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ANSI/ASHRAE Standard 30-2025
Method of Testing Liquid Chillers

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FOREWORD

ASHRAE Standard 30 prescribes methods for obtaining performance test data of liquid-chilling or liquid-heating equipment using the vapor compression thermodynamic cycle and any type of compressor. The intent of this standard is to provide uniform test methods to measure the performance of this equipment by specifying the test and instrumentation requirements, test procedures, data to be recorded, and calculations to generate and confirm valid test results. See Informative Appendix E for a complete list of changes since the previous edition.

1. PURPOSE

1.1 The purpose of this standard is to prescribe methods of testing to measure the thermal capacity, energy efficiency, and liquid pressure drop of packaged liquid-chiller equipment using a refrigerant vapor compression cycle.

1.2 This standard does not specify methods of establishing published ratings or performance tolerances.

2. SCOPE

2.1 This standard applies to the following packaged equipment using any type of compressor:

a. Liquid chilling
b. Liquid heating
c. Simultaneous liquid chilling and liquid heating

2.1.1 Using the following methods of heat rejection during the cooling cycle or heat absorption during the heating cycle:

a. Air cooled
b. Adiabatically cooled
c. Evaporatively cooled
d. Liquid cooled

2.2 This standard includes packaged equipment provided in more than one assembly if the separated or remote assemblies are designed to be used together and are connected together during the test.

2.3 This standard does not include the following types of equipment:

a. Self-contained, mechanically refrigerated drinking-water coolers within the scope of ANSI/ASHRAE Standard 18
b. Unitary water-to-air heat-pump equipment within the scope of ANSI/ASHRAE Standard 37
c. Absorption water-chilling packages within the scope of ANSI/ASHRAE Standard 182

2.4 This standard does not include testing of chillers in field installations.

2.5 This standard does not specify the test operating conditions.

2.6 This standard does not specify methods of performance ratings certification.

3. DEFINITIONS, ABBREVIATIONS, AND ACRONYMS

air-sampling tree: an air-sampling tube assembly that draws air through sampling tubes in a manner to provide a uniform sampling of air entering the air-cooled condenser coil. See Section 6.3.1.4.2.1 for design details.

aspirating psychrometer: a piece of equipment with a monitored airflow section that draws a uniform airflow velocity through the measurement section and has probes for measurement of air temperature and humidity. See Section 6.3.1.4.2.2 for design details.

auxiliary power: see *power.*

capacity: a measurable physical quantity, the rate that heat (energy) is added to or removed from the liquid side of a refrigerating system. Capacity is defined as the mass flow rate of the liquid multiplied by the difference in enthalpy of liquid entering and leaving the heat exchanger. (***Informative Note:*** When the impact of test result uncertainty is acceptable to the test plan requirements, the enthalpy change is approximated as the

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INFORMATIVE APPENDIX E
ADDENDA DESCRIPTION

ANSI/ASHRAE Standard 30-2025 incorporates ANSI/ASHRAE Standard 30-2019 and Addenda a, b, c, d, f, h, and i to ANSI/ASHRAE Standard 30-2019. Table E-1 lists each addendum and describes the way in which the standard is affected by the change. It also lists the ASHRAE and ANSI approval dates for each addendum.

Table E-1 Addenda to ANSI/ASHRAE Standard 30-2019

Addendum	Section(s) Affected	Description of Changes*	Approval Dates
a	3, 5.4, 5.4.1, 5.4.2.1, 5.4.4, 6.4, 7, 9.1, Table 7-1, Table 7-2, Table 9-1, 10, Table 10-1, Table 10-2, Appendix B	• Updates definitions for "capacity" and "condenser" to align with the rest of the standard. • Adds enthalpy measurement and capacity calculations. • Updates thermal input power calculations. • Clarifies existing pressure drop correction calculation. • Adds requirement to test based on operating mode set points defined prior to testing. • Simplifies existing test data collection and test report requirements.	May 29, 2020 (ASHRAE) May 29, 2020 (ANSI)
b	3, 5.4.4, 5.4.4.1, 5.4.4.2, 6, Table 6-1, Table 6-6, 8.4.1, 8.4.3, Table 9-1, Table 10-1, 11, Informative Appendix B (new)	• Changes "water" to "liquid" where applicable. • Clarifies requirements for Δp_{adj}. • Replaces reference to ASME and ISA standards with exclusive reference to the ASHRAE Standard 41 series of standards. • Removes ft H_2O from the standard. • Adds a new Informative Appendix B with link and description to a supplemental Microsoft® Excel® workbook for a system calibration worksheet.	April 30, 2021 (ASHRAE) April 30, 2021 (ANSI)
c	3, 4.1, 4.1.1, 4.1.1.1, 5.4.1, 5.4.3, 5.4.3.1, 5.4.3.2.1, 5.4.3.3, 5.5.1.1, 5.5.2, 6.3.1.4.2.1, 6.3.1.7.1, 6.4, 6.7.1, 6.7.4, Table 6-6, Table 7-1, Table 7-2, 8.2, 9.1, Table 9-1, Table 10-2, 11, Appendix B	• Adds a definition for heat exchanger allowing reference to capacity measurement in cooling or heating. • Redefined heat reclaim and combined heating and cooling metrics to allow capacity and total efficiency calculation including all heat exchangers. • Added definitions for various operating modes such as any hybrid mode that makes use of simultaneous cooling and heating, and any hybrid mode that makes use of passive operation, provided that all system components are included as part of the liquid-chilling system to be tested. Such components may include air-to-liquid, refrigerant-to-liquid, refrigerant-to-air, or liquid-to-liquid heat exchangers.	December 31, 2024 (ASHRAE) December 31, 2024 (ANSI)
d	Table 6-6	Aligns stability requirements in the standard with the measurements supporting the purpose of the test.	February 29, 2024 (ASHRAE) February 29, 2024 (ANSI)
f	Informative Appendix C (new)	Adds new Informative Appendix C with link and description to a supplemental Microsoft® Excel® workbook to facilitate calculations in accordance with Section 8.4.	January 31, 2023 (ASHRAE) January 31, 2023 (ANSI)

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Table E-1 Addenda to ANSI/ASHRAE Standard 30-2019

Addendum	Section(s) Affected	Description of Changes*	Approval Dates
h	6.4, 6.7.4.1.5, 8.2.1, 8.2.1.2, Table 6-6	• Updates Section 8.2.1 to state that all heat exchangers connected to the chiller shall remain connected for the duration of the test. • Clarifies that remote tubing lengths and sizes must be specified in the test plan. For example, if this standard is used to support testing in accordance with AHRI 550/590: for standard rating tests, the tubing length shall be 25 ft; for other rating conditions, the length may vary per the test plan. • Adds the requirement that redundant voltage measurements must be within ±2%. • Clarifies the operation condition tolerance and stability criteria during fan cycling.	April 30, 2025 (ASHRAE) April 30, 2025 (ANSI)
i	2.1	• Shows revisions to the purpose and scope statements of ANSI/ASHRAE Standard 30-2019. The subtle change in the purpose statement reflects the current title and scope of the standard, which includes liquids other than water that may be cooled or heated. The changes to the scope are to harmonize with AHRI Standard 550/590-2023 and Standard 551/591-2023, which define the method of ratings for chillers capable of simultaneously providing both cooling and heating functions	December 31, 2024 (ASHRAE) December 31, 2024 (ANSI)

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