



Setting the Standards for Home Energy Efficiency

**Interpretation:** HVAC Grading when No additional Charge is required for Mini-split or Multi-split Heat Pump

**Designation** IR 310-2020-001

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**Reference:** This request for interpretation refers to the requirements presented in Standard:

ANSI/RESNET/AC  
CA 310-2020

Page Number(s): page 44,45

Section(s): 8.5.2.1.5 , 8.5.3.2

Table(s): \_\_\_\_\_

Relating to: “The length of liquid line accounted for in the factory-supplied charge”

**Background:** *Provided by person requesting the interpretation.*

Section 8.5.3.2 defines the term Ldefault as “the liquid line length accounted for by the factory-supplied charge, from Section 8.5.2.1.5.” Section 8.5.2.1.5 requires the Rater to collect “the length of liquid line accounted for in the factory-supplied charge” from the party responsible for charging the system. Footnote 80 clarifies that “Systems typically come charged from the factory to account for a default length of refrigerant line, often 15 feet. Manufacturer instructions will direct installers to add or remove refrigerant if the actual line length is longer or shorter than this default length.”

For a typical system, the factory-supplied charge will account for a single line length, such as 15 feet. However, for some advanced system types, such as some mini-split and multi-split models, the manufacturer provides a range of liquid line lengths, rather than a single number, that the factory-supplied charge can accommodate.

For an example, a Mitsubishi SUZ-KA18NAHZ outdoor unit comes with a factory charge that according to the installation instructions can accommodate a maximum of 100ft of ¼ inch liquid line. The instructions state that no charge needs to be added or removed as long as the max line length is less than 100ft.

In such cases, there is a range of values for the liquid line length that is acceptable and accounted for by the factory-supplied charge, and the standard does not clearly state which liquid line length value should be used for Ldefault.

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**Interpretation:** *Provided by person requesting the interpretation.*

For systems where the factory-supplied charge accounts for a range of liquid line lengths, the value for Ldefault should reflect the length within that range that is closest to the measured liquid line length. For example, if the factory-supplied charge can accommodate a liquid line length for any length up to 100 feet, and the measured liquid line length is 60 ft, then the value used for Ldefault should be 60 ft.

The reason we need this interpretation is that if we use the maximum allowed length for Ldefault when the installed length is more than 5% shorter, the result will be Grade 3 due to not meeting the Grade 1 criteria of 8.6.3.1.1: “The absolute value of the percent deviation between the total anticipated and total reported refrigerant weight, per Equation 24, is  $\leq 5\%$ ”.

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**Question:** Is this Interpretation correct?

**SDC Answer:** Yes

**SDC Comments**