

HYDRONIC SYSTEM VARIABLE FLOW CONTROL ACCEPTANCE

CEC-NRCA-MCH-10-A (Revised 01/20)

CALIFORNIA ENERGY COMMISSION



CERTIFICATE OF ACCEPTANCE		NRCA-MCH-10-A
Hydronic System Variable Flow Control Acceptance		(Page 1 of 3)
Project Name:	Enforcement Agency:	Permit Number:
Project Address:	City:	Zip Code:
System Name or Identification/Tag:	System Location or Area Served:	

Compliance Results: <input type="checkbox"/> Complies <input type="checkbox"/> Does NOT Comply	Enforcement Agency Use: Checked by/Date
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Intent:	Ensure that hydronic pump speed varies with building heating and cooling loads. Submit one Certificate of Acceptance for each system that must demonstrate compliance.
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A. Construction Inspection			
Building:	Floor:	Room/Area/Zone:	Control/System:
1.	Required documentation (check all of the following):		
<input type="checkbox"/>	a.	As-built, Design Documents, or mechanical equipment schedules as approved by the authority having jurisdiction.	
2.	Prior to Functional Testing, verify and document the following:		
	a.	For the static pressure location, setpoint, and reset control (check one of the following): (NA7.5.9.1(a))	
	<input type="checkbox"/>	i.	For systems WITHOUT direct digital control of individual coils reporting to the central control panel, differential pressure shall be measured at the most remote heat exchanger or the heat exchanger requiring the greatest differential pressure. (\$140.4(k)6Bi)
	<input type="checkbox"/>	ii.	For systems WITH direct digital control of individual coils with a central control panel, the static pressure set point shall be reset based on the valve requiring the most pressure, and the setpoint shall be no less than 80 percent open. Pressure sensors may be mounted anywhere. (\$140.4(k)6Bii)
	<input type="checkbox"/>	b.	Pressure sensors are either factory or field calibrated. (NA7.5.9.1(b))
Construction Inspection Compliance Results: <input type="checkbox"/> Complies <input type="checkbox"/> Does NOT Comply			

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B. Functional Testing

Building:	Floor:	Room/Area/Zone:	Control/System:
Steps:			Results
1	Modulate control valves to reduce water flow to 50 percent of the design flow or less, but not lower than the pump minimum flow. NOTE: in the rare case that the pump minimum flow is greater than 50 percent of the design flow, modulate the control values to the pump minimum flow. Verify and document the following: (NA7.5.9.2 (Step 1))		
a.	Pump operating speed decreases (for systems with DDC to the zone level). (NA7.5.9.2 (Step 1a))		P/F
b.	Current operating setpoint has not increased (for all other systems that are not DDC). (NA7.5.9.2 (Step 1b))		P F NA
c.	Record the system pressure as measured at the control sensor.	(either ft. w.c. or psig)	
d.	Record the system pressure setpoint.	(either ft. w.c. or psig)	
e.	Calculate: $100 \times (1c-1d)/1d$		%
f.	System pressure is within 5 percent of current operating setpoint (1e between -5% and +5%). (NA7.5.9.2 (Step 1c))		P/F
g.	System operation stabilizes within 5 minutes after test procedures are initiated. (NA7.5.9.2 (Step 1d))		P/F
2	Open control valves to increase water flow to a minimum of 90 percent design flow. Verify and document the following: (NA7.5.9.2 (Step 2))		
a.	Pump speed increases. (NA7.5.9.2 (Step 2e))		P/F
b.	Pumps are operating at 100 percent speed. (NA7.5.9.2 (Step 2f))		P/F
c.	Record the system pressure as measured at the control sensor	(either ft. w.c. or psig)	
d.	Record the system pressure setpoint.	(either ft. w.c. or psig)	
e.	System pressure setpoint in 2d is greater than the setpoint in Step 1d. (NA7.5.9.2 (Step 2g))		P/F
f.	Calculate: $100 \times (2c-2d)/2d$		%
g.	System pressure is either within ± 5 percent of current operating setpoint (2f is between -5% and +5%). (NA7.5.9.2 (Step 2h))		P/F
h.	System operation stabilizes within 5 minutes after test procedures are initiated. (NA7.5.9.2 (Step 2h))		P/F
3	Restore system to normal operating conditions. (NA7.5.9.2 (Step 3))		
Functional Testing Compliance Results: <input type="checkbox"/> Complies <input type="checkbox"/> Does NOT Comply			

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DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

1. I certify that this Certificate of Acceptance documentation is accurate and complete.

Documentation Author Name:	Documentation Author Signature:
Documentation Author Company Name:	Date Signed:
Address:	ATT Certification Identification (If applicable):
City/State/Zip:	Phone:

FIELD TECHNICIAN'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:

- The information provided on this Certificate of Acceptance is true and correct.
- I am the person who performed the acceptance verification reported on this Certificate of Acceptance (Field Technician).
- The construction or installation identified on this Certificate of Acceptance complies with the applicable acceptance requirements indicated in the plans and specifications approved by the enforcement agency, and conforms to the applicable acceptance requirements and procedures specified in Reference Nonresidential Appendix NA7.
- I have confirmed that the Certificate(s) of Installation for the construction or installation identified on this Certificate of Acceptance has been completed and signed by the responsible builder/installer and has been posted or made available with the building permit(s) issued for the building.

Field Technician Name:	Field Technician Signature:	
Field Technician Company Name:	Position with Company (Title):	
Address:	ATT Certification Identification (if applicable):	
City/State/Zip:	Phone:	Date Signed:

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:

- I am the Field Technician, or the Field Technician is acting on my behalf as my employee or my agent and I have reviewed the information provided on this Certificate of Acceptance.
- I am eligible under Division 3 of the Business and Professions Code in the applicable classification to accept responsibility for the system design, construction or installation of features, materials, components, or manufactured devices for the scope of work identified on this Certificate of Acceptance and attest to the declarations in this statement (responsible acceptance person).
- The information provided on this Certificate of Acceptance substantiates that the construction or installation identified on this Certificate of Acceptance complies with the acceptance requirements indicated in the plans and specifications approved by the enforcement agency, and conforms to the applicable acceptance requirements and procedures specified in Reference Nonresidential Appendix NA7.
- I have confirmed that the Certificate(s) of Installation for the construction or installation identified on this Certificate of Acceptance has been completed and is posted or made available with the building permit(s) issued for the building.
- I will ensure that a completed, signed copy of this Certificate of Acceptance shall be posted, or made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a signed copy of this Certificate of Acceptance is required to be included with the documentation the builder provides to the building owner at occupancy.

Responsible Acceptance Person Name:	Responsible Acceptance Person Signature:	
Responsible Acceptance Person Company Name:	Position with Company (Title):	
Address:	CSLB License:	
City/State/Zip:	Phone:	Date Signed: