

INSTALLER and INSPECTOR QUICK-REFERENCE: 2025-NRCA-MCH-09-A Supply Water Temperature Reset Controls

Purpose and Scope of the Test

This test ensures that both the chilled water and hot water supply temperatures are automatically reset based on either building loads or outdoor air temperature, as indicated in the control sequences. Many HVAC systems are served by central chilled and heating hot water plants. The supply water operating temperatures must meet peak loads when the system is operating at design conditions. As the loads vary, the supply water temperatures can be adjusted to satisfy the new operating conditions. Typically, the chilled water supply temperature can be raised as the cooling load decreases and heating hot water supply temperature can be lowered as the heating load decreases.

This requirement only applies to chilled and hot water systems that are not designed for variable flow and that have a design capacity greater than or equal to 500,000 Btu/hr, according to the Energy Code.

Test trigger

Newly Constructed and Additions/Alterations: Applies to chilled or hot water systems that have a supply temperature reset control strategy programmed into the building automation system.

Exception: Hydronic systems that use variable flow to reduce pump energy are not subject to this test.

Relevant Energy Code References and Required Compliance Documents

Title 24, Part 6 of the California Building Standards Code, Building Energy Efficiency Standards (Energy Code) sections 120.5(a)9, 140.4(k)1, 140.4(k)4, 160.3(d)1I, 170.2(c)4Ii, 170.2(c)4Iiv, and NA7.5.8.

Who Can Perform the Test

This test must be performed by an acceptance test technician certified by a CEC-approved Acceptance Test Technician Certification Provider, using compliance document NRCA-MCH-09-A.

Required Tools

Tools to perform the test include air and water temperature meters.

Estimated Time to Complete Test

- Construction inspection: 0.5 to 1 hour [depending on availability of construction documentation (i.e., plumbing drawings, material cut sheets, specifications, etc.) as well as sensor calibration].
- Functional testing: 1 to 2 hours (depending on familiarity with BAS, method employed to vary operating parameters, and time interval between control command and system response).

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Potential Issues and Cautions

- If the hot water temperature reset tests when there is minimal heating load, make sure to test the low end of the reset first (coldest hot water supply temperature). If the hottest supply water temperature is tested first, it may be difficult to dissipate the heat in the hot water loop without artificially creating a heating load. Waiting for a small heating load to dissipate the heat in the loop could add significant time to the test procedure.
- Where humidity control is required, chilled water supply water reset is not recommended.

Inspection Enforcement

Required:

Verify the inspector is in receipt of the NRCA-MCH-09-A for EACH system that must demonstrate compliance. All NRCA forms for Mechanical Systems must have a water mark logo from a certified Mechanical ATTCP Provider.

Optional Equipment Check:

Verify that the acceptance test technician has access to the following equipment:

- Temperature meters.

Acceptance Criteria

The following are verified through inspection:

- Supply water temperature sensors must be field calibrated to within one percent of a calibrated reference sensor. Supporting documentation should be attached to the NRCA-MCH-09-A.
- Sensor performance complies with the specifications on the construction documentation.
- Supply water reset works according to the control schedule and the measured water temperature is within 2 percent of control setpoint.

Follow the **Construction Inspection** and **Functional Testing** instructions on the NRCA-MCH-09-A.