



January 24, 2012

Rebecca Duff
ICF International

Subject: Comments on Draft Test Method January 2012

Dear Ms. Duff,

We have reviewed the new draft test method for commercial dishwashers. Our comments are as follows:

Definitions:

1. Under Counter – The definition should be revised to include hot water sanitizing machines with or without an internal booster heater. There are some machines that use water pre-heated to 180°F by an external booster. These models should be eligible for qualification also.

Test Conduct:

2. Post-sanitizing Rinse Machines – A new paragraph should be added to clarify the test method for the water consumption test and subsequent reporting for post-sanitizing rinse machines. For example, “water consumption testing for post-sanitizing rinse machines must be performed and reported both with the post-sanitizing rinse on and with it off”. If the intent is to qualify these models with only the worst-case water consumption value, then it should be noted.
3. Replacement Unit – Item “I” on line 302 states that a replacement unit must be obtained if any issue results in a termination of testing. It is not unusual for a product to be tested in the wrong configuration or with a faulty component. The test unit can often be serviced to bring it in compliance with current production standards without replacing the entire machine. One suggestion for a compromise is to allow the manufacturer to correct the discrepancy with the resulting modifications of components or configuration duly noted in the test record.

Test Set Up

4. Scale – The resolution of the scale for weighing water should be 0.1 lb rather than 0.01 lb. The difference of 0.1 lb equates to approximately 1.5 ounces of water. This difference is easily within the error of dripping water or water retained in the tank or drain lines during the test.
5. Stopwatch – The accuracy should be +/- 2% of the time being measured. Typical stopwatch accuracy calibrations are done at 0.002% of 1 hr. This is approximately 0.072 seconds. If the stopwatch is being used to measure a 10 second rinse time on a door machine, 0.2% of that is 0.02 seconds which is lower than 0.072. We do not want to replace all of our existing stopwatches with precision devices, if they are available.

6. Thermocouple Probes – The description for the gas thermocouple probe on line 435 should be revised to clarify that the probe is used to measure the gas temperature at the meter rather than the dishwasher tank temperature.
7. Stop Watch – The requirements for the stopwatch in section B) 6) a) on line 444 do not match those of section A) 3) on line 315.
8. Water Supply Temperature – Line 491 on page 10 states the supply of water shall be within +/- 2°F of its manufacturer specified input temperature. Many manufacturers specify incoming water temperature from 70 to 140°F. Granted, for the idle energy tests these values are inconsequential. However, when conducting the operating energy consumption tests, the amount of energy consumed by the internal booster is significantly different when changing from 140 to 70°F. One suggestion is to measure the energy consumption at both ends of the range specified by the manufacturer. As discussed during the ASTM standard revision process, the building hot water heater savings for energy recovery systems must be credited for reporting of these types of machines.
9. Inlet Water Temperature – Line 527 should allow inlet water temperature at +/- 2°F rather than 1°F. This is more reasonable and in line with current practice.
10. Water Consumption Test Settings – Line 547 should state the test shall be run at the cycle time that results in the worst-case water consumption value. There may be some situations where the water consumption at the shortest cycle time is actually lower than a different cycle time.

Line 565 states requirements for machines with a final rinse pressure less than 5 psi. NSF 3 requires all fresh water rinse machines to be 5 to 30 psi. This paragraph should be removed.

11. Water Consumption – Section 6.1 requires the capture vessel to be dried between test runs. If the vessel retains some water but this amount is compensated during the tare process, it should be insignificant and would allow easier test runs.

Also, this test method can be problematic for door type machines with a large wash tank. The water level in the tank must be exactly at the overflow stand-pipe when the final rinse comes on to ensure all of the additional final rinse water enters the drain. However, when the wash pump turns on, there is a large amount of water that is cycling through the wash system, clinging to the interior of the machine or splashing out through gaps in the door or tabling. For these reasons it may be worthwhile to consider the flow meter method of measuring the exact amount of water consumed during multiple cycles.

12. Appropriate Changes or Adjustments to Machines Under Test – Line 813 states that the manufacturer shall not make adjustments to the dishwasher under test. Reiterating what was

stated in item 3 above, it is not reasonable to require no adjustments, especially if the test is being performed under a SMTL program. The intent of the requirement should be that whatever adjustments are made during the test process must be documented and carried forward into the production process.

13. Tank Heater Maximum Energy Input Rate – Line 873 states that the test shall be terminated if the difference between the recorded value and the manufacturer specified input is greater than 5%. However, the term “manufacturer specified input” is not clearly defined. Many manufacturers do not include the heater kW rating on the data plate. Even if they do, the machine could be rated for a range of voltages such as 208-240. If the data plate is marked 7,200 kW for the 240 volt operation and the test is performed at 208 volts, the variance will be much greater than 5%. Also, if the kW rating is not marked on the machine, what value is used for “manufacturer specified input”? One solution is to use the engineering details specified on the print for the heating element and document this in the descriptive report for verification inspection purposes.

Again the manufacturer should be allowed to make adjustments if they are documented and carried over to production (line 876).

14. Steam Tank Heat – Lines 860 and 880 describe the methods for maximum energy input rate of machines with steam coil tank heat. We have not performed enough tests on these configurations to be able to provide useful comments at this time. However, we are concerned that the energy consumption for steam machines will be much higher than the equivalent electric heat machines due to the fact that the heat input is only limited by the capacity of the condensate trap.
15. Total Power Consumption Rating – Line 897 states that the booster and other heater loads shall be compared to the total power consumption rating. If the machine is rated in amps only and not kW, this should not be used to determine the maximum energy input rating. The total amps marked on a machine rating plate may be inflated to account for additional loads such as chemical feeders.
16. Electric Booster Power Consumption – The electric booster heater on time for door type machines is often very short, especially during the idle test. Allowing the start and stop time of the power monitoring to vary +/- 2 seconds could skew the results. If the heater on time is 15 seconds, being off by 4 seconds could skew the results by up to 25%. Typically, these meters automatically monitor the on/off time and are nearly instantaneous. (Line 907)
17. Booster Heater Temperature Calibration – (Line 950) Door type machines typically allow the final rinse water to flow for about 10 seconds during a 1 minute operating cycle. When the final rinse comes on, the water in the manifold where the temperature sensing device is located has dropped to well below 180°F. When the rinse turns on, it is not unusual for the temperature to display numbers 10 or 20 °F below the minimum for the first couple of

seconds. It seems to me the better method for door type machines is to state the *maximum* temperature shall not exceed 182°F. Current practice allows +/- 2°F.

18. Wash Tank Temperature Adjustment – When performing the idle tank temperature measurement on line 984, the procedure states the thermostat should be adjusted per the manufacturer's instructions if the temperature is not correct. The temperature should only be adjusted if there is a user adjustment available. Most machines provide thermostats factory set and not adjustable by the user. If a factory set thermostat must be adjusted to meet this criteria, that setting must be carried over to the production line so the energy consumption will be consistent.
19. Built-in and External Boosters – (Line 1005) We believe booster heater idle energy rates should be included in the reporting process as long as the machines are adequately identified on the qualified product list as to whether or not the booster is internal or external. That way a consumer can make an informed decision based on like models.
20. Idle Energy Rate – If the booster heater is required to operate for 10 on cycles similar to the wash tank heater, this will take over 8 hours for many machines (Line 1058). We are not certain why the booster heater must cycle for the same number of cycles as the wash tank heater.
21. Idle Energy for Conveyor Machines – The paragraph starting on line 1119 says to note which components are included in the manufacturer's power consumption ratings and monitor only those components. This seems to imply that a manufacturer can rate the machine based on a tank heater only and not include other loads such as controls or cooling fans and be able to claim a lower idle rate than what is actually being consumed. This is not in compliance with the ENERGY STAR intent.

The last sentence in this paragraph requires verification of amp load ratings if power consumption ratings are not provided. The total amps marked on a machine rating plate may be inflated to account for additional loads such as chemical feeders.
22. Steam Booster Heaters – The booster heater maximum energy input rate does not include provisions for steam booster heaters. These are common on steam heated conveyor machines and must be added.
23. Booster Temperature Calibration – The adjustment procedure on line 1270 should only be used if the booster heater is provided with a user adjustable thermostat. If the internal thermostat is not user adjustable, any change made must be documented and implemented on all production dishmachines.
24. Gallons Per Square Foot – Pot, Pan & Utensil – The calculation starting on line 1495 should use the water consumption per cycle rather than per rack. Some machines may be able to fit two racks but when calculating for the area of the rack, the number of racks is immaterial.

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Comments

25. Total Energy Consumption Units – Line 1597 does not have a units associated with it.

Thank you for the opportunity to comment on the draft test method. If you have any questions regarding this letter, please don't hesitate to call.

Sincerely,



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File Comments draft Test Method-Jan 2012-Hobart