Dishwasher — Technical Information

ADB/CDB1500AW*, ADB2500AW*, CDU650AW*, DDB1501AW*, PDBL390AW*, MDBH945AW*, MDBH955AW*, MDBH965AW*, MDBM601AW*, MDBS561AW*, MDBTT50AW*, MDBTT60AW*, MDBTT70AW*, MDB4651AW*, MDB5601AW*, MDB6601AW*, MDB7601AW*

- Due to possibility of personal injury or property damage, always contact an authorized technician for servicing or repair of this unit.
- Refer to Service Manual 16021814 for detailed installation, operating, testing, troubleshooting, and disassembly instructions

⚠ CAUTION

All safety information must be followed as provided in Service Manual 16021814.

⚠ WARNING

To avoid risk of electrical shock, personal injury, or death, disconnect power to dishwasher before servicing.

Benefits	ADB/CDB1500AW* CDU650AW* DDB1501AW* PDBL390AW*	MDBH945AW* MDBTT50AW*	ADB2500AW*	MDBH965AW* MDBTT70AW* MDB6601AW*	MDBM601AW* MDB5601AW*
Wash cycles	3	4	5	6	5
Heavy Wash	X	X	X	X	X
Normal Wash	X	X	X	X	X
Quick Wash	X		X		
Light Wash		X		X	X
Insta Wash				X	
Rinse Only		X	X	X	X
Features					
Sound package	Sofsound I™	QuietSeries™ 200	Sofsound II™	QuietSeries™ 300	QuietSeries™ 300
High Temp Wash	X	X	X	X	X
Electronic Controls	X	X	X	X	X
Sanitizer		X	X	X	X
Sensor clean		X	X	X	X
Water Filtration	100% Filtered wash water	Micro-Fine Plus Filtration	100% Filtered wash water	Micro-Fine Plus Filtration	Micro-Fine Plus Filtration
Delay Start	2,4 or 6 Hour Delay Start	2,4 or 6 Hour Delay Start	2,4 or 6 Hour Delay Start	1-9 Hour Delay Start	2,4 or 6 Hour Delay Start
Energy Star	X	X	X	X	X
Hard Food Disposer	X	X	X	X	X
Child lockout		X	X	X	X
Touch Pad Controls	5	6	10	12	11
Silverware Location	In door	Wash Compartment	In door	Wash Compartment	Wash Compartment
Low rinse aid indicator	X		X		

Component Specifications

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Benefits	MDBS561AW*	MDBTT60AW*	MDB4651AW*	MDB7601AW*
Wash cycles	4	5	4	5
Heavy Wash	X	X	X	X
Normal Wash	X	X	X	X
Quick Wash				
Light Wash	X	X		X
Insta Wash				X
Rinse Only	X	X	X	X
Features				
Sound package	QuietSeries™ 300	QuietSeries™ 300	QuietSeries™ 200	QuietSeries™ 400
High Temp Wash	X	X	X	X
Electronic Controls	X	X	X	X
*Sanitizer	X	X	X	X
Sensor clean	X	X	X	X
Water Filtration	Micro-Fine Plus Filtration	Micro-Fine Plus Filtration	Micro-Fine Plus Filtration	Micro-Fine Plus Filtration
Delay Start	2,4 or 6 Hour Delay Start	2,4 or 6 Hour Delay Start	2,4 or 6 Hour Delay Start	1-9 Hour Delay Start
Energy Star		X	X	X
Hard Food Disposer	X	X	X	X
Child lockout	X	X	X	X
Touch Pad Controls	7	10	7	12
Silverware Location	Wash Compartment	Wash Compartment	Wash Compartment	Wash Compartment
Low rinse aid indicator				

Specifications	Value
Power Source	
Voltage AC	120 VAC
Amperage (Single Unit)	15 A
Frequency	60 Hz
Motor horsepower	1/3
Dimensions	
Height–overall	33 ½" to 35 ¼"
Weight	71

Component Specifications

WARNING

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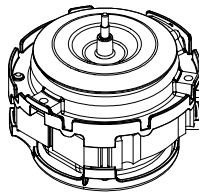
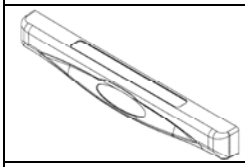
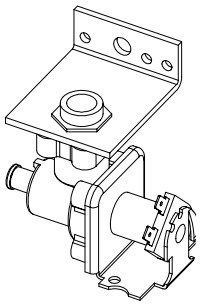
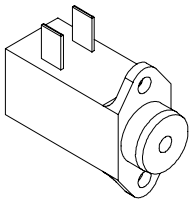
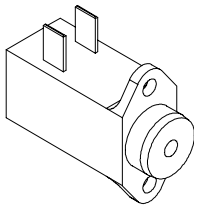
Illustration	Component	Test Procedure	Results
	Dishwasher Motor CCW rotation only viewed from shaft end. 1/3HP 120V/60hz, 3.2 amps, 3250 RPM Main Wattage, 285 watts Start Wattage, 1115 watts	Measure resistance from ST5 (Motor Common – blue) to ST8 (Motor Main - yellow)..... See Component Specifications/Motor Connections for details.	3 to 4 Ω
	Control Panel	See Component Specifications/ Membrane Readings for troubleshooting/pin-out instructions.	
	Water valve 120V/60hz, 7 watts 1.13 ± .10 gpm at 20-120 psi	Measure resistance from J6 Pin 4 Aqua (Float switch) to ST4 Black (Common)	1.1 k Ω (This value assumes the float switch is closed).
	Vent wax motor 120V with 1/4" actuation stroke within 90 seconds	Measure resistance from J6 Pin 1 Purple (Vent) to ST4 Black (Common)	1.2 k Ω
	Dispenser wax motor 120V with 1/4" actuation stroke within 90 seconds	Measure resistance from J6 Pin 3 Tan (Dispenser) to ST4 Black (Common)	2 k Ω

Component Specifications

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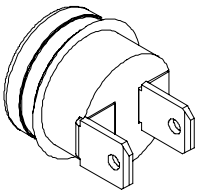
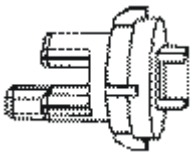
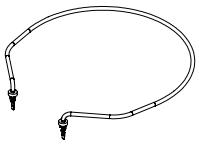
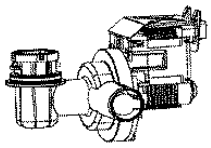
Illustration	Component	Test Procedure	Results
	Limit Thermostat	Close on Temperature drop @ 149°F ± 7°F (Temp) ..... Open on Temperature drop @ 164°F ± 4°F (Temp)	0 Ω = Closed Infinite Ω = Open
	Sensor/Thermistor	10KΩ ± 3% at 77°F and 2.4 k Ω ± 6.5% at 140°F J5 pin 1 - Orange (Temp) to J5 Pin 4 - Red (Neutral)	Infinite Ω = Open 0 Ω = Closed
	Heater/Heating Element 120v/60hz, 650 watts ± 5% in air, 830 watts ± 5% in 90°F water	Measure resistance from ST1 Red/Black (Heater) to ST11 White (Common)	16 Ω (This value assumes the high limit thermostat is closed).
	Drain Motor 120v/60hz 45 watts	Measure resistance from ST6 Gray (Drain) to ST4 Black (Common) ..... See section “Motor Connections and Diagram” for wiring contacts.	25 Ω

Component Readings/Testing

WARNING

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Manual Function Test

A Manual Function Test may be started by pressing the **Heated Dry** key 5 times followed by the **Start** key within 8 seconds.

The **Normal Wash** LED will **Flash** 3 times indicating manual test mode is active. Specific keypads will turn on or off a component as follows:

KEY	Function	LED
Hi Temp Wash	Wash Motor	Hi Temp Wash
Delay	Water Inlet Valve	Delay
Heated Dry	Heating Element	Heated Dry
Cycles Select / Normal		
First Press	Vent	Heavy Wash
Second Press	Dispenser	Normal Wash
Third Press	Drain Pump	Light Wash / China Crystal

The test will cancel 120 seconds after the last keypad is pressed. The display (if available) will show '99' until the remaining timeout period is less than 99 seconds. At this point it will countdown until the modes times out, is cancelled, or another key is pressed. To cancel test, press the **Start / Cancel** keypad.

Diagnostic Tips

To check control**,** LED's and components, enter **Field Service Test**. If control fails to perform sequence as described, and a fault is detected, determine failure as described in the **Field Service Test**. If a load component failure has been diagnosed, proceed to the **Manual Function Test**. To check individual load components for proper operation, enter **Manual Function Test**. Follow test procedure as described. Repair or replace component as needed.

Note: The **High Current** or **Low Current Motor Error** may be detected during a wash cycle selected by a consumer. If this happens, the control will go into a 30 second auto restart mode and shut down if the unit is not able to restart the motor.

Membrane Readings (All Models)

	Connector	Measure Between
Heavy Wash *	J1	Pin 9 - Pin 5
Normal Wash *	J1	Pin 9 - Pin 6
Light Wash / China Crystal / Gentle Wash / Quick Wash *	J1	Pin 9 - Pin 7
Rinse Only *	J1	Pin 9 - Pin 8
Auto Clean / Sensor Clean *	J1	Pin 10 - Pin 5
Heated Dry	J1	Pin 11 - Pin 5
Sanitize *	J1	Pin 11 - Pin 6
Hi Temp Wash	J1	Pin 11 - Pin 8

(Front Only Controls)

	Connector	Measure Between
Cycle Select *	J1	Pin 9 - Pin 5
Start / Cancel	J1	Pin 10 - Pin 6
Delay	J1	Pin 10 - Pin 7
Tough Scrub Plus / Super Scrub / Power Scrub *	J1	Pin 10 - Pin 8
Tough Scrub / Extra Wash / Hi Temp *	J1	Pin 11 - Pin 7
Insta Wash *	J1	Pin 12 - Pin 5
Model ID Jumper *	J1	Pin 12 - Pin 7

An unpressed switch will read as an open circuit.
A pressed switch will read as 10k□.
* On select models

Field Service Test

A Field Service Test may be started by pressing the **Heated Dry** key 6 times followed by the **Start** key within 8 seconds. This test must be performed with clean water to insure proper sensor performance.

"88" will appear in the display (if available*) and the following sequence of events will occur:

SECONDS	FUNCTIONS / ACTIVE LOADS
106	Vent Wax Motor / Water Valve
5	Thermistor check / Turbidity Sensor check & calibration - no loads active.
120	Wash Motor / Vent Wax Motor / Dispenser Wax Motor
180	Wash Motor / Heater / Vent Wax Motor
120	Drain Pump
4	Water Valve

The time for the Thermistor check / Turbidy Sensor check & calibration may vary slightly.

The Field Service Test will not repeat. The **Heavy Wash** LED will **Flash** during the test mode. All Indicator lights (except **Heavy Wash**) will illuminate. If the dishwasher door is opened during the test, the test sequence will pause, and resume when the door is closed. To the cancel test, press the **Start / Cancel** keypad.

The control has been designed to test the Sensor**,** Memory**,** and Motor. During the Field Service Test, if a fault has been detected, the test will abort any time after the motor current has been checked and 2 or more LED's will begin to **Flash**. A **Memory / Software Check** will occur immediately after the test is started. The **(Delay / Delay 2 hr)** LED and one of the following:

Turbidity Sensor - failure - **Hi Temp Wash** LED
Thermistor - failure - **Heavy Wash** LED
Motor - high current - **Normal Wash** LED
Motor - low current - **Light Wash** LED
Memory Failure - **Heated Dry** LED

* On select models

Membrane Readings (Front & Top Controls)

	Connector	Measure Between
Insta Wash *	J1	Pin 10 - Pin 6
Tough Scrub Plus / Super Scrub / Power Scrub *	J1	Pin 10 - Pin 7
160° Wash *	J1	Pin 10 - Pin 8
Tough Scrub / Extra Wash / Hi Temp *	J1	Pin 11 - Pin 7
Model ID Jumper *	J1	Pin 12 - Pin 8
Start / Cancel	J3	Pin 9 - Pin 5
Delay	J3	Pin 9 - Pin 6

(Top Only Controls)

	Connector	Measure Between
Insta Wash *	J1	Pin 10 - Pin 6
Tough Scrub Plus / Super Scrub *	J1	Pin 10 - Pin 7
160° Option	J1	Pin 10 - Pin 8
Tough Scrub / Extra Wash / Hi Temp *	J1	Pin 11 - Pin 7
Model ID Jumper *	J1	Pin 12 - Pin 6
Start Cancel	J1	Pin 13 - Pin 12
Delay	J1	Pin 13 - Pin 14

Load Readings

	Measure Between	Result
Heater[1]	ST1 (Heater) - ST11 (Dlb Neutral)	16□
Wash Motor	ST5 (Motor Common) - ST8 (Motor Main)	3 to 4□
Drain Motor	ST6 (Drain) - ST4 (Dlb Line)	25□
Vent Wax Motor	J6 Pin 1 (Vent) - ST4 (Dlb Line)	1.2k□
Dispenser Wax Motor	J6 Pin 3 (Disp) - ST4 (Dlb Line)	2k□
Water Valve[2]	J6 Pin 4 (Inlt) - ST4 (Dlb Line)	1.1k□
Thermistor	J5 Pin 1 (Temp) - J5 Pin 4 (Neutral)	See Component Info

Notes:
1. This value assumes the high limit thermostat is closed.
2. This value assumes the float switch is closed.

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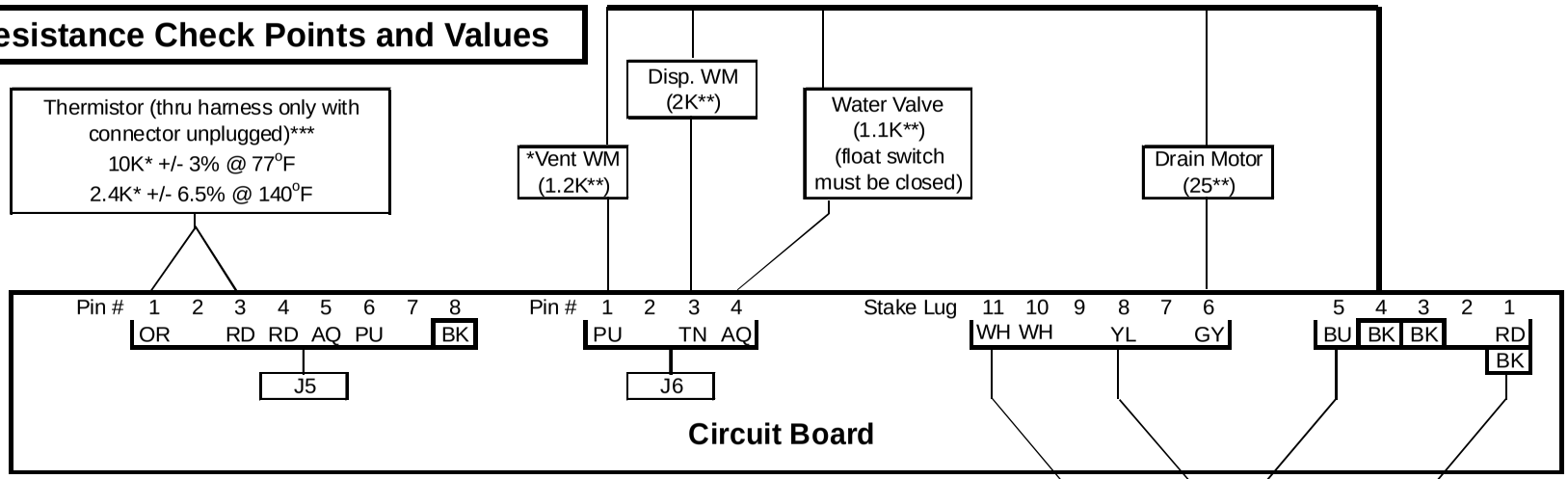
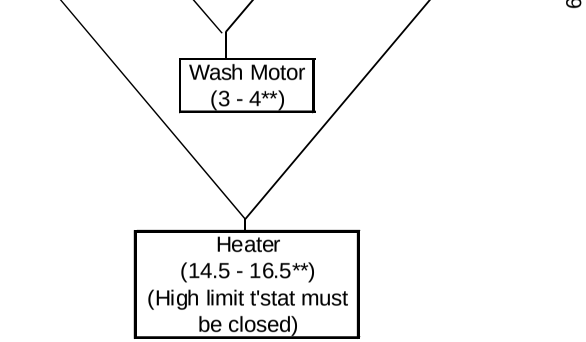
Resistance Check Points and Values





1 **Use the "Manual Function Test" as described on the electrical schematic sheet to check components before opening the door to perform continuity testing or replacing parts.**

2 **To check continuity from ends of power leads to control board through door switches:**
(A white plastic latch must be inserted in the latch assembly for this test.)
> With one ohm meter lead connected to the white (neutral) power lead, you should have continuity at stake lugs 10 & 11.
> With one ohm meter lead connected to the black (line) power lead, you should have continuity at stake lugs 3 & 4, and pin # 8 on connector J5.

3 Perform the resistance checks on the component(s) in question at the locations shown on the chart.

* Select Models Only.

** Nominal value for ohms of electrical resistance of component only. These values will vary slightly due to the additional resistance of the wire harness. Greater variation can occur if the component is still warm from being energized during testing.

*** A resistor in the control board wired in parallel will result in an approximate reading of 4.0 k ohms with connector J5 plugged in.

Always remove power to the unit before performing any resistance or continuity checks.

Control Definition

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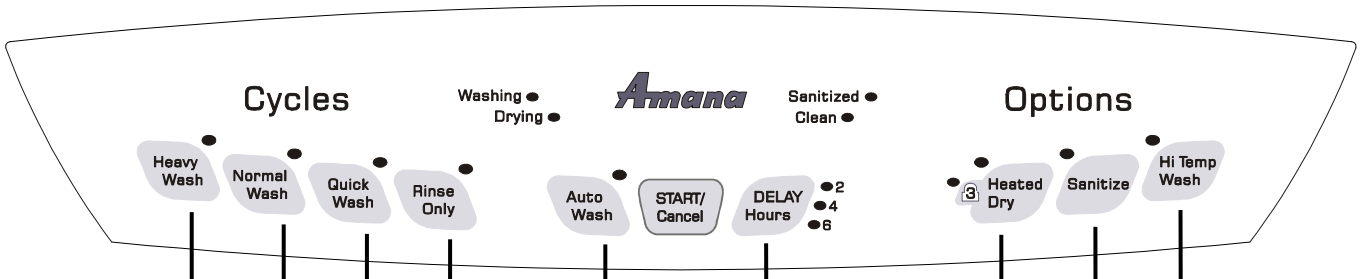

Designed to provide a longer cycle for washing items with heavy food soils. Water usage is 8 gallons.

Designed to wash loads containing dishes with normal amounts of food soils. Water usage ranges from 3 to 6 gallons.

Designed for light food soils. The cycle ends with a rinse and does not include drying. Water usage is 4 gallons.

Rinses dishes being held until the dishwasher is full, and another cycle is selected. This cycle helps reduce the potential for developing odors. Water usage is 2 gallons.

Designed to auto select the number of fills and length of wash times based on soil level of dish load. Water usage ranges from 3 to 8 gallons.

Delays the start of the dishwasher based on user selection.

This option improves drying results by turning the heating element on and off during the dry portion of the cycle.

This option monitors cycles for sanitization.

This option raises Temperature in the Final rinse to 160° F

Light Wash- Designed to wash loads containing dishes that are lightly soiled Water usage is 5 gallons.
Insta Wash- Designed to wash loads containing dishes that are lightly soiled Water usage is 5 gallons.
Auto Clean- Designed to auto select the number of fills and length of wash times based on soil level of dish load. Water usage ranges from 3 to 8 gallons.
Tough Scrub- This option adds fills, heat and/or wash time to the wash cycle.

Control Definition

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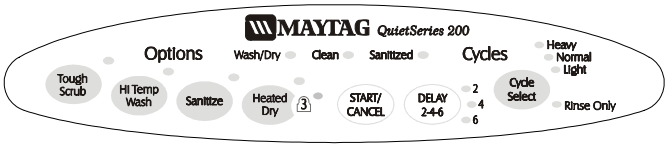

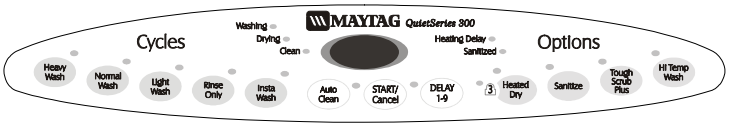

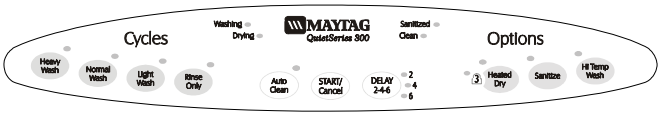

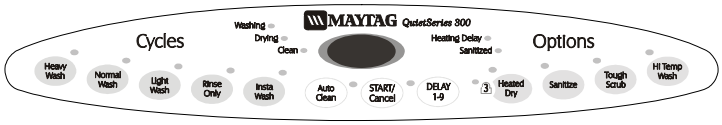

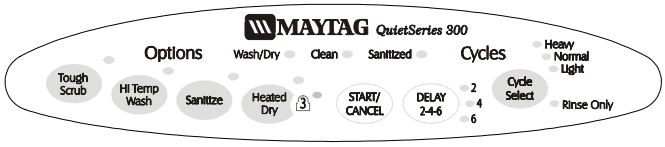

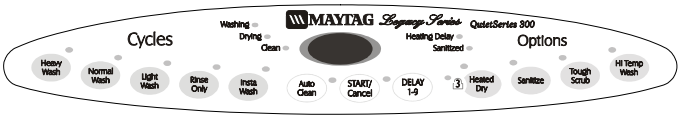

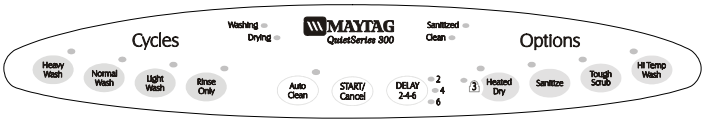

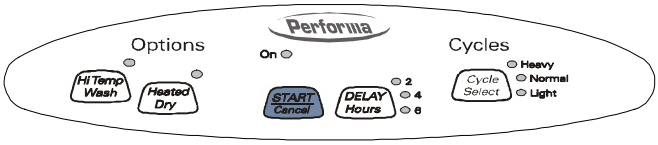

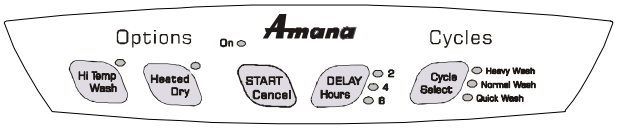

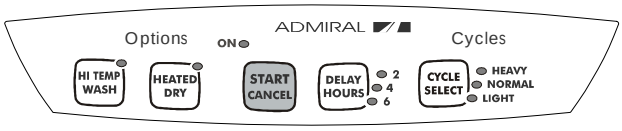

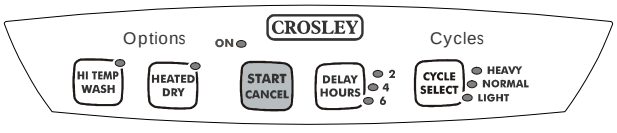

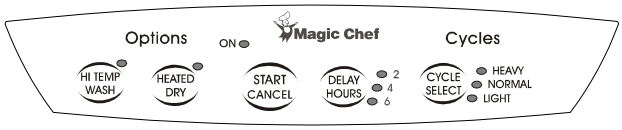

Motor Connectivity

WARNING

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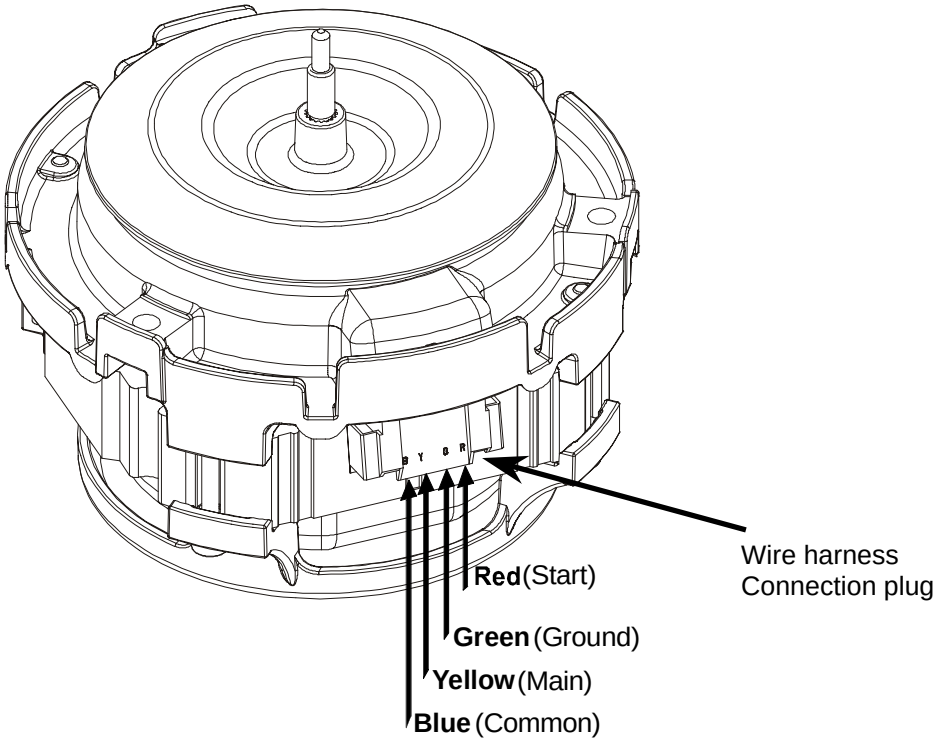

1/3HP
120V/60hz, 3.2 amps, 3250 RPM

Cycle Chart

WARNING

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RINSE ONLY CYCLE
9 Minutes

FILL	RINSE	DRAIN	FILL
1:36 min 1:46 max	5:00	2:00	0:02

Available Options:
No options are available with the **Rinse Only** cycle.

INSTA WASH CYCLE
20 Minutes - Min
51 Minutes - Max

FILL	DET DISP	HEATED WASH	DRAIN	FILL	HEATED RINSE	DRAIN	FILL	HEATED RINSE	DRAIN	FILL
1:36 min 1:46 max		4:00	2:00	1:36 min 1:46 max	2:00	2:00	1:36 min 1:46 max	3:00	2:00	0:02

Available Options:
Only the **Heated Dry** option is available with the **Insta Wash** cycle.

LIGHT WASH CYCLE/ EXPRESS WASH CYCLE/ GENTLE WASH CYCLE/ CHINA/CRYSTAL WASH
81 Minutes - Min
82 Minutes - Max

FILL	DET DISP	HEATED WASH	DRAIN	FILL	HEATED RINSE	DRAIN	FILL	TEMP CHECK	RINSE AID DISP	RINSE	DRAIN	FILL	DRY CYCLE
1:36 min 1:46 max		10:00	2:00	1:36 min 1:46 max	10:00	2:00	1:36 min 1:46 max	140°F		5:00	2:00	0:02	30:00

Available Options:
Hi Temp Wash - This option boosts the final rinse temp check to 145°F.
Tough Scrub/Extra Wash/Hi Temp - This option adds an 8 minute pre-wash and 5 minutes of heated wash to the main wash.
Tough Scrub Plus/Super Scrub/Power Scrub - This option is the same as **Tough Scrub** but the main wash temp check is boosted to 145°F.

NORMAL WASH CYCLE
(97 Minutes - min)
(117 Minutes - max)

FILL	HEATED PRE WASH	DRAIN	FILL	DET DISP	HEATED WASH	TEMP CHECK	DRAIN	FILL	HEATED PRE RINSE	DRAIN	FILL	RINSE AID DISP	TEMP CHECK	RINSE	DRAIN	FILL	DRY CYCLE
1:36 min 1:46 max	8:00	2:20	1:36 min 1:46 max		26:00	SEE NOTE TC 1	2:00	1:36 min 1:46 max	10:00	2:00	1:36 min 1:46 max		SEE NOTE TC 2	20:00	2:00	0:02	30:00
		SKIP?						SKIP?									

Available Options:
Hi Temp Wash - Overrides the sensor's decision to modify the temp checks and skip a rinse.
Tough Scrub/Extra Wash/Hi Temp - This option overrides the sensor's decision to skip cycle functions / modify temp checks and adds an additional **5** minutes of heated wash to the main wash.
Tough Scrub Plus/Super Scrub/Power Scrub - This option is the same as **Tough Scrub** but the main wash temp check is boosted to 145°F.

TC 1: If sensor detects lighter soil, the temp check will be 128 ° F
If sensor detects heavier soil, the temp check will be 140 ° F
TC 2: If sensor detects lighter soil, the temp check will be 140 ° F
If sensor detects heavier soil, the temp check will be 145 ° F

HEAVY WASH CYCLE
(132 Minutes - min)
(133 Minutes - max)

FILL	HEATED PRE WASH	DRAIN	FILL	HEATED WASH	DET DISP	HEATED WASH	TEMP CHECK	DRAIN	FILL	PRE RINSE	DRAIN	FILL	HEATED PRE RINSE	DRAIN	FILL	RINSE AID DISP	RINSE	DRAIN	FILL	DRY CYCLE
1:36 min 1:46 max	8:00	2:20	1:36 min 1:46 max	8:00		22:00	140°F	2:00	1:36 min 1:46 max	10:00	2:00	1:36 min 1:46 max	10:00	2:00	1:36 min 1:46 max		5:00	2:00	0:02	30:00
		SKIP?						SKIP?												

Available Options:
Hi Temp Wash - This option has no effect on this cycle.
Tough Scrub/Extra Wash/Hi Temp - This option adds an additional 5 minutes of heated wash to the main wash and a 10 minute heated pre- rinse.
Tough Scrub Plus/Super Scrub/Power Scrub - This option is the same as **Tough Scrub** but the main wash temp check is boosted to 145°F.

AUTO CLEAN CYCLE/ SENSOR CLEAN CYCLE
(94 Minutes - min)
(128 Minutes - max)

FILL	HEATED PRE WASH	DRAIN	FILL	DET DISP	HEATED WASH	TEMP CHECK	DRAIN	FILL	HEATED PRE RINSE	DRAIN	FILL	HEATED RINSE	TEMP CHECK	RINSE AID DISP	RINSE	DRAIN	FILL	DRY CYCLE
1:36 min 1:46 max	8:00	2:20	1:36 min 1:46 max		25:00	140°F	2:00	1:36 min 1:46 max	10:00	2:00	1:36 min 1:46 max	20:00	145°F		5:00	2:00	0:02	30:00
		SKIP?						SKIP?										

Available Options:
Hi Temp Wash - This option has no effect on this cycle.
Tough Scrub/Extra Wash/Hi Temp - This option adds 5 minutes of Heated Wash to main wash.
Tough Scrub Plus/Super Scrub/Power Scrub - This option is the same as **Tough Scrub** but the main wash temp check is boosted to 145°F.

Temperature Options (Available on select models)
Sanitize: If the **Sanitize** option is available for a given cycle, it forces a 140°F temp check at the end of the main wash for the **Light Wash,** a 154°F temp check prior to the rinse aid dispense in the final rinse, and adds 5 minutes unheated circulation prior to rinse aid dispense.
160° Option: If the **160° Option** is available for a given cycle, it forces a 160°F temp check prior to the rinse aid dispense in the final rinse.

DRY CYCLE (Front Only Display Models)

HEATER	HEATER	HEATER	HEATER	HEATER	HEATER	HEATER	HEATER	HEATER	HEATER	HEATER	HEATER	HEATER	HEATER	HEATER
ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON
3:00	1:30	1:00	1:30	1:00	1:30	1:00	1:30	1:00	1:30	1:00	1:30	1:00	1:30	1:00

Available Options:
No options are available during the dry cycle.

Note: If **Heated Dry** is not selected, the heater will not be activated during the dry cycle.

DRY CYCLE (Front Top / Top Only Display Models)

HEATER	HEATER	HEATER	HEATER	HEATER	HEATER	HEATER	HEATER	HEATER	HEATER	HEATER	HEATER	HEATER	HEATER	HEATER	HEATER
ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF
3:00	3:00	1:00	3:00	1:00	3:00	1:00	3:00	1:00	3:00	1:00	3:00	1:00	3:00	1:00	7:00
or															or
1:00															9:00

Notes: If **Heated Dry** is not selected, the heater will not be activated during the dry cycle.
If **160° Option** is selected, the first two minutes of heating is changed to 2 minutes of unheated at the end of the dry cycle.

Notes
1. All times are approximate.
2. Temperature checks force a maximum 20 minute heating delay to reach the desired temperature.
3. The **Auto Clean/Sensor Clean** cycle definition gives the minimum and maximum possible cycle lengths. Actual cycle length and executed cycle functions will vary based on the sensor input.
4. Fill length varies between different models.

SKIP?

This represents the portion of a cycle that **MAY** be omitted. The determination of whether a segment is skipped or not is made by input from the sensor.

Wiring Diagram

WARNING

To avoid risk of electrical shock, personal injury, or death, disconnect power to dishwasher before servicing.