



BSR/ASHRAE Standard 23.1-2010R

Public Review Draft

Methods for Performance Testing Positive Displacement Refrigerant Compressors and Condensing Units that Operate at Subcritical Pressures of the Refrigerant

Third Public Review (November 2018)

(Draft Shows Proposed **Independent Substantive Changes to Previous Public Review Draft)**

This draft has been recommended for public review by the responsible project committee. To submit a comment on this proposed standard, go to the ASHRAE website at www.ashrae.org/standards-research--technology/public-review-drafts and access the online comment database. The draft is subject to modification until it is approved for publication by the Board of Directors and ANSI. Until this time, the current edition of the standard (as modified by any published addenda on the ASHRAE website) remains in effect. The current edition of any standard may be purchased from the ASHRAE Online Store at www.ashrae.org/bookstore or by calling 404-636-8400 or 1-800-727-4723 (for orders in the U.S. or Canada).

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ASHRAE, 1791 Tullie Circle, NE, Atlanta GA 30329-2305

23.1-2010R ISC Publication Public Review Draft, Methods for Performance Testing Positive Displacement Refrigerant Compressors and Condensing Units That Operate at Subcritical Pressures of the Refrigerant

Background. The first 23.1-2010R full public review (PPR1) that ended on April 17, 2017, had no public review comments.

In May 2017, one of the 23.1-2010R voting members discovered that a key section was inadvertently omitted from the 23.1-2010R PPR1 draft. A 23.1-2010R Independent Substantive Change (ISC) Publication Public Review (PPR) draft was prepared to correct that error of omission. The ISC public review (ISC1) that ended on October 15, 2017, had no public review comments.

Since then, ASHRAE editors and publication staff have begun the publication process for 23.1-2018. However, one of the 23.1-2010R voting members has discovered that several equations contain unit conversion errors and that a variable was inadvertently omitted from one equation. Correcting these equations is the subject of this 23.1-2010R ISC2 PPR draft.

Note that in this 23.1-2010R ISC2 PPR draft, changes to 23.1-2010R PPR1 draft are indicated in the text by underlining for additions, and by ~~striketrough~~ for deletions.

Equation 5-5b has been corrected as shown below:

$$\eta = \frac{[(h_{3s} - h_2)]}{P} \times 29.31$$

$$\eta = \frac{[\dot{m}_1(h_{3s} - h_2)]}{P} \times 0.02931$$

Equation 5-6b has been corrected as shown below:

$$\eta = \frac{[\sum_{i=1}^{NS} \dot{m}_i(h_{3is} - h_{2is})]}{P} \times 29.31$$

$$\eta = \frac{[\sum_{i=1}^{NS} \dot{m}_i(h_{3is} - h_{2is})]}{P} \times 0.02931$$

Equation 5-7b has been corrected as shown below:

$$\eta = \frac{[\dot{m}_1(h_{31s} - h_{21s}) + \dot{m}_2(h_{32s} - h_{22s})]}{P} \times 29.31$$

$$\eta = \frac{[\dot{m}_1(h_{31s} - h_{21s}) + \dot{m}_2(h_{32s} - h_{22s})]}{P} \times 0.02931$$

Equation 5-11b has been corrected as shown below:

$$\eta = \frac{[\dot{m}_1(h_{31s} - h_{21s}) + \dot{m}_2(h_{32s} - h_{22s})]}{P} \times 29.31$$

$$\eta = \frac{[\dot{m}_1(h_{31s} - h_{21s}) + \dot{m}_2(h_{32s} - h_{22s})]}{P} \times 0.02931$$

The SI unit for capacity in Equation 5-15 has been corrected as shown below:

$$Q = \dot{m}_1(h_2 - h_1) \quad (5-15)$$

where

Q = capacity of a UUT at the specified operating conditions, kW (Btu/h)

Equation 5-20b has been corrected as shown below:

$$\eta_v = \frac{(\dot{m})(v)}{(V)(N)} \times 28.8$$
$$\eta_v = \frac{(\dot{m})(v)}{(V)(N)} \times 2880$$

Equation 5-21b has been corrected as shown below:

$$\eta_v = \frac{(\dot{m})(v)}{(V_{max})(f)} \times 48$$
$$\eta_v = \frac{(\dot{m})(v)}{(V_{max})(f)} \times 48$$