

Dear Homeowner:

Using the Title 24 Residential Appendices section (RA3.2), The State of California and the California Energy Commission (CEC) regulates the procedure for determining that the proper amount of refrigerant ("system charge") has been installed for a split air conditioning system (an indoor coil and outdoor condenser). During the winter months the outdoor temperatures often drop below 55°F. Under these colder conditions, the CEC requires the HVAC contractor to follow the Alternate Charge Measurement Procedure (RA3.2.3), commonly referred to as the "Weigh-In Charging Method", to determining the proper charging of the system. This procedure requires the HVAC installers to use this alternate procedure in conjunction with installing and charging the system in accordance with the manufacturer's specifications. Split system air conditioners come from the factory already charged with the proper amount of refrigerant based on their standard "line set" length, which is typically 15ft. The HVAC installer is required to determine the actual length of piping used between the indoor coil and the outdoor unit so that the actual "line set" length is known. Then responsibility of the HVAC installer is to ensure that the refrigerant charge is correct for each air conditioner and to adjust the charge based on "line set" lengths as appropriate per the manufacturer's specifications for the actual "line set" length. The proper refrigerant charge in the system ensures proper cooling and critical to the energy savings for the homeowner.

Recently, the CEC ruled that installations where the Alternate Charge Measurement Procedure (RA3.2.3) was used (where the outdoor temperature is under 55°F at the time of installation verification) must now be 100% tested by a Home Energy Rating System Rater (HERS Rater) using the Standard Charge Measurement Procedure (RA3.2.2) once the outdoor temperatures rise above 55°F. In your project, your contractor has included this service, provided by DuctTesters, Inc. (a third party rating service), within your installation contract. There will not be an additional expense to you from DuctTesters, Inc for this service. Please note, this same law provides that you may choose and contract with a third party rating service of your choice, should you decide it is appropriate.

Once the outdoor temperatures rise above 55°F and time constraints allow, the HERS Rater or your HVAC Contractor may contact you to schedule an appointment for testing the proper refrigerant charge and confirming the system charge is suitable. Should the HERS testing find that the system charge is out of compliance, the HVAC contractor will return and correct the system charge along with a return visit by the HERS Rater for a "Third Party" confirmation of the proper system charge.

Under California Energy Code, Residential Appendices, RA2.4.4, an enforcement agency may approve the permit documentation for the RA3.2.3 procedure described above, provided your Contractor presents the homeowner with a signed agreement, with a copy going to the enforcement agency, stating he agrees to return "at a later time" and correct any non-complying system charge as determined by the HERS Rater".

Your Contractors' signature below indicates that they agree to return to your home at a later time to correct any non-complying system charge as determined by the HERS Rater" in conformance with the Title 24 Residential Appendices RA2.4.4. We solicit your cooperation and your patience regarding these matters. Thank you.

_____ agrees to the terms set forth in CEC Title 24 Residential Appendices RA2.4.4.

- c) If the difference is between minus 3°F and minus 100°F, then the measurement procedure shall be repeated making sure that temperatures are measured in a manner that obtains the average temperature in the airflow.
- d) If the re-measured difference is between plus 3°F and minus 3°F the system **passes** the adequate airflow criteria. If the re-measured difference is between minus 3°F and minus 100°F, the system passes, but it is likely that the capacity is low on this system (it is possible, but unlikely, that airflow is higher than average).

For the HERS Rater inspecting the system,

- a) If the difference is between plus 4°F and minus 4°F, then the system **passes** the adequate airflow criterion.
- b) If the difference is between minus 4°F and minus 100°F, then the measurement procedure shall be repeated making sure that temperatures are measured in a manner that obtains the average temperature in the airflow.
- c) If the re-measured difference is between plus 4°F and minus 4°F the system **passes** the adequate airflow criteria. If the re-measured difference is between minus 4°F and minus 100°F, the system passes, but it is likely that the capacity is low on this system (it is possible, but unlikely, that airflow is higher than average).

RA3.2.3 Alternate Charge Measurement Procedure

This section specifies the alternate charge measurement procedure. Under this procedure, the required refrigerant charge is calculated using the *Weigh-In Charging Method*.

HVAC installers who must complete system installation verification when the outdoor temperature is below 55°F shall use this alternate procedure in conjunction with installing and charging the system in accordance with the manufacturer's specifications. HERS Raters shall not use this procedure to verify compliance. Split system air conditioners come from the factory already charged with the standard charge indicated on the nameplate. The manufacturer supplies the charge proper for the application based on their standard liquid line length. It is the responsibility of the HVAC installer to ensure that the charge is correct for each air conditioner and to adjust the charge based on liquid line lengths different from the manufacturer's standard.

5. Require resubmission of data when retesting and correction is directed, and
6. Maintain a database of all data submitted in a format that is acceptable to the Commission and available to the Commission upon request.

The HERS provider shall arrange for the services of an independent HERS rater to conduct independent field verifications of the installation work performed by the participating installing contractor and Third Party Quality Control Program, completing all of the responsibilities of a HERS rater as specified in this Appendix RA2 with the exception that sampling shall be completed for a group of up to thirty dwelling units and sampling and re-sampling shall be completed for a minimum of one out of every thirty sequentially completed dwelling units from the group.

RA2.4.4 Enforcement Agency

The enforcement agency at its discretion may require independent testing and field verification to be scheduled so that it can be completed in conjunction with the enforcement agency's required inspections, and/or observe the field verification and diagnostic testing performed by builders or subcontractors or the certified HERS rater in conjunction with the enforcement agency's required inspections to corroborate the results documented on the Installation Certificate(s) and on the Certificate(s) of Field Verification and Diagnostic Testing.

For dwelling units that have used a compliance alternative that requires field verification and diagnostic testing, the enforcement agency shall not approve a dwelling unit until the enforcement agency has received, in accordance with Title 24, Part 1 Section 10-103(a) and the procedures in this Appendix, an Installation Certificate that has been completed and signed by the builder or subcontractor, and a registered copy of the Certificate of Field Verification and Diagnostic Testing that has been signed and dated by the HERS rater in conjunction with requests for final inspection for each dwelling unit. These filings shall be paper or electronic documents as applicable. The HERS provider shall make document verification services available, via phone or internet communications interface, to enforcement agencies, builders and contractors, HERS raters, the Energy Commission, and other authorized users of the provider data registry.

If necessary to avoid delay of approval of dwelling units completed when outside temperatures are below 55°F, the enforcement agency may approve compliance credit for refrigerant charge and airflow measurement when installers have used the alternate charging and airflow measurement procedure described in Section RA3.2. This approval will be on the condition that installers provide a signed agreement to the builder with a copy to the enforcement agencies to return to correct refrigerant charge and airflow if the HERS rater determines at a later time when the outside temperature is above 55°F that correction is necessary.

RA2.5 Installer Requirements - Installation Certificate Form

Installation Certificates are required for each and every dwelling unit that has features, materials, components, or manufactured devices that are required for compliance with the Appliance Efficiency Regulations and Title 24, Part 6 as listed on the Certificate of Compliance for the dwelling. The builder or the installing subcontractor shall complete and sign the applicable sections of an Installation Certificate for these items, and post a copy of the Certificate(s) at the building site for review by the enforcement agency in conjunction with requests for final inspection for each dwelling unit.

If any of the installed features, materials, components, or manufactured devices also require field verification or diagnostic testing by a certified HERS rater, they will be listed on the Certificate of Compliance with an indication that HERS verification is required for compliance, and the builder shall arrange for the services of a certified HERS rater prior to installation of the measures, so that once the installation is complete the HERS rater will have ample time to complete the required field verification and diagnostic testing without delaying final approval of the dwelling unit by the enforcement agency.

For some buildings, HERS verification procedures require the Installation Certificate(s) to be submitted to a HERS provider data registry. When this is required, the completed Installation Certificates are referred