

REFRIGERANT CHARGE VERIFICATION

CEC-CF2R-MCH-25f-F (Revised 06/14)

CALIFORNIA ENERGY COMMISSION



| | | |
|---|---------------------|----------------|
| CERTIFICATE OF INSTALLATION | | CF2R-MCH-25-E |
| Refrigerant Charge Verification – Packaged System | | (Page 1 of 3) |
| Project Name: | Enforcement Agency: | Permit Number: |
| Dwelling Address: | City | Zip Code |

A. System Information

Each system requiring refrigerant charge verification will be documented on a separate certificate.

| | | |
|----|--|--|
| 01 | System Identification or Name | |
| 02 | System Location or Area Served | |
| 03 | Condenser (or package unit) make or brand | |
| 04 | Condenser (or package unit) model number | |
| 05 | Nominal Cooling Capacity (tons) of Condenser | |
| 06 | Condenser (or package unit) serial number | |
| 07 | Refrigerant Type | |
| 08 | Other Refrigerant Type (if applicable) | |
| 09 | System Installation Type | |
| 10 | Charge Indicator Display (CID) Status (Note: Even systems with a CID must have refrigerant charge verified by installer) | |
| 11 | Is the system of a type that the minimum airflow can be verified using an approved measurement procedure (RA3.3 or RA3.2.2.7)? | |
| 12 | Is the system of a type that approved refrigerant charge verification procedures can be used to verify compliance with the refrigerant charge verification requirements when temperatures are $\geq 55^{\circ}\text{F}$ (RA3.2.2, or RA1)? | |
| 13 | Date of Refrigerant Charge Verification for this system | |
| 14 | Refrigerant charge verification method used. | |
| 15 | Person who performed the Refrigerant Charge Verification reported on this Certificate of Installation: | |
| 16 | HERS Verification Compliance Requirement Status | |

Registration Number:

Registration Date/Time:

HERS Provider:

CA Building Energy Efficiency Standards - 2013 Residential Compliance

June 2014



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| CERTIFICATE OF INSTALLATION | | CF2R-MCH-25-E |
| Refrigerant Charge Verification – Packaged System | | (Page 2 of 3) |
| Project Name: | Enforcement Agency: | Permit Number: |
| Dwelling Address: | City | Zip Code |

CF2R-MCH-25f – New Package Unit With Factory Charge

B. Measurement Access Hole (MAH) Verification*Procedures for installing MAH are specified in Reference Residential Appendix RA3.2.2.3*

| | | |
|----|--|--|
| 01 | Method used to demonstrate compliance with the Measurement Access Hole (MAH) requirement | |
|----|--|--|

C. Minimum System Airflow Rate Verification*Procedures for verifying minimum system airflow are specified in Reference Residential Appendix RA3.2.2.7.*

| | | |
|----|--|--|
| 01 | Minimum Required System Airflow Rate (cfm) | |
| 02 | System Airflow Rate Verification Status | |

D. Verification of New Package Unit Factory Charge*Note: There is no HERS verification requirement for the MCH-25f. The Enforcement Agency has responsibility for verification of the MCH-25f.*

| | | |
|----|---|--|
| 01 | Provide the AHRI certificate number for the installed new package unit with factory charge. | |
| 02 | The responsible person's signature on this document affirms that this new package unit has correct refrigerant charge as provided by the manufacturer prior to shipment from the factory, and no modifications have been made to this packaged unit that would result in a change to the amount of refrigerant in the unit. | |



| | | |
|---|---------------------|----------------|
| CERTIFICATE OF INSTALLATION | | CF2R-MCH-25-E |
| Refrigerant Charge Verification – Packaged System | | (Page 3 of 3) |
| Project Name: | Enforcement Agency: | Permit Number: |
| Dwelling Address: | City | Zip Code |

| | | |
|---|--|--------------|
| DOCUMENTATION AUTHOR'S DECLARATION STATEMENT | | |
| 1. I certify that this Certificate of Installation documentation is accurate and complete. | | |
| Documentation Author Name: | Documentation Author Signature: | |
| Documentation Author Company Name: | Date Signed: | |
| Address: | CEA/HERS Certification Identification (If applicable): | |
| City/State/Zip: | Phone: | |
| RESPONSIBLE PERSON'S DECLARATION STATEMENT | | |
| I certify the following under penalty of perjury, under the laws of the State of California: | | |
| 1. The information provided on this Certificate of Installation is true and correct. | | |
| 2. 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 Installation, and attest to the declarations in this statement (responsible builder/installer), otherwise I am an authorized representative of the responsible builder/installer. | | |
| 3. The constructed or installed features, materials, components or manufactured devices (the installation) identified on this Certificate of Installation conforms to all applicable codes and regulations, and the installation conforms to the requirements given on the plans and specifications approved by the enforcement agency. | | |
| 4. I reviewed a copy of the Certificate of Compliance approved by the enforcement agency that identifies the specific requirements for the scope of construction or installation identified on this Certificate of Installation, and I have ensured that the requirements that apply to the construction or installation have been met. | | |
| 5. I will ensure that a registered copy of this Certificate of Installation 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 registered copy of this Certificate of Installation is required to be included with the documentation the builder provides to the building owner at occupancy. | | |
| Responsible Builder/Installer Name: | Responsible Builder/Installer Signature: | |
| Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) | Position With Company (Title): | |
| Address: | CSLB License: | |
| City/State/Zip: | Phone | Date Signed: |

Instructions MCH-25f:

Section A. System Information

1. This information is automatically pulled from the Certificate of Installation (MCH-01).
2. This information is automatically pulled from the Certificate of Installation (MCH-01).
3. This information is automatically pulled from the Certificate of Installation (MCH-01).
4. This information is automatically pulled from the Certificate of Installation (MCH-01).
5. This information is automatically pulled from the Certificate of Installation (MCH-01).
6. This information is automatically pulled from the Certificate of Installation (MCH-01).
7. Choose the type of refrigerant used by the system being verified. R-22 and R-410A are the most common, but other types may occasionally be encountered.
8. If “Other” is chosen in Row A07, then indicate the type of refrigerant being used. If R-22 or R-410A is being used (regardless of trade name, Puron, Genetron, etc.) it should be indicated in Row A07. This row is only for refrigerants other than R-22 and R-410a. Documentation of refrigerant may be requested.
9. Indicate whether the HVAC system is Completely New, Replacement or an Alteration. These are defined in detail the Residential Compliance Manual.
10. Select the appropriate choice regarding whether this system has a Charge Indicator Display (CID). Qualifying CID’s may exempt a system from HERS refrigerant charge verification. CID’s are described in Joint Appendix JA6.1. Qualifying CID’s must appear on a list of approved devices kept by the Commission. Installation of a CID does not exempt the installer from proper refrigerant charge verification. It may only exempt the need for third party refrigerant charge verification. Third party verification of the CID is required. Other requirements may also be triggered.
11. Most ducted split systems and package systems are of the type that minimum airflow can be verified using an approved measurement procedure. Examples of systems that do not meet this description are ductless systems. Selecting “No” here may subject the project to additional scrutiny by enforcement personnel.
12. Most ducted split systems and package systems are of the type that approved refrigerant charge verification procedures detailed in Residential Appendix RA3.2.2 or RA1 can be used (i.e., Standard Charge Verification or Winter Setup Verification procedures). Examples of systems that may not meet this description are “mini splits” or variable refrigerant flow systems that may only be charged using weigh-in procedures. Selecting “No” here may subject the project to additional scrutiny.
13. Specify the date the refrigerant charge verification was performed by the installer.
14. Select the refrigerant charge verification method used from the choices provided:
 - Superheat (outdoor temperature must be ≥ 55 degF); This verification method can only be used when the outdoor temperature is at or above 55 degF. It is only used on systems with fixed orifice refrigerant metering devices (non-variable metering devices). This method is detailed in Reference Appendix RA3.2.2.6.1. Systems verified using this method may be eligible for HERS verification compliance using Group Sampling. Choosing this option will generate a CF2R-MCH-25a.
 - Subcooling (outdoor temperature must be ≥ 55 degF); This verification method can only be used when the outdoor temperature is at or above 55 degF. It is only used on systems with variable metering devices (TXV or EXV). This method is detailed in Reference Appendix RA3.2.2.6.2. Systems verified using this method may be eligible for HERS verification compliance using Group Sampling. Choosing this option will generate a CF2R-MCH-25b.
 - Weigh-in; This verification method can be used at any outdoor temperature allowed by the equipment manufacturer. This method is detailed in Reference Appendix RA3.2.3. Systems verified using this method are NOT eligible for HERS verification compliance using Group Sampling. Choosing this option will generate a CF2R-MCH-25c.
 - Winter Setup (applicable when outdoor temperature is < 55 degF); The Winter Setup verification method is a special version of the Subcooling method. It can be used when the outdoor temperature is between 37 and 55 degF. It can only be used on equipment where the manufacturer has specifically approved it for the equipment being tested. The Winter Setup procedure is details in Residential Appendix RA1.2. Choosing this option will generate a CF2R-MCH-25e.
 - New Package Unit Factory Charge; Choose this option when a new package unit is being installed that has an AHRI rating. This helps ensure that the unit was properly charged at the factory. HERS verification of refrigerant charge may not be required in this case. Choosing this option will generate a CF2R-MCH-25f.
15. Identify who will be performing the verification that is documented on this Certificate of Installation, select from the two options. Note that HERS verification compliance by Group Sampling requires that the installer perform their own refrigerant charge verification as part of the installation of the equipment prior to the system being put into a sample group for possible selection by a HERS rater for verification. If Group Sampling is not intended, the HERS Rater may perform the

refrigerant charge verification on behalf of the Installing Contractor (applies to any method but Weigh-In) and the Rater will enter same results on both the CF2R and CF3R.

16. The Group Sampling status is automatically displayed based on the input results of Row A14 and Row A15. Group Sampling procedures are detailed Residential Appendix RA2.3.

Section B. Measurement Access Hole (MAH) Verification

1. Indicate the method used to demonstrate compliance with the MAH requirement by selecting the appropriate method from the drop down list. Procedures for installing MAH's are detailed in RA3.2.2.3. Selecting that the MAH cannot be installed consistent with Figure 3.2-1 may result in additional scrutiny by enforcement personnel.

Section C. Minimum System Airflow Rate Verification

1. This information is automatically calculated based on the information given in line A09. This is the target minimum system airflow required for the system being verified.
2. This information is automatically calculated based on the MCH-23 or MCH-28, which documents the measured airflow (or alternative method) of the system being verified. If the measured airflow is not adequate it will not comply with the airflow requirements and refrigerant charge verification cannot be performed until the airflow meets the requirement.

Section D. Verification of New Package Unit Factory Charge

1. Only AHRI certified package units can qualify for having an appropriate factory charge. Provide an accurate AHRI certificate number here and be prepared to provide supporting documentation upon request.
2. By signing the Declaration Statement at the bottom of this form, the installer is declaring that the package unit was an AHRI certified unit and that no modifications were made to the unit to change the factory charge.

A. System Information

Each system requiring refrigerant charge verification will be documented on a separate certificate.

| | | |
|----|---|--|
| 01 | System Identification or Name | <<auto filled text: referenced from MCH01>> |
| 02 | System Location or Area Served | <<auto filled text: referenced from MCH01>> |
| 03 | Condenser (or package unit) make or brand | <<auto filled text: referenced from MCH01>> |
| 04 | Condenser (or package unit) model number | <<auto filled text: referenced from MCH01>> |
| 05 | Nominal Cooling Capacity (tons) of Condenser | <<auto filled text: referenced from MCH01>> |
| 06 | Condenser (or package unit) serial number | <<auto filled text: referenced from MCH01>> |
| 07 | Refrigerant Type | <<user select from list: <u>R-22</u> , or <u>R-410A</u> , or <u>other</u> >> |
| 08 | Other Refrigerant Type (if applicable) | << if A07 value = R-22 or R-410A then value in this field = N/A; elseif value in A07= other, then user input: text in this field to identify the refrigerant type >> |
| 09 | System Installation Type | <<user pick one from list: <u>New</u> ; or <u>Replacement</u> ; or <u>Alteration</u> >> |
| 10 | Charge Indicator Display (CID) Status (Note: Even systems with a CID must have refrigerant charge verified by installer) | <<user pick one from list: <u>This system has a factory installed CID</u> ; or <u>This system has a field installed CID</u> ; or <u>This system does not have a CID device installed</u> >> |
| 11 | Is the system of a type that the minimum airflow can be verified using an approved measurement procedure (RA3.3 or RA3.2.2.7)? | <<user pick one from list: <u>yes, this is a ducted system and one of the system airflow rate measurement procedures in RA3.3 or RA3.2.2.7 can be used to verify system airflow rate requirements</u> ; or <u>no, the airflow rate measurement procedures in RA3.3 or RA3.2.2.7 are not applicable to this system, therefore compliance shall use HERS Rater observation of the installer's weigh-in charging procedure</u> >> |
| 12 | Is the system of a type that approved refrigerant charge verification procedures can be used to verify compliance with the refrigerant charge verification requirements when temperatures are ≥ 55°F (RA3.2.2, or RA1)? | <<user pick one from list: <u>yes, one of the Refrigerant charge verification procedures from RA3.2.2 or RA1 is applicable to this system and can be used to verify compliance</u> ; or <u>no, none of the refrigerant charge verification procedures in RA3.2.2, or RA1 are applicable to the system therefore compliance shall use HERS Rater observation of the installer's weigh-in charging procedure</u> >> |
| 13 | Date of Refrigerant Charge Verification for this system | <<user input: date: use validated date format>> |
| 14 | Refrigerant charge verification method used. | <<user pick one from list: <ul style="list-style-type: none"> • <u>Superheat (outdoor temperature must be ≥ 55 degF)</u>; or • <u>Subcooling (outdoor temperature must be ≥ 55 degF)</u>; or • <u>Weigh-in</u>; or • <u>Winter Setup (applicable when outdoor temperature is < 55 degF)</u>; or • <u>New Package Unit Factory Charge</u> >> |
| 15 | Person who performed the Refrigerant Charge Verification reported on this Certificate of Installation: | <<user input: pick from list: <u>HVAC System Installer</u> ; or <u>HERS Rater</u> >> |

| | | |
|----|---|---|
| 16 | HERS Verification Compliance Requirement Status | <p><<calculated field: if A11 or A12=no, then display text" "System does not qualify for Group Sampling";</p> <p>elseif A14= <u>Weigh-in</u>, then display text: "System does not qualify for Group Sampling";</p> <p>elseif A14 = <u>New Package Unit Factory Charge</u>, then display text: "HERS verification of refrigerant charge is not required";</p> <p>elseif, A15=<u>HERS Rater</u>, then display text: "System does not qualify for Group Sampling";</p> <p>else display text: "System qualifies for Group Sampling.">></p> |
| 17 | <p>determine compliance method for this document; display applicable tables below; (this row not visible to user)</p> | <p><<calculated field: if A11 and A12=yes and A14=<u>Superheat</u>; then display method: 25a Superheat Charge Verification Procedure;</p> <p>elseif A11 and A12=yes, and A14= <u>Subcooling</u>; then display method: 25b. Subcooling Charge Verification Method;</p> <p>elseif A11 and A12=yes and A14= <u>Weigh-in</u>; then display method: 25c. <u>Weigh-in</u> Charging Procedure;</p> <p>elseif A11 and A12=yes and A14=<u>Winter Setup</u>; then display method: 25e. Winter Setup for Standard Charge Verification;</p> <p>elseif A11 and A12=yes and A14= <u>New Package Unit Factory Charge</u>; then display method: 25f. <u>New Package Unit with Factory Charge</u>;</p> <p>elseif A11=no, or A12=no; then display method: 25c. <u>Weigh-in</u> Charging Procedure</p> |

CF2R-MCH-25f – New Package Unit With Factory Charge

B. Measurement Access Hole (MAH) Verification

Procedures for installing MAH are specified in Reference Residential Appendix RA3.2.2.3

| | | |
|----|--|---|
| 01 | Method used to demonstrate compliance with the Measurement Access Hole (MAH) requirement | <<user select one of the options from list: <ul style="list-style-type: none"> • "MAH installed and labeled consistent with Figure 3.2-1"; or • "Return side of system is located entirely within conditioned space such that an accurate return air dry-bulb temperature can be taken at the return grille"; or • "MAH cannot be installed consistent with Figure 3.2-1. An alternative location has been provided and clearly labeled">> |
|----|--|---|

C. Minimum System Airflow Rate Verification

Procedures for verifying minimum system airflow are specified in Reference Residential Appendix RA3.2.2.7.

| | | |
|----|--|---|
| 01 | Minimum Required System Airflow Rate (cfm) | <calculated field, numeric xxxx: if A09= <u>Completely New or Replacement</u> , then display numeric value =A05*350; elseif A9=Alteration, then display numeric value =A05*300>> |
| 02 | System Airflow Rate Verification Status | <<calculated field: if the CF2R-MCH-01 indicates a MCH-28 is required for alternate minimum airflow rate compliance, then if the system has a registered CF2R-MCH-28 that indicates compliance with Table 150.0-C or D return duct design requirements, then result = system complies using Table 150.0-C or D alternative return duct design criteria. else result= System does not comply. A registered CF2R-MCH-28 is required (do not allow this MCH-25 to be registered). elseif the CF2R-MCH-01 indicates a MCH-23 is required for minimum airflow rate compliance, then if this system has a registered CF2R-MCH-23a or CF2R-MCH-23b that meets the compliance criterion in C01, then result = System complies with minimum airflow rate requirements; elseif A09=Alteration, then if the system complies with the alternative airflow compliance method on a registered CF2R-MCH23c; then result = system complies using the alternative remedial actions specified in RA3.2.2.7.3. This System does not qualify for Group Sampling. else result= System does not comply. A registered CF2R-MCH-23 for this system is required . (do not allow this MCH-25 to be registered). end>> |

D. Verification of New Package Unit Factory Charge

Note: There is no HERS verification requirement for the MCH-25f. The Enforcement Agency has responsibility for verification of the MCH-25f.

| | | |
|----|---|---|
| 01 | Provide the AHRI certificate number for the installed new package unit with factory charge. | <<User entry, alphanumeric text maximum 50 digits(value must be given in this field in order to register the doc)>> |
| 02 | The responsible person's signature on this document affirms that this new package unit has correct refrigerant charge as provided by the manufacturer prior to shipment from the factory, and no modifications have been made to this packaged unit that would result in a change to the amount of refrigerant in the unit. | |

For information and data collection only. Not valid until registered with a HERS provider

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

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

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

RESPONSIBLE PERSON'S DECLARATION STATEMENT

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

1. The information provided on this Certificate of Installation is true and correct.
2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the scope of construction or installation, in the applicable classification, for the scope of work specified on this Certificate of Installation (responsible builder/installer), otherwise I am an authorized representative of the responsible builder/installer.
3. The constructed or installed features, materials, components or manufactured devices (the installation) identified on this Certificate of Installation conforms to all applicable codes and regulations, and the installation conforms to the requirements given on the plans and specifications approved by the enforcement agency.
4. I reviewed a copy of the Certificate of Compliance approved by the enforcement agency that identifies the specific requirements for the scope of construction or installation identified on this Certificate of Installation, and I have ensured that the requirements that apply to the construction or installation have been met.
5. I will ensure that a registered copy of this Certificate of Installation 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 registered copy of this Certificate of Installation is required to be included with the documentation the builder provides to the building owner at occupancy.

| | | |
|---|--|--------------|
| Responsible Builder/Installer Name: | Responsible Builder/Installer Signature: | |
| Company Name: (Installing Subcontractor or General Contractor or Builder/Owner) | Position With Company (Title): | |
| Address: | CSLB License: | |
| City/State/Zip: | Phone | Date Signed: |