codes.
   1. Clean debris from the door seal.
   2. Check door sensor alignment.
      The door may have opened and re-closed during the wash cycle - in other words, the door sensor may have temporarily not sensed the door latch magnet due to pressure on the door (from inside the tub).

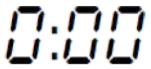
5.3.2 Error codes seen by customers

Dishwashers with digital displays have error codes shown in the customer service test program and seen by customers. Some service error codes (e.g. E:08, E:16) can’t be seen by customers.

1. Run the customer service test program to check error codes.
2. Run the customer service test program again to clear error codes.

5.3.3 Customer displays

Here are typical displays customers see when using dishwashers - they can help you answer questions and avoid service calls.

Display Symbol	Description
	Cycle time remaining
	Rinse aid level is low
	Add salt (for models with water softeners) Dishes have been sanitized (for some older models w/o water softeners)
	Dishes have been sanitized Water fill error (for models with flow meters)
SA:nl	Sanitized option had been selected
	Delay Start
	WiFi is connected
	WiFi connected locally only (not to Home Connect server)
	Remote Diagnostics

Occasionally, customers may see a SA:nl display at the end of a wash cycle. This merely confirms the Sanitized option was chosen - there's no fault with the dishwasher.

5.4 Dishwasher won’t run or stops with far right (Sanitized) light on

	Most customers will see the Add Rinse Aid (far right) LED flashing - **it merely means a problem has occurred and doesn't designate any specific error / fault code**.

Dishwashers continually perform safety checks:

- If an error is found before wash cycles start, dishwashers **won’t run**.
- If heat / drain pumps are disconnected or faulty, dishwashers **won't run**.
- If an error is found after wash cycles started, cycles will stop abruptly after several minutes and the Sanitized (or Clean) light will be lit.

If the dishwasher won't run or stops abruptly after several minutes with the far right (Sanitized or Clean) light lit, there could be several causes:

- Draining issues
- Faulty power module relays
- Door ajar or faulty / misaligned door latch
- Disconnected or faulty heat / drain pump

Prerequisite:

- ✔ Customer service error code program has been run.
- ✔ Error codes have been recorded.

5.4.1 E:01 error code

If an E:01 error code occurred, **dishwashers won't run**.

1. Check power cord plug connections at power module and customer outlet - plug cord in securely or replace it if it's faulty.
2. Check both heat and drain pumps and their harnesses - replace the main harness or faulty pump.
3. If both pumps and harnesses check out OK, run CS test program - if E:01 error code reoccurs, replace power module.

	Dishwashers check heat and drain pumps before operating - problems with either prevents dishwashers from operating (i.e. power module couldn't communicate with the heat or drain pump): ■ If heat or drain pump isn’t connected, reconnect it. ■ If heat or drain pump is faulty, replace it.

5.4.2 E:02 error code

Is an E:02 error code occurred, **dishwashers could've run without heating or zeolite drying**.

1. A power module heat pump or zeolite relay may have failed - if so, replace the faulty power module.
2. There could've been a ground fault at the heat pump heating element or at the zeolite heater - if so, replace the faulty heat pump or zeolite container.

	The cause could've been a failed power module (heater relay) or a ground fault at the heater itself - if there isn't a ground fault at the heat pump or zeolite heating element, replace the power module.

5.4.3 Door didn't close properly

1. ⓘf Dishwasher won’t run after you securely closed the door, check the door latch Hall sensor by holding a magnet over it (located just left of the left screw - see below).

Doors being ajar can prevent dishwashers from operating:

- Occasionally a door can catch on the door seal and not close securely.
- Error code E:06 will show when the test program is run.
- The sensor senses the door latch magnet - if door, door latch or door seal is misaligned, the sensor won't sense the magnet and the dishwasher won't run.

2. ⓘf Dishwasher runs (after you checked the door latch sensor with a magnet), the door latch is the issue:
   1. Clean any debris from around the door seal.
   2. Realign door, door latch or door seal.
   3. Replace door latch, if faulty.
3. *Advise customer:*
   To securely close dishwasher door (i.e. until door latch clicks).

	Make sure customers close doors properly: ■ If dishwasher runs after the door is securely closed, the customer hasn't been closing the door securely. ■ The dishwasher won't run or will stop abruptly after several minutes if the door isn't closed securely or if the door latch is misaligned or faulty.

5.4.4 Drain installation / maintenance issues

▸ ⓘf E:22, E:24 or E:25 error codes occur, check and correct these drain installation / maintenance issues:
   1. Snap in loose drain pump cover.
   2. Clean out clogged sump filters.
   3. Remove garbage disposal plug.
   4. Clean out debris clogging drain hose, drain pump or customer drain line.
   5. Form a high loop in the drain hose.
   6. Shorten an overly long drain hose.

	Make sure drain hose is < 150" (12.5') long, has a 33" high loop and is installed ≤ 50" above the floor.

5.5 Clearing error code E24 drain obstructions

If a dishwasher doesn't drain properly and / or shows an E24 error code, the problem is due to drain obstructions, not a faulty power module or drain pump.

To correct the problem, (1) reset the power module, (2) correct overly high drain connections and / or (3) clear drain obstructions.

5.5.1 Resetting power modules

- ▸ Reset the power module by using Method 1 below. If unsuccessful, use Method 2.

Fig. 65: Power module

5.5.1.1 Method 1

1. With the door closed and the dishwasher turned on, press and hold Start for 5 s.
   ➥ The display should show 01 or 00.
2. Press On / off (turning the dishwasher off).

5.5.1.2 Method 2

Prerequisite:

- ✔ Power supply to dishwasher disconnected.
- ✔ Toe panel removed→ *Page 87*
- ✔ Drain pump harness disconnected from drain pump and connector taped (to make sure it didn't touch anything).
- ✔ Power supply to dishwasher reconnected.

1. With the door closed, press On / off to turn the dishwasher on.
   ➥ You should hear the power module turn on and control relays click on and off.
2. Wait about 30 s with the power on, then press On / off to turn the dishwasher off.
3. With the power off, reconnect the drain pump harness and reinstall the toe panel.
4. Close the door and press On / off to turn the dishwasher on.

5.5.2 Correcting overly high drain connections

- ■ Error code E24 can occur for drain connections > 50" (1.27 m).
- ■ The only repair, especially for Johnson Tee installations, is to instruct customers to correct their drain connections.

1. *Advise customer:*
   To have their drain connection lowered < 50" (1.27 m).
2. *Advise customer:*
   To correct their Johnson Tee installation.

   - – The Johnson Tee must be installed in the wall behind the dishwasher ≤ 50" (1.27 m) above the floor.
   - – The plumbing connection must be ¾" minimum – ½" must not be used.
   - – Dishwasher drain hose extensions must not be used (with overly high drain connections).

5.5.3 Clearing drain obstructions

Prerequisite:

- ✔ Dishwasher is fully installed (if previously disconnected).
- ✔ Drain hose is properly connected.

1. Prepare dishwasher.
   1. Drain water from the dishwasher base.
   2. Open the door to the dishwasher and remove the sump filter.
   3. Add water to the sump until it is filled.
   4. Gently lift up on the safety float (2) until the float switch (1) closes (~ ¼"), activating the drain pump to drain the water out.

2. If the drain pump turns on, but does not drain.
   1. Check sump and drain hoses for kinks or obstructions.
   2. Make sure the drain pump cover (4) is securely snapped into place. While you're there, make sure the suction cap (3) is securely snapped into place as well.
   3. If the drain hose is attached to a garbage disposal, make sure the disposal plug is removed and the disposal doesn't have any obstructions.

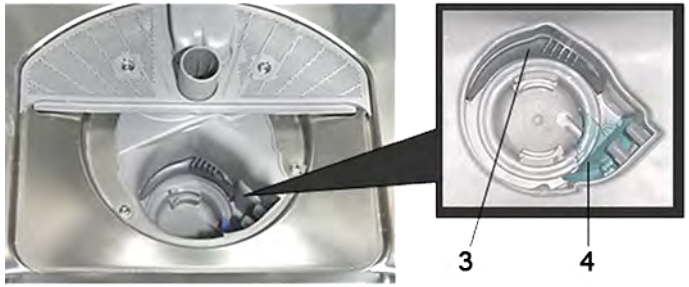


Fig. 66: Drain pump cover

3. If the water drains out completely, the drain check valve may be faulty.
   1. Release the safety float (2). If water flows back into the sump, the drain check valve (5) may be stuck open.
   2. Clean out the drain check valve and sump.
   3. If the flap (6) is damaged, replace the drain check valve.

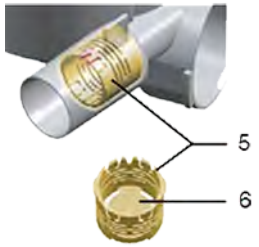


Fig. 67: Drain check valve location and detail

4. If the drain pump doesn't turn on, remove the drain pump cover (4), check for obstructions and make sure the pump impeller turns freely.
5. Carefully remove the suction cap (3) from the sump and make sure the heat pump impeller turns freely (using a 5 mm nut driver).

	Opening and closing the door bypasses the E24 error code, allowing the dishwasher to continue in the wash cycle (unless it is reset).

5.5.4 Loosening tight heat pump impellers

A stuck heat pump impeller can generate an E24 drain pump error code.

1. If all drain related issues have been checked and confirmed OK, check the heat pump impeller.
2. ⓘf If the impeller is binding or feeling tight, replace the heat pump.

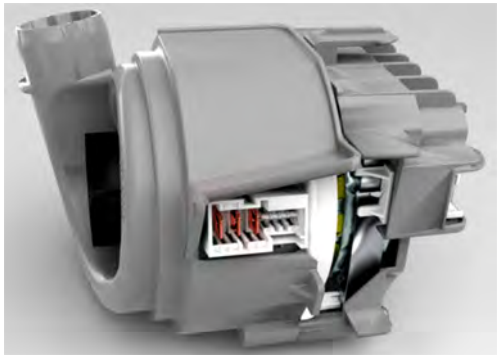


Fig. 68: Heat pump

5.6 Error code E25 for loose drain pump covers

If a dishwasher doesn’t drain properly and / or shows an E:25 error code, the problem could be the drain pump cover (4) wasn’t replaced properly (i.e. not completely seated and locked into position).

- Loose drain pump covers allow more water flow to the drain pump, increasing the pump load, drawing more current and causing an E:25 error code.
- The Clean light can come on abruptly after several minutes, giving the impression the dishwasher finished its cycle when it actually didn’t.
- Occasionally E:23 and E:24 error codes can occur as well.
- The suction cap (3) doesn't affect drain pump operation, but must be completely seated and locked into position for proper heat pump operation.

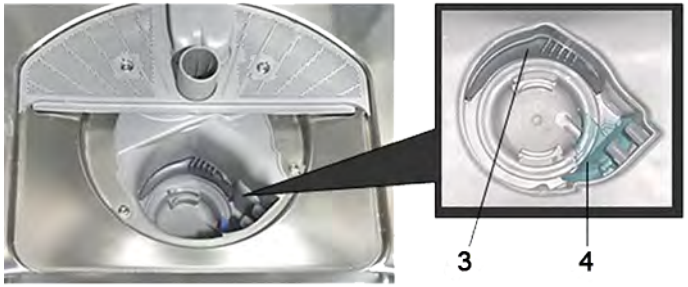


Fig. 69: Location of drain pump cover

	Many drain pumps returned for analysis check out OK. Many drain pump issues are due to improper drain installations and error codes for other parts.

▸ ⓘf If error code E:25 occurs, make sure the drain pump cover is securely snapped into the sump.

5.7 Heat pump terminal measurements

Required tools:

Multimeter	Digital multimeter VC 850K	[15000062]

There are two sets of terminals, 6-pin heater / NTC's and 3-pin motor.

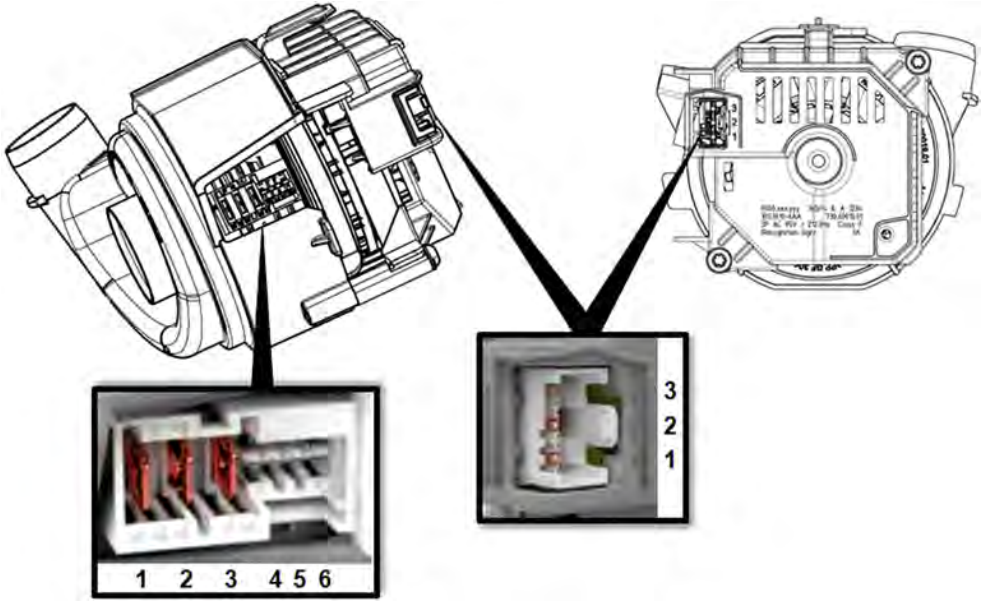


Fig. 70: 6–pin heater / NTC's and 3–pin motor terminals

The 6-pin terminal on the side of the heat pump connects to the heat pump heater (terminals 2 - 3), heater NTC's (terminals 4, 5, & 6) and ground (terminal 1).

The 3-pin terminal on the end of the heat pump connects to the 3-pole BLDC motor (terminals 1, 2 & 3). The power module controls motor speed, starting and stopping.

Prerequisite:

- Customer service error code program has been run.
- Error codes have been recorded.
- Power supply to dishwasher disconnected.

1. To check the 1200 W heater, measure the resistance between terminals 2 – 3.
   - The resistance should be 9.3 Ω (at 77 ºF). If the resistance = ∞, replace the faulty heat pump since the heater has failed.

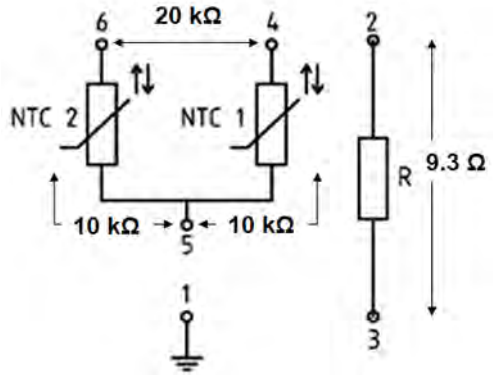


Fig. 71: Heater and NTC's wiring diagram

Heater 2 – 3: 9.3 Ω (at 77 ºF)

2. To check the NTC's, measure the resistances between terminals 4 - 5, 5 - 6 and 4 - 6.
   1. If resistances don't match values below (e.g. 10 kΩ or 20 kΩ (at 77 ºF)), replace heat pump.
   2. Replacing heat pumps→ *Page 100*

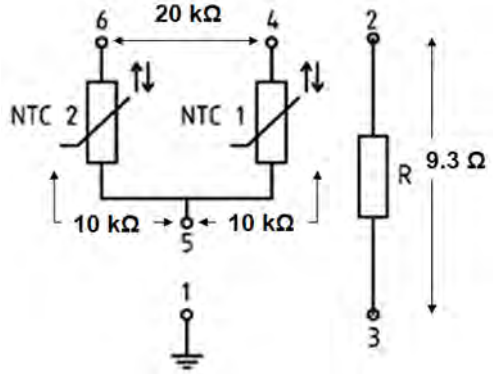


Fig. 72: Heater and NTC's wiring diagram

– NTC 4 – 5: 10 kΩ (at 77 ºF)
– NTC 5 – 6: 10 kΩ (at 77 ºF)
– NTC 4 – 6: 20 kΩ (at 77 ºF)

3. To check the motor, measure the resistances between terminals 1 - 2, 2 - 3 and 3 - 1.
   - If resistances don't match 14.7 Ω (at 68 ºF), replace heat pump.

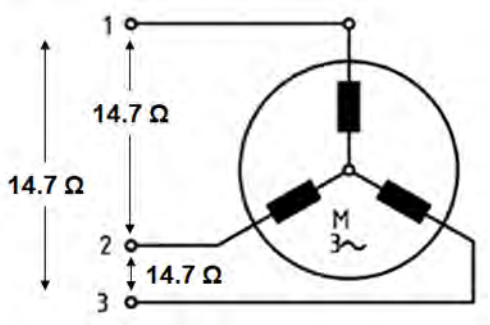


Fig. 73: Heat pump motor wiring diagram

– Motor 1 – 2: 14.7 Ω (at 68 ºF)
– Motor 2 – 3: 14.7 Ω (at 68 ºF)
– Motor 3 – 1: 14.7 Ω (at 68 ºF)

5.7.1 Protection of heater if there's no water

Two NTC's protect the heater – both are checked by the control. The dishwasher runs without heating if:

- The heat pump detects the water level is too low (E:08 error code)...or
- The NTC resistances are outside of the acceptable range (E:11 error code).

Prerequisite:

- ✔ Customer service error code program has been run.
- ✔ An E:08 or E:11 error code has occurred.
- ✔ Power supply to dishwasher disconnected.

1. ⓘf An E:08 error code has occurred.
   - Check water inlet.
2. ⓘf An E:11 error code has occurred:
   - Check heat pump heater NTC's and wire harness.

5.8 Drain pump terminal measurements

Required tools:

Multimeter Digital multimeter VC 850K [15000062]

There is a single 3-pin connector, connecting to the 3-pole BLDC pump motor.

Prerequisite:

- Customer service error code program has been run.
- Error codes have been recorded.
- Power supply to dishwasher disconnected.

▸ To check drain pump, measure between terminals 1 - 2, 2 - 3 and 3 - 1.

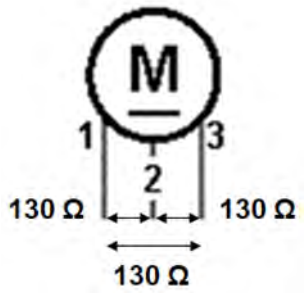


Fig. 74: Drain pump resistance measurements

– Pump motor 1 – 2: 130 Ω (@ 68 ºF)
– Pump motor 2 – 3: 130 Ω (@ 68 ºF)
– Pump motor 3 – 1: 130 Ω (@ 68 ºF)

➥ If resistances don't match 130 Ω, replace drain pump.

5.9 Water switch terminal measurements

Required tools:

Multimeter	Digital multimeter VC 850K	[15000062]

The 2-pin terminals connect to the single pole synchronous (exact speed) motor.
Water switch 1 – 2: ~ 1400 Ω (@ 68 ºF)

Prerequisite:

- Customer service error code program has been run.
- Error codes have been recorded.
- Dishwasher disconnected and pulled out→ *Page 76*

▸ To check the water switch motor, measure the resistance between terminals 1 – 2.
- If resistance isn't = 1400 Ω, replace water switch or water switch motor.

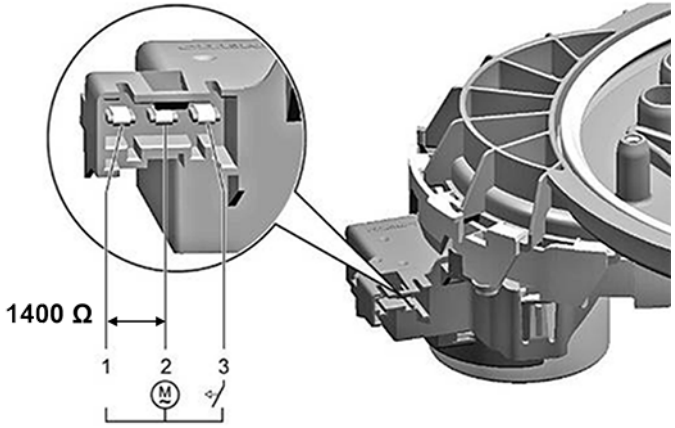


Fig. 75: Water switch wiring diagram - terminal location

6.1 Repair access chart

Check here to find how to access the part you wish to test or replace.

Part Serviced	Front Serviceable - No Pull Out Needed	Side / Front / Rear Serviceable - Pull Out Dishwasher	Bottom Service-able - Pull Out & Flip Dishwasher
Power module	-	Right side	-
Heat pump	-	-	X
Drain pump	-	Front	X
Operating module	Remove fascia panel	-	-
Fascia panel	X	-	-
On / off switch (where equipped)	Remove fascia panel	-	-
Dispenser	Remove outer door	-	-
Door latch sensor	Remove outer door	-	-
Door latch	-	Front	-
Filters / spray arms / fill tube	X	-	-
Door hinges	-	Both sides	-
Lower door seal	-	X	-
Float	-	Front	X
Water inlet system	-	Left side	-
Aqua sensor	-	Front	X
Terminal block (where hard-wired)	Located under sink	-	-
Water switch	-	-	X
Water inlet valve	-	Rear	-

6.1.1 Front access

Optional where needed for access:

- Remove outer door for dispenser and bottom front access.
- Remove inner door and base cover for bottom front access for parts such as aqua sensors, drain pumps and floats.

Prerequisite:

- ✔ Outer door removed→ *Page 79*
- ✔ Inner door removed→ *Page 92*
- ✔ Base cover removed→ *Page 88*

▸ Access door latch Hall Effect sensors (1), dispensers (2), operating modules (3) and fascia panels (4) from the front of dishwashers.

Fig. 76: Parts accessed from the front of dishwashers

Dishwashers don't need to be pulled out to access these parts.

6.1.2 Left side access

Prerequisite:

- ✔ Dishwasher disconnected and pulled out→ *Page 76*

▸ Access the water inlet control with condensation vent (1), drain hose (2), sump hose (3) and water inlet hose (4) from the left side of the dishwasher.

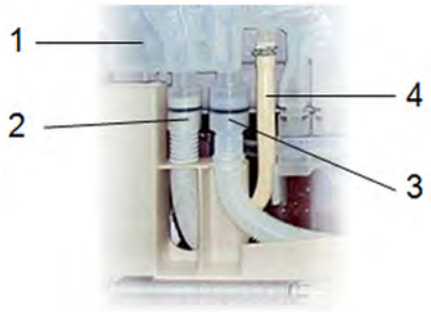


Fig. 77: Parts accessed from the left side of the dishwasher

6.1.3 Bottom front access

Required tools:

Torx T20 screwdriver		[00341279]
Phillips screwdriver PH2		
Pliers	160 mm	[00341142]

To provide better access for parts removed from the bottom front of dishwashers:

- Remove base cover to eliminate disconnecting and reconnecting all wire harnesses.
- Remove inner door only if needed for access.
- Remove lower door seal only if needed for access.

Prerequisite:

- Dishwasher disconnected and pulled out→ *Page 76*
- Outer door removed→ *Page 79*
- Toe panel removed→ *Page 87*
- Base cover removed→ *Page 88*
- Overflow trough removed→ *Page 94*
- Inner door removed→ *Page 92*
- Lower door seal removed→ *Page 95*

▸ Access parts such as aqua sensors, drain pumps and floats from the bottom front of the dishwasher.

6.2 Disconnecting and pulling out dishwashers

▸ Follow these instructions to pull out dishwashers for side or bottom front access.

6.2.1 Disconnecting and pulling out dishwashers

Required tools:

Phillips screwdriver PH2		
Pliers	160 mm	[00341142]
Gloves	Protective gloves	

Dishwashers have power cords which plug into the back of them, on the right side (viewing the front).

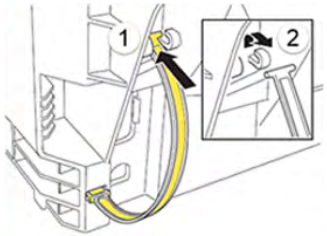
1. Remove base insulation (on models with insulation).
2. Disconnect dishwasher mounting brackets. Brackets can be top or side mounted.

3. Turn off water and disconnect water line at the water supply.

4. Turn off electricity and disconnect electric supply.

5. Disconnect drain line at the customer connection.

6. Slide out dishwasher and supply hoses / cords:
   1. Slide dishwasher out completely (below left).
   2. Disconnect supplies support strap (below center) by lifting top of strap up (1) and pulling it up and away from the base latch (2).
   3. Carefully pull out water supply hose, drain hose and power cord through cabinet access hole (below right).



Parts can now be accessed for repairs.

6.3 Flipping dishwashers

Required tools:

- Torx T20 screwdriver [00341279]
- Phillips screwdriver PH2
- Long screwdriver
- Gloves Protective gloves

Follow these instructions to flip dishwashers onto their backs for bottom access.

Prerequisite:

- Dishwasher disconnected and pulled out→ *Page 76*
- Toe panel removed→ *Page 87*
- Outer door removed→ *Page 79*
- Base cover removed→ *Page 88*
- Dishwasher completely slid out from under countertop.
- Base insulation removed (on models with front / rear base insulation).
- All water removed from dishwasher sump and hoses.

1. Remove both racks.

2. Remove the two (2) rear base screws.

3. Release door spring tension by disconnecting both hinge cords from their hinge levers and parking cords onto the base.
   1. To park the hinge cords onto the base, open the door and place the hinge cord notches onto the base housing flange. Close the door to slide both hinge levers out from hinge cords.

   2. If parking hinge cords isn't sufficient (to release spring tension), remove both door spring clips, door springs and cords from the base.

4. Unlatch front base latches from both hinge plates and slide the base off of the hinge plates.



5. **Caution**

Sharp edges on the retaining tabs!
Cut injuries
- Wear protective gloves.

Place a pad or cardboard on the floor and carefully flip the dishwasher onto its back.

6. Carefully remove the base from the dishwasher tub.


7. **Caution**

Sharp edges on the sump!
Cut injuries
- Wear protective gloves.

Once the base is removed, all bottom accessible parts are accessible.

6.4 Replacing outer doors

Required tools:

Torx T20 screwdriver [00341279]

Removing the outer door is needed for front access and for bottom access / flipping dishwashers on their backs. For most dishwashers, the short bottom six (6) screws hold outer doors.

Danger

Risk of electric shock due to live parts!
Death by electrocution
- Disconnect appliances from electrical supply at least 60 seconds before starting repairs.

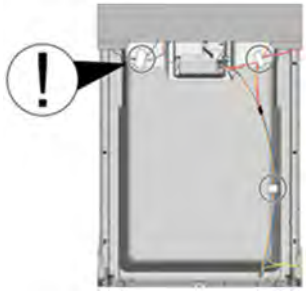
Prerequisite:

Power supply to dishwasher disconnected.

1. Remove six (6) short T20 Torx inner door screws below fascia panel – three per side (below).

2. **Notice**

Cutting wire harnesses while removing / installing outer doors.!
Causing short circuits that can damage controls or cause electric shock.
- Remove / install outer doors carefully to insure harness wires and insulation aren't cut.
- After removing outer doors, check wires and insulation to make sure they're not cut or pinched. Carefully retape harnesses as needed to eliminate any slack.



Carefully pull bottom of outer door out from dishwasher until top door tabs clear, then pull door down until it releases from dishwasher (below). Take care to not scratch outer door.

3. Install in reverse order.

6.5 Replacing fascia panels

Required tools:

Torx T20 screwdriver [00341279]

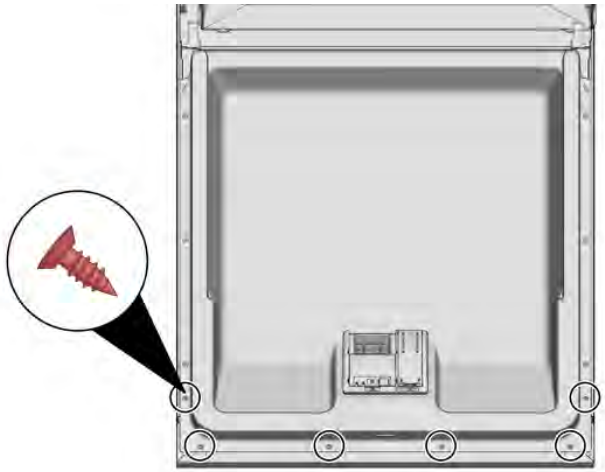
Fascia panels and outer doors are both removed by removing inner door screws. For most dishwashers, the top four (6) screws hold the fascia panel, except for the two (2) small small screws holding the door latch (Hall Effect) sensor.

	Outer doors don't need to be removed for front button (SHE / SHEM) models.

Prerequisite:

- Power supply to dishwasher disconnected.
- Outer door removed→ *Page 79*

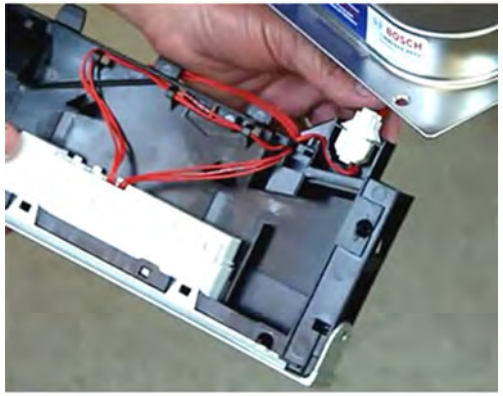
1. Remove fascia panel by removing six (6) fascia panel screws from top of inner door.



Screws can be different sizes - note sizes of screws for screw locations when removing them.

2. Lift fascia panel out from door. Be careful to not damage wire harnesses. The slightly longer six (6) fascia screws are different than the shorter six (6) outer door screws, so don’t mix screws when removing both fascia panel and outer door.

3. Disconnect wire harnesses.



Fascia panels can now be removed from dishwashers.

4. Install in reverse order.

6.6 Replacing operating modules

Required tools:

Torx T20 screwdriver		[00341279]
Slotted screwdriver	Blade 4 mm x 0.8 mm x 100 mm, only China	[00342443]

STOP **Before** replacing operating modules:

- **Check error codes before replacing operating modules.** Many good modules have been replaced and faulty parts not replaced, causing repeat calls.
- **75% of modules returned for analysis have checked out OK.** Most issues are due to loose connections and error codes for other parts.

Only remove outer door if needed to remove fascia panel.

Prerequisite:

- Customer service error code program has been run.
- Error codes have been recorded.
- Power supply to dishwasher disconnected.
- Fascia panel removed→ *Page 80*

6.6.1 Removing front button modules

1. Disconnect short wire harnesses from module and on/off switch.


2. Remove handle trays before removing modules. To remove handle trays, carefully pry in plastic clips.


3. Remove modules by carefully prying clips from one side to the other (below left) and gently lifting modules up as you pry clips.


4. Install in reverse order.

6.7 Replacing door latches and sensors

Required tools:

Magnet	Permanent magnet	

The door latch is mounted on top of the tank and contains a magnet, not a microswitch. A Hall effect sensor in the door senses the magnet when the door is closed.

Before replacing the latch or sensor, check if the latch is misaligned and cannot be read by the sensor by checking the sensor with a magnet. If the dishwasher runs when the magnet is held above the left screw of the sensor (see below), the sensor is OK -- adjust the door, door latch or door seal.

Fig. 78: Checking door latch sensor with a magnet

Prerequisite:

- Door latch sensor checked with a magnet (see above).

6.7.1 Removing door latch Hall Effect sensors

Required tools:

Torx TX10 bit with hole, long	6.3 mm (1/4") 89 mm , for screws with safety pin	[00341231]
Torx T20 screwdriver		[00341279]
Slotted screwdriver	Blade 4 mm x 0.8 mm x 100 mm, only China	[00342443]

Prerequisite:

- Power supply to dishwasher disconnected.
- Outer door removed→ *Page 79*
- Fascia panel removed→ *Page 80*

1. Disconnect wire harness from sensor.

2. To remove sensor, open door and remove (2) T10 Torx screws from the top center of the door.

3. Install in reverse order.

6.7.2 Removing door latches

Required tools:

Pliers	160 mm	[00341142]
Slotted screwdriver	Blade 2.4 mm x 0.4 mm x 60 mm, in the kit [00341820]	
Torx T20 screwdriver		[00341279]

When replacing a door latch:

- Make sure the door latch is aligned, is held securely and the sensor detects the door latch magnet.
- Misaligned latches can prevent dishwashers from starting. If the dishwasher won't start, check door latch alignment.
- Only disconnect and pull out dishwasher enough to clear door latch.

Prerequisite:

- Dishwasher disconnected and pulled out→ *Page 76*

1. Lift off upper door seal.

2. Carefully pry tub clamp ears away from door latch.

3. To remove door latch, carefully unlatch front tab with a small screwdriver, lift latch up and forward (until rear tab clears) and lift latch up from dishwasher tub.

4. Install in reverse order.

6.8 Replacing dispensers

Required tools:

Torx T20 screwdriver		[00341279]
Slotted screwdriver	Blade 4 mm x 0.8 mm x 100 mm, only China	[00342443]
Gloves	Protective gloves	

- Although many dispenser components can be replaced, it's quicker to replace the entire dispenser.
- Dispensers are easily removed from inner doors by removing outer doors.

Prerequisite:

- Power supply to dishwasher disconnected.
- Outer door removed→ *Page 79*

6.8.1 Removing dispensers

1. Remove outer door.
2. Disconnect both wire harnesses from dispenser, after noting connector locations (1, 2).
   1. Before disconnecting harnesses, note how harnesses are taped to the inner door to aid reconnection.
   2. Peel back tape far enough to free harnesses, but don't remove tape.

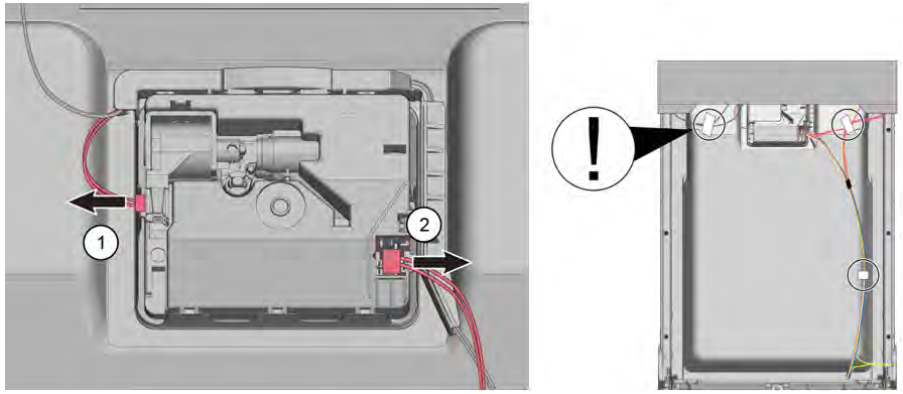


Fig. 79: Disconnecting both dispenser harnesses

3. Remove dispenser cable guide (1).
   - If not done previously, peel back tape far enough (to provide slack) to free cable guide.

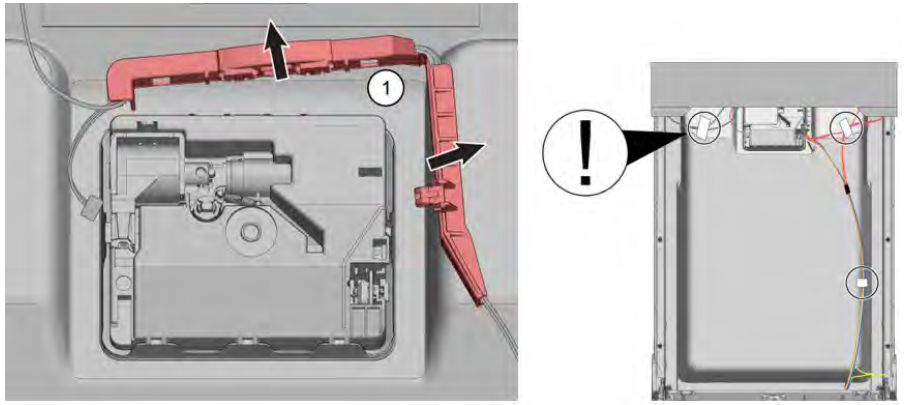
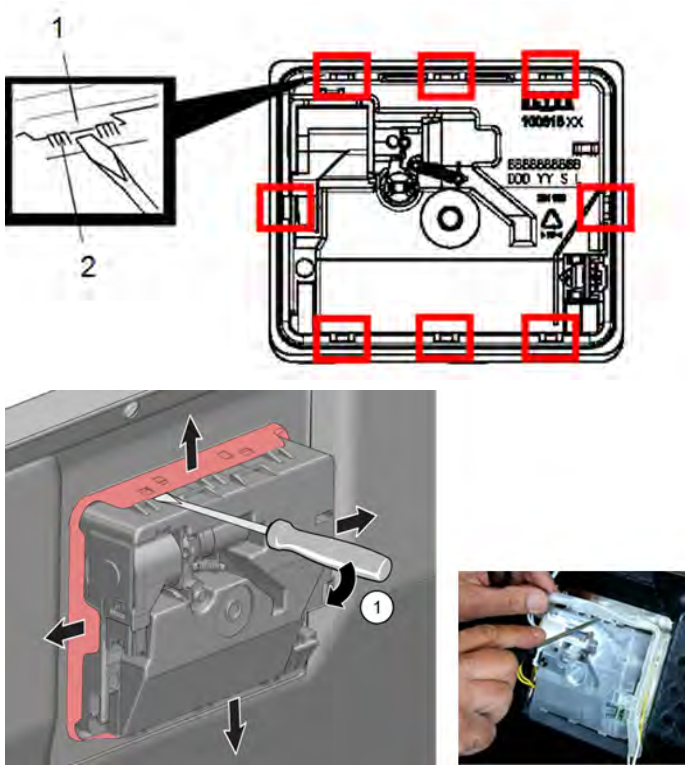


Fig. 80: Removing dispenser cable guide

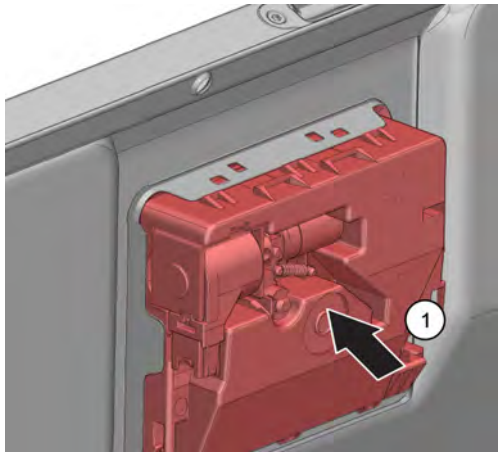
4. Carefully pry inner door flanges (1) away from the 8 locking tabs on the top, sides & bottom of the dispenser (2).



5.

	**⚠ Caution** **Sharp edges on the retaining tabs!** Cut injuries ► Wear protective gloves.

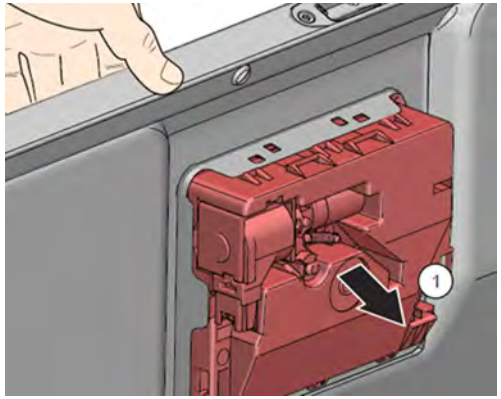
Carefully push faulty dispenser through the inner door (i.e. toward the dishwasher tub).



6.8.2 Installing dispensers

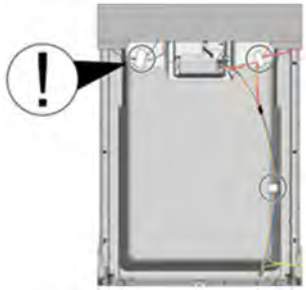
1. If inner door flanges have been bent too far, bend them so they can snap into dispenser tabs.

2. Carefully push replacement dispenser through the inner door (i.e. from the dishwasher tub toward the front of the dishwasher).
   - Snap inner door flanges into dispenser tabs until all are locked in.



	To aid installation, coat dispenser seal with rinse-aid.

3. Reconnect dispenser wire harnesses.
4. Reinstall dispenser cable guide.
5. Retape harnesses to inner door.



6. Reinstall outer door.

6.9 Replacing toe panels

Required tools:

- Phillips screwdriver PH2
- Torx T20 screwdriver [00341279]

- Depending on the model, there is a 1-piece steel toe panel with or without the need for brackets. Some older models had a 2-piece plastic / steel toe panel. Follow the instructions for each type.
- Removing toe panels aren't necessary for left / right side access, rear access or for flipping dishwashers on their backs.
- Remove outer door only if necessary for access.

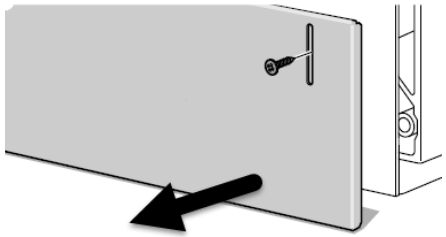
Prerequisite:

- None.

6.9.1 Removing 1-piece steel toe panels

Removing toe panels aren't necessary for left / right side access, rear access or for flipping dishwashers on their backs.

1. Remove two (2) Phillips #2 screws and tilt bottom of toe panel out and up from dishwasher (below). Save screws for reuse.



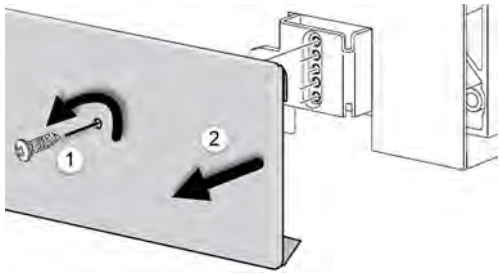
   – Toe panels can have vertical slots or vertically stacked horizontal slots.
   – These 1-piece steel toe panels don't need or have mounting brackets.
   – 1-piece toe panels were used until around FD 9906 or so, depending on the model, replaced by 1-piece toe panels with brackets.

2. Install in reverse order.

6.9.2 Removing 1-piece steel toe panels with brackets

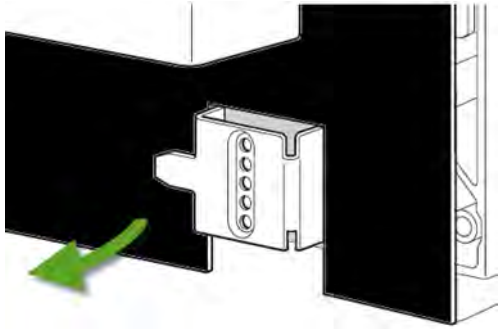
- Don't remove the outer door to avoid disturbing the self-adhesive rubber apron.
- Starting around FD 9906, depending on the model, 1-piece toe panels with brackets were used on most models, including those without rubber aprons.

1. Where decorative screw caps are used, remove and save them for reuse.
2. Remove two Phillips #2 screws (1) and tilt bottom of 1-piece steel toe panel out and up from dishwasher (2). Save screws for reuse.



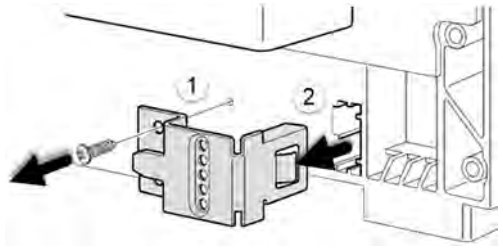
   – Toe panels have two single holes, one on each end, for use with mounting brackets. Panels cannot be mounted without brackets.
   – Don't remove brackets unless they're damaged.

3. If brackets need to be replaced, fold rubber apron up and away from brackets (for models with rubber aprons).



   Aprons are attached to outer doors by a self-adhesive strip. Removing aprons can make the adhesive less effective, so don't remove aprons from doors.

4. To remove brackets, unscrew mounting screws (1) and slide brackets out from the base (2).



5. Install in reverse order.

6.10 Replacing base covers

Required tools:

Torx T20 screwdriver		[00341279]
Phillips screwdriver PH2		
Pliers	160 mm	[00341142]

Prerequisite:

- Toe panel removed→ *Page 87*
- Outer door removed→ *Page 79*

6.10.1 Removing base covers

1. Remove base insulation (on models with insulation).
2. Remove two (2) base cover screws.
3. Tilt top of base cover forward and lift up until slots clear base.

6.10.2 Installing base covers

1. Insert slots onto base.
2. Tilt top of base cover toward base and fasten with two (2) screws.

6.11 Replacing door springs

Required tools:

- Torx T20 screwdriver [00341279]
- Phillips screwdriver PH2
- Needle-nose pliers, straight pattern
- Hammer Rubber / wooden mallet, steel hammer

Fig. 81: Door spring system

Door springs have a color coded “dot” corresponding to each specific spring tension.

Door springs / cords can be replaced for the following repairs:

- Changing spring tensions for lighter / heavier wooden (fully integrated) door panels
- Doors drifting open / not holding position
- Doors closing on their own / failing to stay open
- Broken cords / holders / springs

	When replacing springs: ■ Replace all parts – do not reuse existing parts. ■ Replace both sides using the same (tension) springs. ■ Install plastic spring clips. ■ Install plastic spring guides.

Prerequisite:

- Dishwasher disconnected and pulled out→ *Page 76*
- Outer door removed→ *Page 79*

6.11.1 Removing door springs

1. Disconnect hinge cords from hinge levers.
   1. Release spring tension by opening door and moving both hinge cords from hinge levers to the base, parking cord notches onto base flanges.
   2. Close the door to slide hinge levers out from hinge cords.

Fig. 82: Parking hinge cords onto base flanges

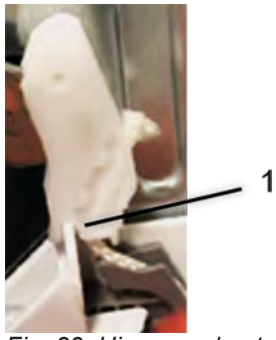


Fig. 83: Hinge cord notch (1)

   This replaces pulling up hinge cords from hinge levers with needle nose pliers.

2. For easier spring removal, remove sliding pulleys with cords out from the base. Rotate pulleys toward the front of the dishwasher to clear base latches (below left), then pull pulleys with cords out from the base (below right).

3. Using needle nose pliers, pull onto spring brackets to slide door springs out from the base.

4. Carefully pull spring guides away from springs.

6.11.2 Door spring chart

Use the following chart to choose replacement door springs if existing springs are too strong / not strong enough for customer wooden panels.

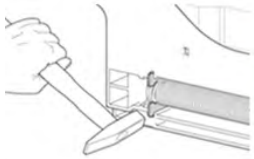
Spring Color	Spring Force / Length	Part #	Wooden Panel Weight	Application
-	Strongest to weakest			-
Light blue	Strongest	[00623843]	18 - 25 lbs. (8.1 - 11.3 kg)	Use if pink springs not strong enough
Pink	Strong	[00611340]	14 - 18 lbs. (6.3 - 8.1 kg)	Fully integrated models
Green	Moderately strong	[00611339]	10 - 14 lbs. (4.5 - 6.3 kg)	Use if pink springs too strong
Black	Fairly strong	[00611338]	7 - 10 lbs. (3.2 - 4.5 kg)	Use if green springs too strong
Blue	Fairly weak	[00611337]	5.5 - 7 lbs. (2.5 - 3.2 kg)	Evolution / Integra
Red	Weak	[00611336]	-	Evolution / Integra

	Service calls have occurred from customers with dishwasher doors without wooden panels installed. Door springs are chosen to support the weight of most wooden panels – doors without panels are too light and close on their own.

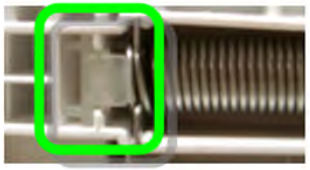
6.11.3 Installing door springs

Fig. 84: Door spring with cord

1. Reinstall left and right pulleys.
2. Snap spring guides onto replacement springs.
3. To install both springs into bases, tap brackets into base slots.



4. Insert plastic spring clips into bases.



5. Insert cord ends into ends of both springs, making sure they’re seated properly.


6. Thread cords through pulleys. Using the parking position, slide cord holders onto hinge levers. Make sure cords are not damaged during installation.

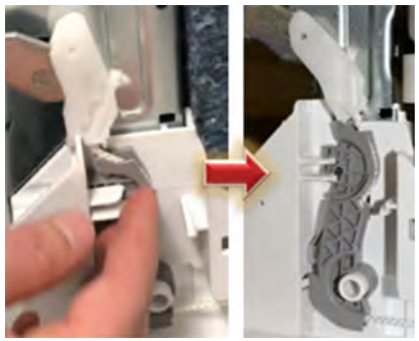


Fig. 85: Reconnecting hinge cord and hinge lever

7. Install outer door, slide dishwasher into place, reconnect any disconnected electrical / water supplies and install mounting brackets.
   - It’s good practice to replace both sides at the same time using the same springs and cords. Spring tensions must be matched for doors to open / close properly.
   - Many service calls have occurred from customers with dishwasher doors without wooden panels installed. Door springs are chosen to support the weight of most wooden panels – doors without panels are too light and close on their own.

6.12 Replacing inner doors

Required tools:

Torx T20 screwdriver		[00341279]
Phillips screwdriver PH2		
Pliers	160 mm	[00341142]
Gloves	Protective gloves	
Replacement serial label	When inner doors are replaced	[00618453]

- Inner doors have serial labels affixed & need replacement labels to keep model / serial #'s.
- Inner doors are removed to access lower door seals and hinge levers.
- Only pull out dishwashers enough to clear hinges.
- Remove and set aside fascia panels to avoid disconnecting wire harnesses.
- Remove dispensers & replace labels if replacing inner doors.

Prerequisite:

- Blank replacement serial label [00618453] obtained & model / KI / serial #'s gathered.
- Dishwasher disconnected and pulled out→ *Page 76*
- Outer door removed→ *Page 79*
- Fascia panel removed→ *Page 80*
- Dispenser removed→ *Page 84*
- Toe panel removed→ *Page 87*
- Base cover removed→ *Page 88*
- Overflow trough removed→ *Page 94*

6.12.1 Removing inner doors

Video tutorial

1. Unscrew ground harness from right hinge plate.

2. Disconnect hinge cords from hinge levers.
   1. Release spring tension by opening door and moving both hinge cords from hinge levers to the base, parking cord notches onto base flanges.
   2. Close the door to slide hinge levers out from hinge cords.

Fig. 86: Parking hinge cords onto base flanges

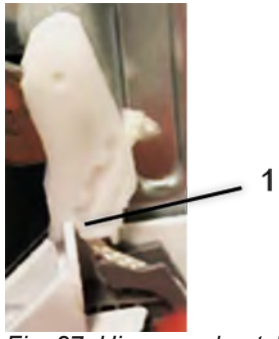


Fig. 87: Hinge cord notch (1)

This replaces pulling up hinge cords from hinge levers with needle nose pliers.

3.

⚠ Caution

Sharp edges!
Cut injuries
- ▶ Wear protective gloves.
- ▶ Wear protective sleeves.

Remove two (2) hinge screws on both sides of inner door and slide inner door out.

– Use care removing the inner door as the bottom of it is sharp.
– The bottom screws (closest to the hinge) also hold the lower door seal.

4. If the lower door seal sticks to the inner door, separate the seal from the door by hand.

5. Install in reverse order.

6.12.2 Replacing serial label onto replacement inner door

When inner doors are replaced, dishwashers cannot be identified since their serial labels are attached to the inner doors being replaced.

1. Instruct customers to write their model and serial #'s in their Use & Care manuals.
2. Order blank service replacement serial label [00618453], legibly write the model / serial #'s and ratings on it using permanent ink and affix it to the replacement inner door (on the right side where the original label was on the original inner door).

6.13 Replacing overflow troughs (channels)

Required tools:

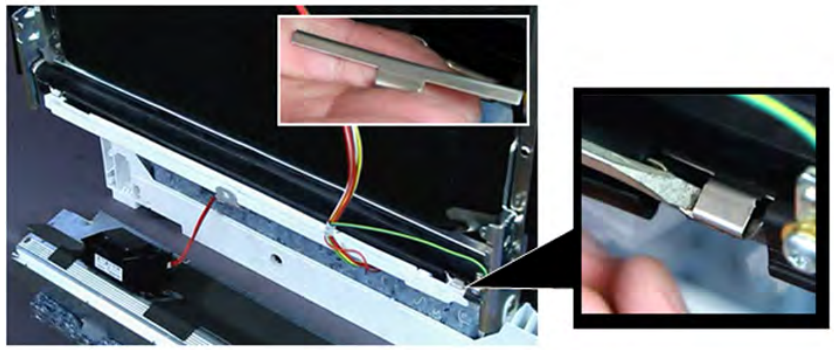
- Phillips screwdriver PH2
- Slotted screwdriver — Blade 4 mm x 0.8 mm x 100 mm, only [00342443] China

Only pull out dishwashers enough to clear hinges.

Prerequisite:

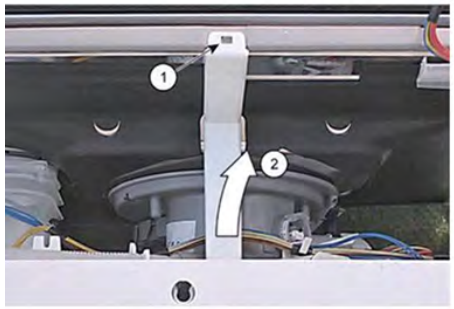
- Dishwasher disconnected and pulled out→ *Page 76*
- Toe panel removed→ *Page 87*
- Outer door removed→ *Page 79*
- Base cover removed→ *Page 88*

1. Pry off clips at each end of the overflow trough.



Save clips for reuse.

2. Carefully pry support from tab on trough (1) and lift support out and away from dishwasher (2).



3. Carefully lift trough up and away from dishwasher.

4. Install in reverse order.

6.14 Replacing lower door seals

Video tutorial

Required tools:

Torx T20 screwdriver		[00341279]
Phillips screwdriver PH2		
Pliers	160 mm	[00341142]
Gloves	Protective gloves	

- Only pull out dishwashers enough to clear hinges.
- The lower door seal is attached by two of the four inner door screws. It is often removed along with the inner door.
- Remove and set aside fascia panels to avoid disconnecting and reconnecting wire harnesses.
- Note where each harness is taped to make sure harnesses are reconnected and retaped correctly.

Fig. 88: Lower door seal

⚠ Caution

Sharp edges!
Cut injuries
- ▸ Wear protective gloves.
- ▸ Wear protective sleeves.

Prerequisite:

- Dishwasher disconnected and pulled out→ *Page 76*
- Outer door removed→ *Page 79*
- Fascia panel removed→ *Page 80*
- Wire harnesses disconnected from dispenser (after noting connections) and untaped from inner door.
- Toe panel removed→ *Page 87*
- Base cover removed→ *Page 88*
- Overflow trough removed→ *Page 94*
- Inner door removed→ *Page 92*

1. If the lower door seal sticks to the tub, carefully separate the seal from the tub by hand.

After the inner door has been removed, the lower door seal will be loose since its two (2) screws were removed when the inner door was removed.

2. Remove lower door seal.

   – Use care removing the inner door as the bottom of it is sharp.
   – The bottom screws (closest to the hinge) also hold the lower door seal.
3. Install in reverse order.

6.15 Replacing door hinge levers

Required tools:

Torx T20 screwdriver		[00341279]
Phillips screwdriver PH2		
Pliers	160 mm	[00341142]

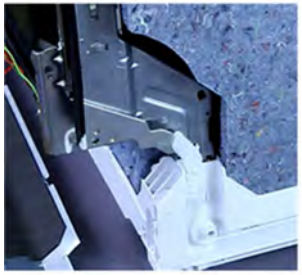


Fig. 89: Hinge lever location

Removing the inner door includes disconnecting hinge levers from inner door and hinge cords.

Prerequisite:

Inner door removed→ *Page 92*

1. Remove right hinge ground wire.

2. Pry open hinge bushing latches and lift hinge levers from hinge plates. Replace hinge bushings as they shouldn't be reused.

3. Install in reverse order.

6.16 Replacing power modules

Required tools:

- Phillips screwdriver PH2
- Slotted screwdriver — Blade 4 mm x 0.8 mm x 100 mm, only [00342443] China

The power module can be accessed from the right side of the dishwasher after pulling it out.

STOP **Before** replacing power modules:

- **Check error codes before replacing power modules.** Many good power modules have been replaced and faulty parts not replaced, causing repeat calls.
- **75% of modules returned for analysis have checked out OK.** Most issues are due to loose connections and error codes for other parts.

Technicians occasionally ask to identify power modules from 10-digit material #'s, which **cannot** be done:

- Due to iService, programmed power module part #'s cannot be identified from 10-digit material #'s.
- 10-digit material #'s are linked to unprogrammed power modules, used for dozens of programmed modules.
- Power module part #'s cannot be identified without model, KI and FD #'s from serial labels.

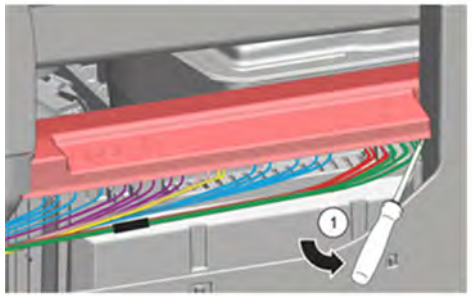
Prerequisite:

- Customer service error code program has been run.
- Error codes have been recorded.
- Dishwasher disconnected and pulled out→ *Page 76*

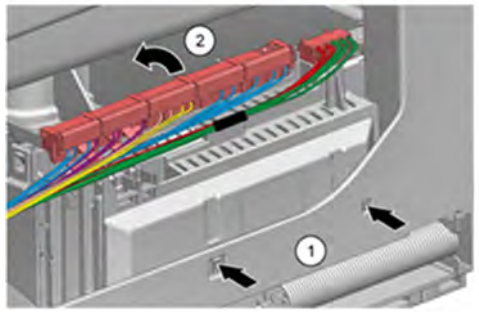
1. Disconnect hose strap (1) and unplug power supply cord (2) from rear of power module.

2. Lift off tub fleece insulation from right side of dishwasher.

3. While pushing down on left side of power module cover, lift up right side of cover to remove cover from power module.

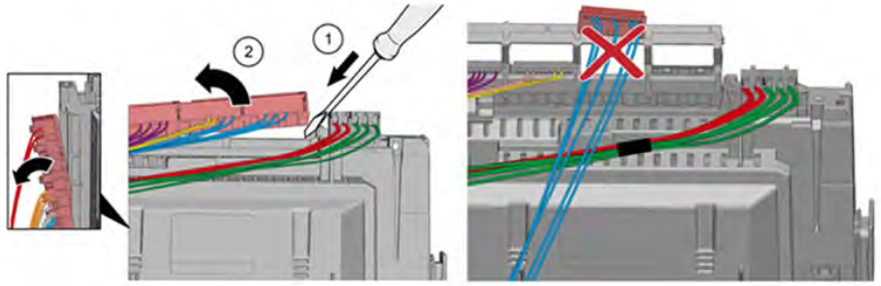


4. To remove power module, (1) gently pry base tabs until they clear module and (2) lift module up from base.



Two plastic base tabs hold power module in place.

5. Disconnect top / side wire harnesses from power module, making sure to remove connectors with their cable guides, not individually. Gently pry up one end of cable guide (1) and lift cable guide with connectors from power module (2).



6. Save cable guides - don't remove them from wire harnesses.

Replacement cable guides are included with main wire harnesses and are not available separately.

7. Install in reverse order.

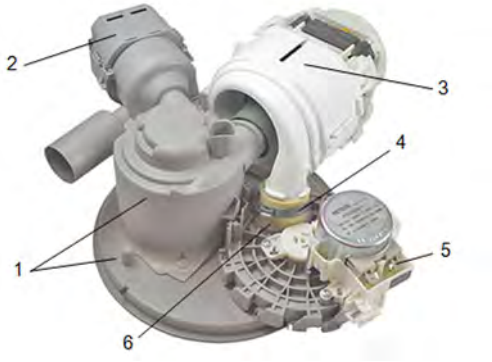
6.17 Replacing heat pumps

Video tutorial

Required tools:

Hose clamp	inner diameter 28 mm - 39 mm	[00172272]
Torx T20 screwdriver		[00341279]
Phillips screwdriver PH2		
Slotted screwdriver	Blade 4 mm x 0.8 mm x 100 mm, only China	[00342443]
Diagonal cutting nipper		
Blanket or towel		

Heat pumps (3) are best accessed from the bottom of dishwashers by flipping them on their backs. Use the same process to access water switches (5) and sumps (1).



	Standard hose clamp [00172272] is needed when heat pumps are being removed, not replaced, since replacement heat pumps already include it.

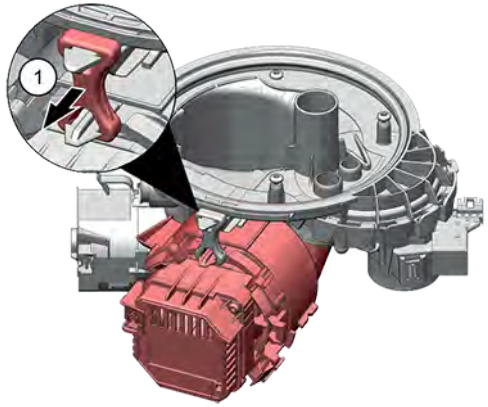
Prerequisite:

- Dishwasher disconnected and pulled out→ *Page 76*
- Dishwasher flipped onto its back→ *Page 77*
- Hose clamp [00172272] provided

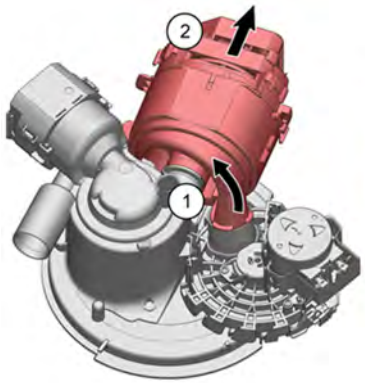
1. Cut or twist off hose clamp to separate pump from adapter.

   – Production hose clamps require a special tool for assembly / disassembly, but can be readily removed with diagonal cutters or pliers. Once removed in this way, they **cannot** be reused.
   – Replacement heat pumps come with hose clamps.
   – When heat pumps are removed (for access for other repairs), not replaced, [00172272] hose clamps must be sourced separately since existing clamps cannot be reused.

2. Disconnect motor support strap (1).



3. To remove the heat pump, rotate it clockwise (cw) to clear the pump adapter (1), then slide it off of the sump (2).



The seal ring can't be field removed from the heat pump.

4. For dishwashers built FD 0004 (April 2020) and later, remove heater terminal cover and keep for reuse.

If lost or damaged, it must be replaced.

5. Disconnect the two pump wire harnesses, after noting connections (below left). To remove the small connector for the sensor harness with black wires, unlatch it from its terminal (below right).

6. If necessary, remove the adapter by removing four screws.

7. Install in reverse order.
8. When reinstalling the heater terminal cover, simply snap it into place.

If lost or damaged, it must be replaced.

6.18 Replacing drain pumps

Video tutorial

Required tools:

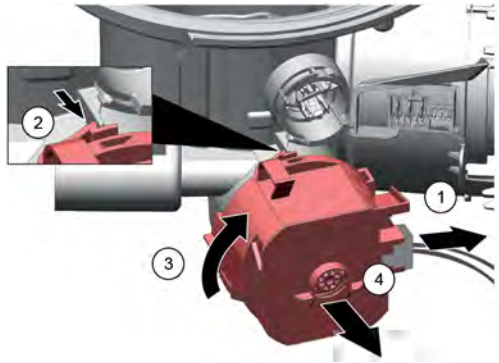
- Phillips screwdriver PH2
- Pliers 160 mm [00341142]
- Torx T20 screwdriver [00341279]

- Access the drain pump from the front of the dishwasher base by removing the toe panel and base cover.
- Only pull out dishwashers enough to clear hinges.

Prerequisite:

- Dishwasher disconnected and pulled out→ *Page 76*
- Toe panel removed→ *Page 87*
- Base cover removed→ *Page 88*

1. Disconnect the wire harness from the drain pump (step 1 below).
2. Remove the drain pump from the sump by lifting the latch (2), rotating the pump clockwise (3) and pulling the pump out (4).



3. Install in reverse order.

6.19 Replacing water switches

Video tutorial

Required tools:

Hose clamp	inner diameter 28 mm - 39 mm	[00172272]
Diagonal cutting nipper		
Phillips screwdriver PH2		
Slotted screwdriver	Blade 4 mm x 0.8 mm x 100 mm, only China	[00342443]
Torx T20 screwdriver		[00341279]
Blanket or towel		

Standard hose clamp [00172272] is needed when heat pumps are being removed, not replaced, since replacement heat pumps already include it.

Prerequisite:

- Dishwasher disconnected and pulled out→ *Page 76*
- Dishwasher flipped onto its back→ *Page 77*
- Hose clamp [00172272] provided
- Heat pump removed→ *Page 100*

1. To only remove water switch motor assembly, remove three (3) screws and lift it from the sump.

If removing the entire water switch, omit this step.

2. To remove the water switch, unlatch the water switch housing from the sump using a small flat blade screwdriver, rotate the housing counter-clockwise and lift it out from the sump.

Removing the heat pump may be needed to gain access to remove the water switch.

3. This is what parts look like when removed.

4. Install the replacement water switch in reverse order.

To aid installation, coat water switch O-ring with rinse-aid.

6.20 Replacing drain check valves

Required tools:

Torx T20 screwdriver		[00341279]
Slotted screwdriver	Blade 4 mm x 0.8 mm x 100 mm, only China	[00342443]
Phillips screwdriver PH2		

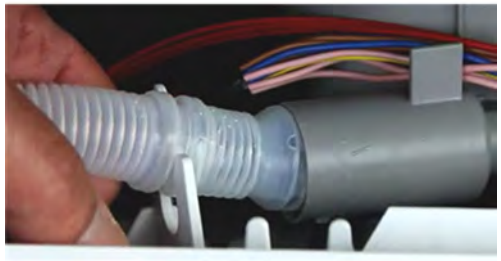
The drain check valve is located in the sump connector to the drain hose.

Prerequisite:

- Bottom front access

6.20.1 Removing drain check valves

1. Remove water completely from sump.
2. Disconnect drain hose from sump.

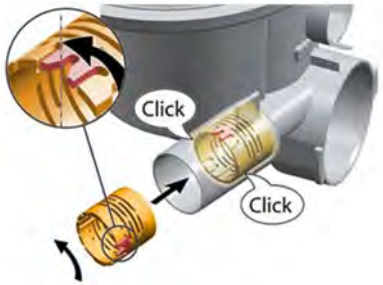


3. Using a small flat blade screwdriver, carefully work the drain check valve out from the sump.

To avoid leaking, do not scratch the inside of the sump outlet.

6.20.2 Installing drain check valves

- Align the notch of the replacement drain check valve with the top of the sump, then carefully slide the valve into the sump outlet until it clicks.



6.21 Replacing aqua sensors

Required tools:

- Torx T20 screwdriver [00341279]
- Phillips screwdriver PH2
- Pliers 160 mm [00341142]

- Access the aqua sensor (3) from the front of the dishwasher base by removing the toe panel and base cover.
- Only pull out dishwashers enough to clear hinges.

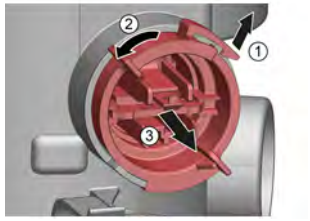
Prerequisite:

- Dishwasher disconnected and pulled out→ *Page 76*
- Outer door removed→ *Page 79*
- Toe panel removed→ *Page 87*
- Front base insulation removed.
- Base cover removed→ *Page 88*

6.21.1 Removing aqua sensors

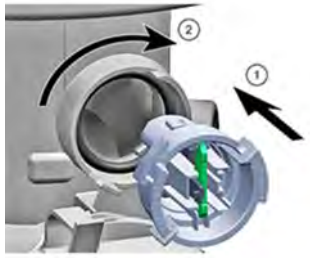
1. Disconnect aqua sensor wire harness.

2. Lift up housing latch (1), twist aqua sensor counter-clockwise (2) and pull aqua sensor out from sump (3).



6.21.2 Installing aqua sensors

- Insert aqua sensor into the sump with its pc board vertical (1), then rotate it clockwise (cw) until it locks into place (2).



Apply some rinse-aid onto the aqua sensor O-ring to lubricate it for easier installation.

6.22 Replacing water inlet valves

Required tools:

Slotted screwdriver	Blade 4 mm x 0.8 mm x 100 mm, only China	[00342443]
Pliers	160 mm	[00341142]

6.22.1 Removing water inlet valves

Access the water valve from the rear of the dishwasher base by pulling out the dishwasher.

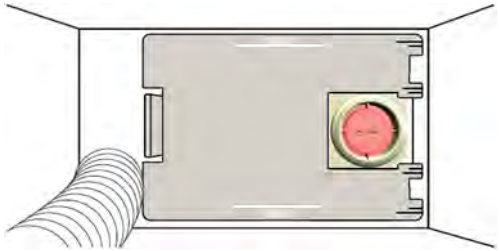


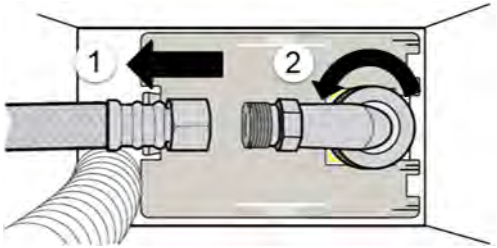
Fig. 90: Location of water inlet valve

Prerequisite:

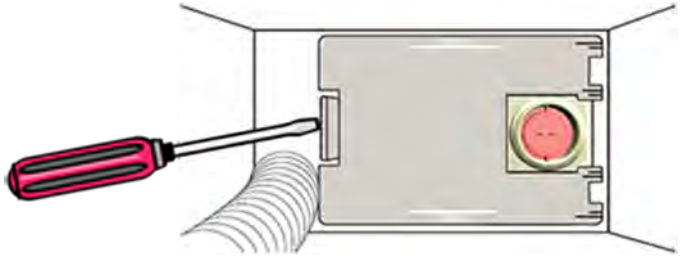
- Dishwasher disconnected and pulled out→ *Page 76*

1. To gain slack to pull out water valve, loosen hose clamp from water inlet hose and pull water inlet hose from water inlet control.

2. Unscrew supply hose (1) and adapter (2) from water valve.



3. Push valve holder latch to right and carefully pull water valve and valve holder away from base.



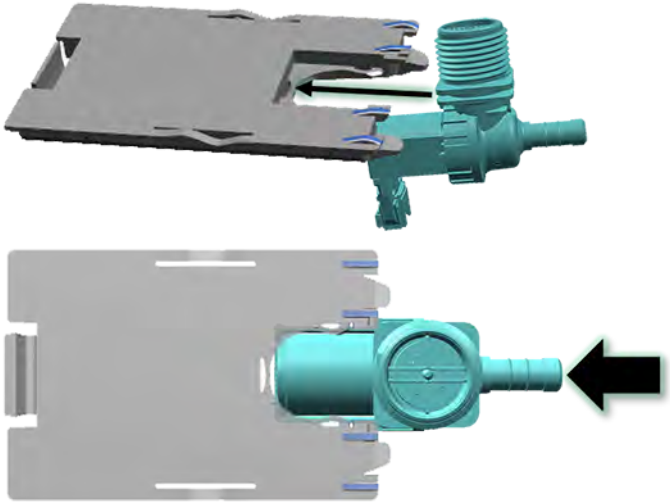
4. Slide valve holder (to the left) away from water valve.
5. Disconnect wire harness from water valve.

6. Loosen hose clamp and disconnect water inlet hose from rear of valve.

7. Remove any water from sump and base.

6.22.2 Installing water inlet valves

▸ Install in reverse order.



– When installing new water valve, slide groove in valve flange into holder until the valve snaps in securely. The holder has springs on three sides to lock water valve in place.
– When installing water valve and holder, tilt tabs on right side of holder into base and snap latch (at left side of holder) into base.

	Reconnection hints: ■ Water connection: ¾” garden hose female. Inlet water pressure range: 5 - 120 psi (0.3 – 8.27 bars). ■ When reconnecting the water supply hose to the water valve, don’t overtighten the elbow fitting. Hand tighten snugly. ■ If water supply hose seal doesn't seat properly, use Teflon tape on water fitting to prevent leaking.

6.22.3 Water valve connection issues

Some installation issues have occurred with water inlet valves.

6.22.3.1 Cross-threaded or stripped threads

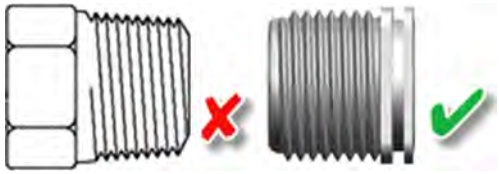


Fig. 91: NPT threads (wrong, left) compared with hose threads (correct, right)

Some installers / customers have cross-threaded / stripped valve threads or used wrong connectors (e.g. ¾" NPT instead of ¾" hose fittings), resulting in E:15 error codes from leaking.

- When customers complain of water leaking from tubs, check water inlet valves for cross-threaded / stripped threads - don't assume leaks are due to leaky tubs.
- Replace water inlet valves with cross-threaded or stripped threads.
- Instruct installers / customers to use ¾” garden hose connectors / fittings, not ¾” NPT, as NPT threads can strip / cross-thread plastic water valve threads. NPT fittings have fine, tapered threads designed to wedge / grind together to prevent leaking without gaskets and are often used in automotive / hydraulic applications.

6.22.3.2 Plastic filters removed

Fig. 92: Water valve with missing filter and loose flow restrictor

Some installers / customers have removed water valve filters, thinking they were removable plugs / caps, dislodging or losing water flow restrictors, generating E:17 error codes from excessive inlet water pressure.

- Plastic filters hold flow restrictors in place - when filters are removed, flow restrictors come loose.
- There are **no** covers or parts to be removed from water inlet valves.
- Replace water inlet valves with missing plastic filters.

Fig. 93: Intact water valve with filter

6.22.3.3 Substituting inlet hose gaskets

Rigid plastic gaskets / washers / seals in many (braided) inlet hoses are meant for metal water inlet valves, not plastic valves.

- Some installers / customers have overtightened hoses, causing leaking by cracking water valves.
- Some installers / customers have overtightened hoses, causing leaking by damaging rigid plastic hose gaskets.
- Replace original rigid plastic gaskets (in inlet hoses) with soft rubber gaskets and don't overtighten hoses onto water valves.
- Replace cracked water valves and damaged gaskets.

Fig. 94: Damaged rigid plastic gasket

Fig. 95: Replacement soft rubber gasket

6.23 Replacing water inlet controls

Required tools:

- Torx T20 screwdriver [00341279]
- Phillips screwdriver PH2
- Pliers 160 mm [00341142]

The water inlet control is easily accessed from the left side of the dishwasher. It includes a condensation vent, so there's no separate condensation tube. The water inlet, sump and drain hoses all connect to it.

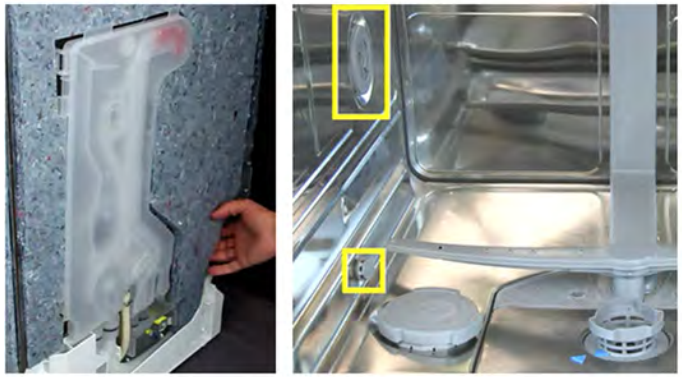


Fig. 96: Location of water inlet control

Prerequisite:

- Dishwasher disconnected and pulled out→ *Page 76*

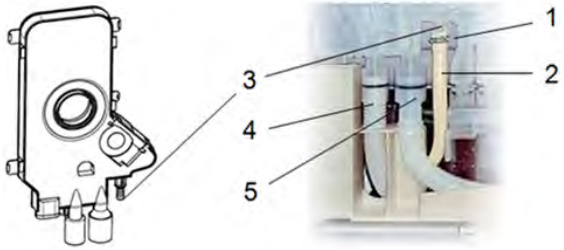
1. Remove lower rack. If more space is needed, remove the upper rack as well.

2. Unscrew water inlet ccw (counterclockwise) from inside of tub.

3. Unscrew condensation vent cap ccw (counterclockwise) from inside of tub.

4. Remove side insulation.

5. Loosen hose clamp (1) from water inlet hose (2) and pull water inlet hose from water inlet (3, below).



6. Pull out drain (4) and sump (5) hoses from water inlet control (above).
7. Pull out water inlet control from tub.

8. Install in reverse order.

6.24 Replacing floats (safety systems)

Required tools:

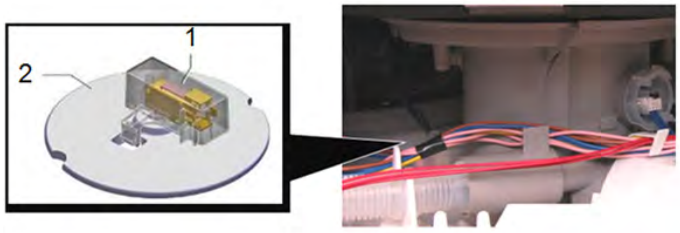
Torx T20 screwdriver		[00341279]
Phillips screwdriver PH2		
Slotted screwdriver	Blade 4 mm x 0.8 mm x 100 mm, only China	[00342443]

The float is easily accessed from the front of the dishwasher once the outer door and base cover are removed.

Prerequisite:

- Dishwasher disconnected and pulled out→ *Page 76*

1. Unlatch float switch housing (1, below) and remove housing and float switch (microswitch).



2. Lift float (2, above) up and away from base.
3. Install in reverse order.

6.25 Replacing sump parts (inside tub)

Required tools:

Slotted screwdriver	Blade 4 mm x 0.8 mm x 100 mm, only China	[00342443]

The inside of the sump is easily accessed for maintenance, for removing the drain pump cover and suction cap (“heat pump cover”) for cleaning drain / heat pump impellers.

Fig. 97: Sump location

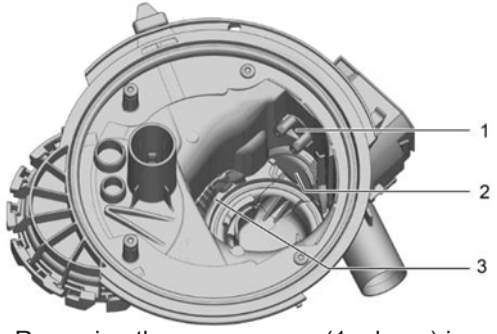
Prerequisite:

- Door opened and all racks removed.

1. Lift out lower spray arm.

2. Unscrew microfilter counterclockwise (ccw) and lift out microfilter and fine filter screen.

3. Remove (pull out) fill tube.
4. Carefully pry out drain pump cover (2, below).



Removing the aqua sensor (1, above) is only necessary when replacing the sump.

5. Carefully pry out suction cap (3, above).

6. Reinstall parts in reverse order.

When installing drain pump covers:

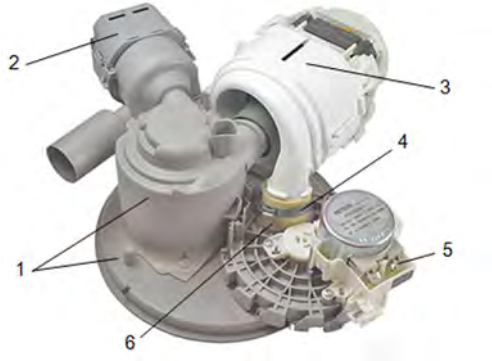
– Snap in drain pump covers **tightly** to insure proper draining and to avoid drain pump cavitating. Drain pumps can't get adequate suction when drain pump covers aren't snapped in securely.
– Loose drain pump covers have caused many service calls. Error codes will be generated.

6.26 Replacing sumps

Required tools:

Torx T20 screwdriver		[00341279]
Phillips screwdriver PH2		
Slotted screwdriver	Blade 4 mm x 0.8 mm x 100 mm, only China	[00342443]
Diagonal cutting nipper		
Gloves	Protective gloves	
Blanket or towel		
Hose clamp	inner diameter 28 mm - 39 mm	[00172272]

Sumps (1) are best removed from the bottom of dishwashers by flipping them on their backs, similar to removing heat pumps (3) and water switches (5). To make sure sumps are seated properly onto tubs, installing sumps requires standing dishwashers upright and gaining access from underneath / inside tubs.



	Standard hose clamp [00172272] is needed when heat pumps are being removed, not replaced, since replacement heat pumps already include it.
	Removing drain check valve isn't necessary if replacement sump has one.

Prerequisite:

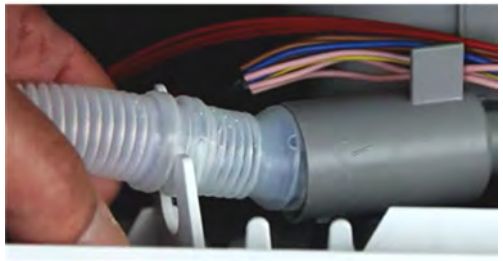
- Dishwasher disconnected and pulled out→ *Page 76*
- Sump parts (inside tub) removed→ *Page 112*
- Water removed from sump and hoses
- Dishwasher flipped onto its back→ *Page 77*
- Drain pump removed→ *Page 102*
- Heat pump removed→ *Page 100*
- Aqua sensor removed→ *Page 105*
- Water switch removed→ *Page 103*
- Drain check valve removed→ *Page 104*
- Hose clamp [00172272] provided

6.26.1 Removing sumps

Tub edges are sharp! Use gloves, cover tub edges and remove sump carefully.

	⚠ Caution **Sharp edges!** Cut injuries ▸ Wear protective gloves. ▸ Wear protective sleeves.

1. Disconnect drain hose from sump.



2. Remove (pull out) fill tube.

3. Remove four (4) sump screws from inside of tub.

4. Lift sump from dishwasher tub.

6.26.2 Installing sumps

To make sure the sump is seated properly onto the tub, the dishwasher must be right side up during sump installation and the following steps must be followed. Once the sump is properly installed, other parts (e.g. heat pump, water switch) can be installed with the dishwasher upright or on its back.

Fig. 98: Sump view (under tub)

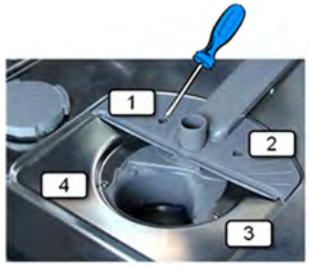
1. Install drain check valve.
   If replacement sump doesn't have one.
2. Install aqua sensor.

	For easier installation, coat aqua sensor o-ring with rinse-aid.

3. Install water switch.

	Installation hints: ■ For easier installation, coat water switch o-ring with rinse-aid. ■ Do not reconnect heat and drain pumps until later.

4. Place dishwasher right side up.
5. Lay the sump loosely onto the base where it would be in its final position.
   In other words, lay the sump onto the base right side up, centered under the tub cutout in a position to be reconnected to the heat pump and hose.
6. Lift the dishwasher onto the base and reconnect the base to the tub using the two (2) front latches and two (2) rear base screws.
7. Using one hand, carefully lift the sump up to the tub. Use the hand you won't be using to screw in sump screws.
8. Using your other hand, insert screws in the order shown below, starting at the top left screw and going cw (clockwise) around the sump to use the screws to raise the sump to the tub.



9. Use a gauge to check the clearance of the sump to the tub cutout. The clearance at all points around the sump must be 1mm or less.

10. Reinstall heat / drain pumps and sump drain hose.
11. Install parts into top of sump, including suction cap and drain pump cover.
12. Install remaining parts, including sump cover, fill tube and fine filter screen.

6.27 Replacing drain hoses

The drain hose (1) and sump hose (2) enter the water inlet control at the left rear of the dishwasher.

Fig. 99: Drain hose connections at water inlet control

6.27.1 Removing drain hoses

Required tools:

- Phillips screwdriver PH2
- Slotted screwdriver — Blade 4 mm x 0.8 mm x 100 mm, only [00342443] China

	The hose is locked into the base below the water inlet control, so the control has to be removed to remove the hose.

Prerequisite:

- Dishwasher disconnected and pulled out→ *Page 76*
- Water inlet control removed→ *Page 117*

1. Disconnect drain hose from customer drain line.

2. Disconnect water inlet tube from water inlet control.
3. Push the drain hose in to unlock it from the base to disconnect it (at the water inlet control). For installation, slide the hose notch into the base.

4. Remove the valve and holder from the base just enough so the hose can slide out (i.e. don't remove the water inlet valve completely).

5. Slide the drain hose to the right to remove it from the base (below right). The hose is notched to be locked into the base and can't be pulled straight out.

6. Install in reverse order.

6.27.2 Removing sump hoses

Required tools:

- Phillips screwdriver PH2
- Slotted screwdriver — Blade 4 mm x 0.8 mm x 100 mm, only China [00342443]

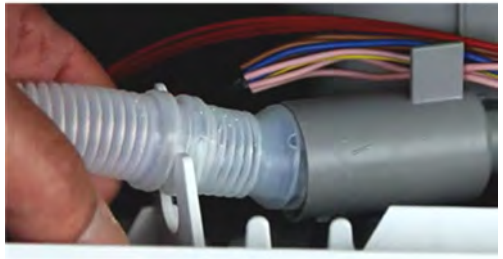
	The hose is locked into place at the water inlet control, so the control has to be removed to remove the hose.

Prerequisite:

- Disconnect and pull out dishwasher
- Remove water inlet control (to unlock drain hose for removal)

1. Disconnect drain hose from customer drain line.

2. Slide sump drain hose up from the base and then out from the sump. The hose is notched to be locked into the base and can't be pulled straight out from the sump.



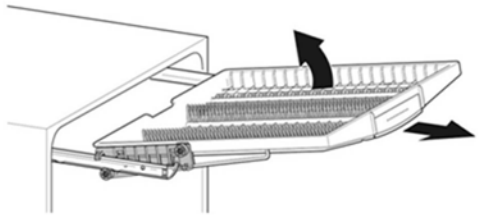
3. Disconnect water inlet tube from water inlet control.
4. Slide sump drain hose out from the base at the water inlet control. For installation, slide the hose notch into the base.

5. Install in reverse order.

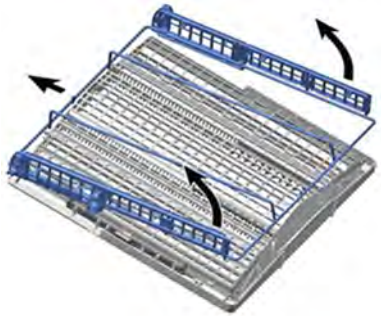
6.28 Repairing cutlery (top) drawers

6.28.1 Removing and disassembling cutlery (top) drawers

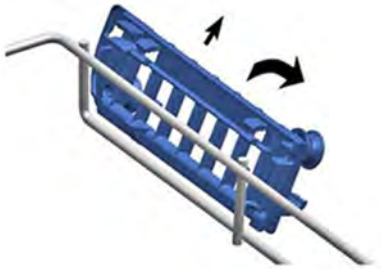
1. Open door and pull out cutlery drawer.
2. When drawer is fully extended, lift up drawer until front wheels clear rack slides and slide drawer off of rack slides.



3. To remove drawer from support, turn rack upside-down and lift support from drawer, taking care to not break plastic latches.

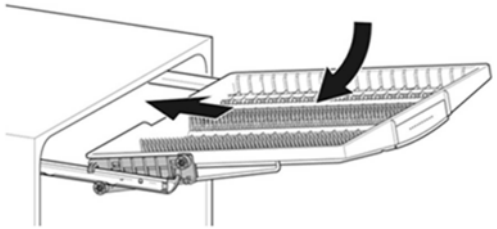


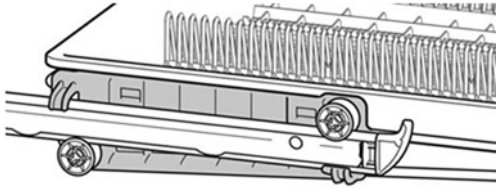
4. To remove wheels, snap wheel assemblies out from the drawer support, taking care to not break plastic latches.



6.28.2 Installing cutlery (top) drawers

1. Open door and fully extend both rack slides.
2. Lift front of drawer, carefully slide wheels over slide front endcaps until wheels clear them and lower front of drawer until wheels fully engage rack slides.

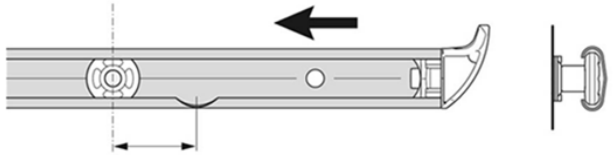




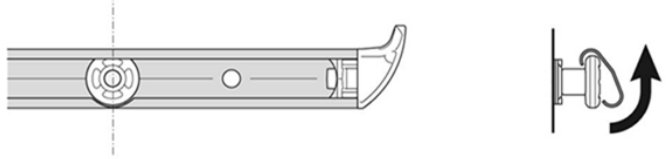
Wheels fully engaging rack slides.

6.28.3 Removing rack slides (rails)

1. Remove cutlery drawer.
2. Slide rack slides in toward dishwasher until round cutouts line up with tub wheels.

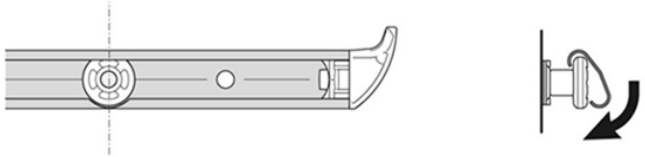


3. Rotate bottom of rack slides in toward dishwasher (away from tub walls) and lift rack slides away from tub wheels.

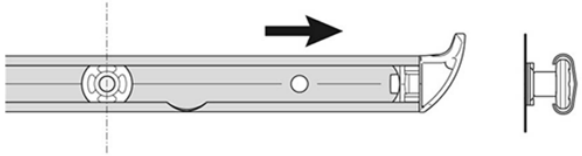


6.28.4 Assembling rack slides (rails)

1. Rotate bottom of rack slides in toward dishwasher (away from tub walls) and hook tops of rack slides over tub wheels. Line up round cutouts of rack slides with tub wheels and rotate bottoms of rack slides down.



2. Move rack slide cutouts away from tub wheels.



6.29 Replacing trim strips

Required tools:

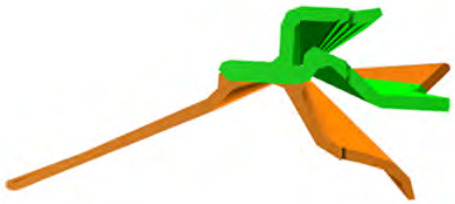
- Phillips screwdriver PH2

Prerequisite:

- Dishwasher disconnected and pulled out→ *Page 76*

6.29.1 Removing side trim strips

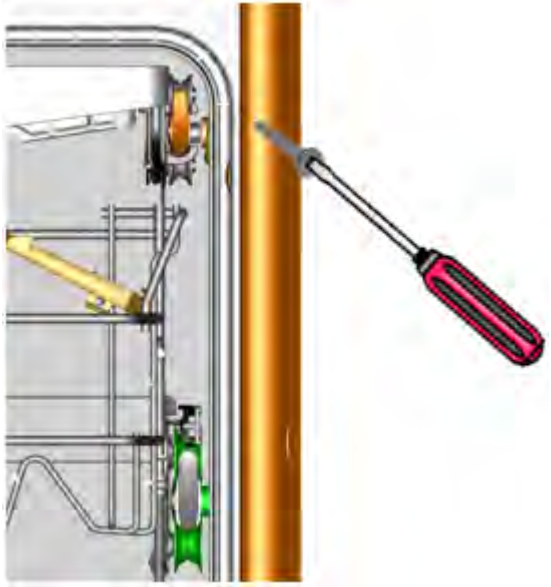
1. Disconnect mounting brackets and pull out dishwashers, enough to clear side trim strips.
2. Remove two (2) screws from each trim strip and save screws for reuse.
3. Twist trim strips away from dishwasher tub flange. Tabs in trim strips snap into front tub flange slots.



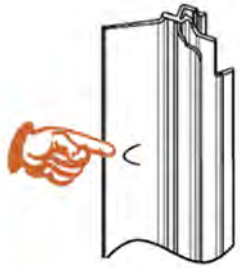
6.29.2 Installing side trim strips

1. Align hole in bottom of each trim strip with the hinge screw. There is also a lip on the back of the hinge to help line up the holes.

2. Rotate trim strip into tub flange until the three (3) tabs snap into corresponding tub flange slots.
3. Attach replacement trim strips with two (2) screws per strip.



There's a notch in the side of trim strips allowing side mounting brackets to be secured to cabinets without removing trim strips.



6.29.3 Removing top trim strips

1. Lift top trim strip up from tub flange.

2. Install in reverse order.

6.30 Leveling dishwashers

Required tools:

- Phillips screwdriver PH2
- Long screwdriver
- Spirit level

When dishwashers are installed, it's very important they're leveled front to back and side to side. If dishwashers aren't level front to back and side to side:

- Doors may not be securely closed or sensed as closed, preventing dishwashers from operating.
- Water can drip onto floors.

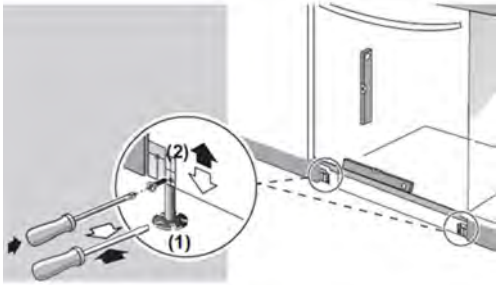
Prerequisite:

- ✔ Toe panel removed→ *Page 87*

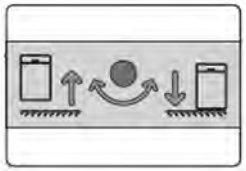
1. To raise the dishwasher, use a flat blade screwdriver to turn both front feet clockwise.

Raise the dishwasher as high as possible under the counter. Maximum height the dishwasher can be raised with feet fully extended is 34.5" (87.6 cm).

2. Use a level to check if the dishwasher is level horizontally (side to side). If not, use a flat blade screwdriver to turn both front feet clockwise to raise them or counter-clockwise to lower them until the dishwasher is level (1). Once the dishwasher is level, use screws to lock the front feet in position (2).



3. Use a level to check if the dishwasher is level vertically (front to back). If not, use a flat blade screwdriver to turn the center screw (for the rear foot) clockwise to raise it or counter-clockwise to lower it until the dishwasher is level.



6.31 Electrical connections

All electrical connections must be made according to national and local electrical codes.

6.31.1 Making electrical connections

Required tools:

- Phillips screwdriver PH2

All electrical connections must be made according to national and local electrical codes.

6.31.1.1 To power module

The dishwasher cord plugs into the power module at the left rear of the dishwasher base.

Prerequisite:

- [Dishwasher disconnected and pulled out→ *Page 76*]
- ▸ Plug the power cord completely and securely into the back of the power module until it "clicks".

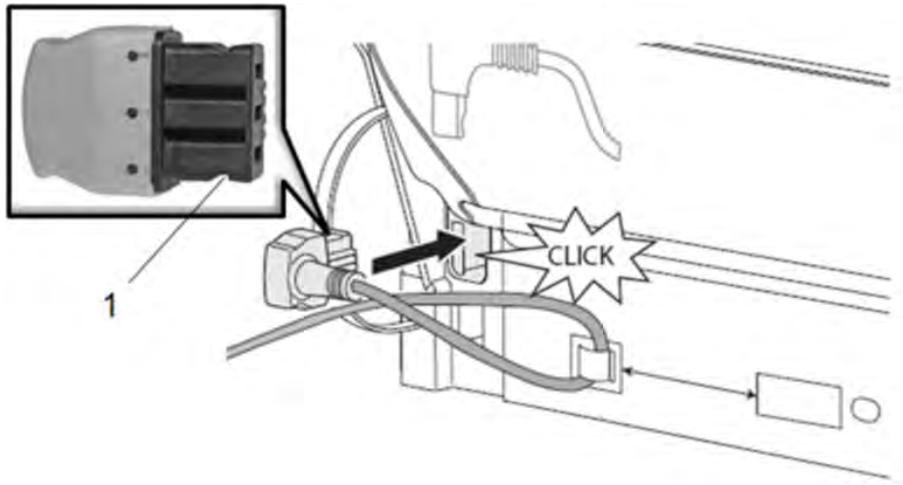


Fig. 100: Power module connections

The plug has notches (1) to keep it plugged into the power module.

	An optional junction box with cord, cord clip and strain relief is available to replace the power cord provided with the dishwasher - [SMZP-CJB1UC].

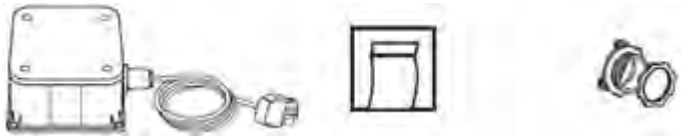


Fig. 101: Optional junction box [SMZPCJB1UC]

6.31.1.2 Using cord clips

Power cords have been lengthened for difficult installations. To meet UL standards, power cords must not be longer than 1.2 m (47.24") between the dishwasher base and outlet (or junction box when the optional [SMZPCJB1UC] junction box kit is used).

To make sure power cords aren't further than 1.2 m (47.24") from the dishwasher to the outlet or junction box, a self-adhesive clip has been provided to clamp cords to bases 5" (127 mm) to the left of the rear foot adjuster.

1. Attach the clip pointing in one of two directions, depending on where the power cord exits the dishwasher.
   1. Left (viewing rear of dishwasher) – point the clip to the right.
   2. Right (viewing rear of dishwasher) – point the clip upward.

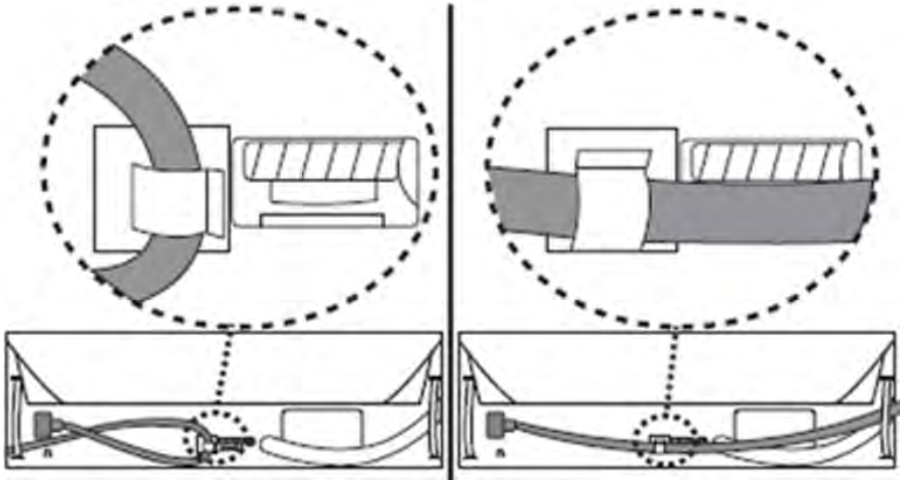
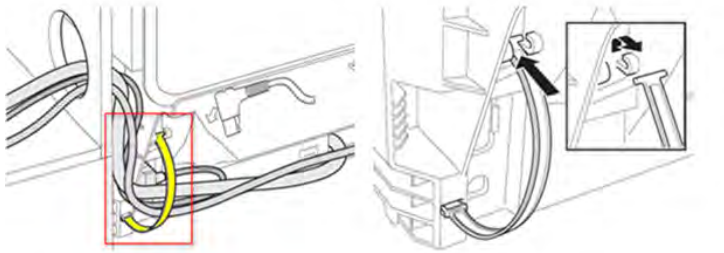


Fig. 102: Using power cord clip

2. Measure the distance between the dishwasher base and outlet (for power cord) or junction box (for optional junction box with cord) to make sure it's not longer than 1.2 m (47.24").

6.32 Stowing supply lines

1. Route power cords, water inlet hoses and drain hoses in the recess behind dishwasher bases.
   1. Stow cords and hoses in the cabinet next to the dishwasher (where connections to customer supplies are made).
   2. Do not attach them directly behind dishwashers – dishwashers are designed to mount against walls to provide deeper tubs and racks. Dishwashers cannot be mounted flush with cabinetry if cords and hoses are attached behind them.
2. Slide the strap around the cords / hoses and snap it into in the latch in the base.



Use the left or right strap on the dishwasher base to hold power cords / hoses in place, depending on what side they exit the dishwasher.

6.33 Changing customer settings (codings)

Dishwasher settings can be changed on the fascia panel and stored in memory until changed again.

- Displays only show features available for the model you're working on - if some features shown below don't appear, they aren't available on your model.
- Dishwashers have been preset with default settings for customer convenience. Settings can be changed as desired using the procedure below or reset to factory defaults.

Prerequisite:

- ✔ Dishwasher has been turned off and no wash programs are running

1. Press "On / Off" button to turn the dishwasher on.
2. While pressing and holding "A" button, press and hold "Start" button for ~ 3 seconds until display shows "r:0x" or "d:0x" (“x” can be any # from 0 – 6), then release both buttons.

➔ Button "A" will be flashing.

3. To choose settings to change, press button "A" repeatedly to scroll through available settings (see setting chart below).

Setting (coding)	Selections	Descriptions / Defaults
Rinse-aid	r:00 - r:06	6 settings & no rinse-aid (default: r:05, 5 ml). With no rinse aid, wash cycles default to longest time with most washes and rinses.
Extra Dry	d:00 - d:01	On or off (default: d:00 = Off)
Auto Power Off	P:00 - P:02	■ P:00 = Dishwasher doesn’t turn off (default w/o display) ■ P:01 = Dishwasher turns off after 1 minute (default w/ display) ■ P:02 = Dishwasher turns off after 2 hours

➔ Button "A" will be flashing.

4. To change your setting, press button "C" repeatedly to scroll through setting choices.
5. To choose other settings to change, press button "A" to scroll through available settings as before. Press button "C" repeatedly to scroll through setting choices.

6. To save all of your settings, press "Start" button for ~ 3 seconds.