

OPERATIONS MANUAL

AUTOMATIC COMMERCIAL ICE-MAKERS AND ICE-STORAGE BINS CERTIFICATION PROGRAM



AHRI ACIM OM – NOVEMBER 2023

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PREFACE

The following manual outlines the procedures and policies of the Performance Certification Program for Automatic Commercial Ice-Makers and Ice-Storage Bins (ACIM) operated by the Air-Conditioning, Heating, and Refrigeration Institute (AHRI). This manual is to be used in conjunction with the AHRI General Operations Manual for AHRI Certification Programs. Where the AHRI General Operations Manual and this product-specific manual differ, this product-specific operations manual shall prevail.

The revision of this manual supersedes all previous revisions. The current edition of this manual, as well as the AHRI General Operations Manual, can be accessed through the AHRI website, www.ahrinet.org.

The ACIM Certification Program by AHRI provides for independent verification of the ACIM manufacturers' stated equipment performance. Safety criteria are not within the scope of this program.

Participation in the program is voluntary. Any manufacturer, regardless of AHRI membership, may obtain approval of Program Ratings and use of the AHRI ACIM Certification Marks hereinafter referred to as the "Mark". The Mark is the Participant's public representation that the ratings of randomly selected units have been verified by an independent laboratory in accordance with test procedures prescribed by this operations manual. A Certification Agreement is executed between the manufacturer and AHRI specifying the conditions under which such Ratings and the Marks may be used. No manufacturer has the right to use Program Ratings or to state that their products have been tested in conformance with the procedures outlined in this Rating Procedure unless and until they have received written authority from AHRI to use the Marks as applied to the specific approved Program Ratings.

This Operations Manual has been prepared to assure that administration of the program is carried out in a uniform manner. It is an amplification of the Certification Agreement signed by licensees and AHRI. General information, procedural details, and copies of forms are included in the guide. Provisions of the Operations Manual may be amended as provided in the Certification Agreement.

This certification program complies with requirements of the ISO/IEC Standard 17065:2012, *Conformity assessment – Requirements for bodies certifying products, processes and services*.

Note:

This manual supersedes the AHRI Automatic Commercial Ice-makers and Ice-Storage Bins Certification Program Operational Manual, May 2021.

CERTIFICATION OPERATIONS MANUAL FOR
AUTOMATIC COMMERCIAL ICE-MAKERS

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1. Program Overview

1.1 Applicable Rating Standard. It is mandatory for program Participants to comply with the provisions of AHRI Standard 810-2023, *Performance Rating of Automatic Commercial Ice-makers*. For Participants opting to certify Ice Storage Bins, it is mandatory to comply ANSI/AHRI Standard 820-2023, *Performance Rating of Ice Storage Bins*. Copies of these Standards are available for download from the AHRI website, www.ahrinet.org.

1.2 Product Definitions.

1.2.1 Automatic Commercial Ice-maker. A factory-made assembly (not necessarily shipped in one (1) package) including a condensing unit and ice-making section, operating as an integrated unit, with means for making and harvesting ice. It is an assembly that makes no less than 50.0 lbs. of ice per day and up to 4,000.0 lbs of ice per day at Standard Ratings Conditions and may also include means for storing or dispensing ice, or both.

1.2.1.1 Self-Contained Ice-maker. A model in which the ice-making mechanism and storage compartment are in an integral cabinet.

1.2.1.2 Split System Ice-maker. A model in which the ice-making mechanism and condenser or condensing unit are in separate assemblies but are designed to be used together.

1.2.1.3 Batch Type Ice-maker. An ice-maker that has alternate freezing and harvesting periods.

1.2.1.4 Continuous Type Ice-maker. An ice-maker that continually freezes and harvests ice at the same time.

1.2.1.5 Modular Ice-maker. A model in which the ice-making mechanism and ice-storage bin are in separate assemblies.

1.2.2 Ice Storage Bins. A factory-made assembly (not necessarily shipped in one (1) package) that consists of a non-refrigerated compartment for storage of ice.

1.3 Program Scope. This program applies to 50 and 60 Hz Automatic Commercial Ice-makers, as defined in Section 1.2, for which Published Ratings are available.

1.3.1 Voluntary Program Scope Inclusions. Manufacturers may optionally choose to certify the following:

1.3.1.1 Ice Storage Bins. Participants may elect to certify Ice Storage Bins, as defined in Section 1.2.2. If a Participant elects to certify their Ice Storage Bins, the Participant is required to certify all its Ice Storage Bins, as per AHRI's Certify-All Policy.

1.4 Intended Market. The Intended Market for this certification program includes products defined in Section 1.3 that are sold for use in the U.S. and Canada (U.S., U.S. Territories, and Canada).

1.5 Basic Model Groups (BMGs). A Participant's listings shall be grouped by the following BMG criteria. There are 16 BMGs for Batch Type Ice-makers and 16 BMGs for Continuous Type. Participants that elect to certify Ice Storage Bins shall have all Ice Storage Bin models listed with the BMG ID of zero (0). Tables 1 and 2 list the ranges of ice harvest rates representing the BMG classifications for Batch Type Ice-maker and Continuous Type Ice-maker:

| Table 1. Batch Type Ice-maker BMGs | |
|------------------------------------|---------------------------|
| BMG ID | Ice Harvest Rate (lb/24h) |
| 1 | 50-150 |
| 2 | 151-238 |
| 3 | 239-281 |
| 4 | 282-369 |
| 5 | 370-455 |
| 6 | 456-530 |
| 7 | 531-600 |
| 8 | 601-705 |
| 9 | 706-815 |
| 10 | 816-890 |
| 11 | 891-1170 |
| 12 | 1171-1235 |
| 13 | 1236-1420 |
| 14 | 1421-1540 |
| 15 | 1541-1670 |
| 16 | 1671-4000 |

| Table 2. Continuous Type Ice-maker BMGs | |
|---|---------------------------|
| BMG ID | Ice Harvest Rate (lb/24h) |
| 17 | 50-150 |
| 18 | 151-238 |
| 19 | 239-281 |
| 20 | 282-369 |
| 21 | 370-455 |
| 22 | 456-530 |
| 23 | 531-600 |
| 24 | 601-705 |
| 25 | 706-815 |
| 26 | 816-890 |
| 27 | 891-1170 |
| 28 | 1171-1235 |
| 29 | 1236-1420 |
| 30 | 1421-1540 |
| 31 | 1541-1670 |
| 32 | 1671-4000 |

2. Qualification Process

2.1 Original Equipment Manufacturer (OEM) Applicants. With the additions noted below, the OEM qualification process shall proceed according to the AHRI General Operations Manual, Section 4.

STEP 2.1.1 Certification Application Package. In addition to the Application for AHRI Certification, Annual Sales Volume Form, and product-specific ratings and data, noted in the AHRI General Operations Manual, Section 4, STEP 4.1, Applicants shall submit the following documentation to AHRI:

- One test report for each BMG; and
- Additional information may be needed to meet ENERGY STAR® program requirements.

STEP 2.1.2 Processing Application Package.

STEP 2.1.2.1 Performance Certification Agreement for Original Equipment Manufacturer (OEM Agreement). No further action required beyond that listed in Section 4, STEP 4.2 of the AHRI General Operations Manual.

STEP 2.1.2.2 Participation and Licensing Fee Invoice. Payment of the Participation and Licensing Fee is due within 30 calendar days of the invoice issue date. Testing shall not be conducted until the invoice is paid in full. No further action required beyond that listed in Section 4, STEP 4.2 of the AHRI General Operations Manual.

STEP 2.1.3 Selection and Acquisition of Test Samples.

STEP 2.1.3.1 Number of Qualification Tests. 30% of an Applicant's Batch and Continuous Type Ice-maker BMGs shall be tested, with a minimum of two (2) models for each type. Fractional numbers shall be rounded to the nearest whole number using traditional rounding methods. For Applicants electing to take part in Ice-Storage Bin certification, two (2) Ice-Storage Bin models shall be tested.

STEP 2.1.3.2 Acquisition of Qualification Test Samples/Selection Criteria. Within 30 calendar days of a request from AHRI, the Applicant shall have samples available for selection. Samples shall be acquired in accordance with Section 3 of this manual.

STEP 2.1.4 Qualification Testing. AHRI shall supply the Laboratory with the Published Ratings. The Laboratory shall conduct the testing of the samples in accordance with the Standard, against the Published Ratings.

STEP 2.1.4.1 Successful Completion of All Qualification Tests. If all qualification tests pass proceed to STEP 2.1.5.

STEP 2.1.4.2 First Sample Qualification Test Failure. Refer to Section 4, STEP 4.4.2 of the AHRI General Operations Manual for details regarding the first sample qualification failure options.

STEP 2.1.4.3 Second Sample Qualification Test Failure. Refer to Section 4, STEP 4.4.3 of the AHRI General Operations Manual for details regarding the second sample qualification failure options.

STEP 2.1.5 Welcome to the Program. No further action required beyond that listed in Section 4, STEP 4.5 of the AHRI General Operations Manual.

2.2 Private Brand Marketer (PBM) Applicants. With the additions noted below, the PBM qualification process shall proceed according to the AHRI General Operations Manual, Section 5.

PBM Applicants are not required to undergo qualification testing. PBM product certification is contingent upon the certification of the associated OEM product.

STEP 2.2.1 Certification Application Package. No further action required beyond that listed in Section 5, STEP 5.1 of the AHRI General Operations Manual.

STEP 2.2.2 Processing Application Package.

STEP 2.2.2.1 Performance Certification Agreement for Private Brand Marketer (PBM Agreement). No further action required beyond that listed in Section 5, STEP 5.2.1 of the AHRI General Operations Manual.

STEP 2.2.2.2 OEM Agreement on Behalf of the PBM Applicant. No further action required beyond that listed in Section 5, STEP 5.2.2 of the AHRI General Operations Manual.

STEP 2.2.2.3 Licensing Fee Invoice. Payment of the Licensing Fee is due within 30 calendar days of the invoice issue date.

STEP 2.2.3 Welcome to the Program. No further action required beyond that listed in Section 5, STEP 5.3 of the AHRI General Operations Manual.

3. Equipment Selection and Testing

3.1 Annual Testing Requirement. 20% of a Participant's Batch and Continuous Type Ice-makers BMGs shall be tested, with a minimum of two (2) models for each type. Fractional numbers shall be rounded to the nearest whole number using traditional rounding methods. For Participants taking part in Ice-Storage Bin certification, two (2) Ice-Storage Bin models shall be tested.

3.2 Location of Test. Testing shall be performed at the Laboratory and the sample shall be installed in the test facility in accordance with the Participant's published installation instructions in printed or electronic format.

3.3 Selection of Test Samples. Selections shall be made based on data contained in the AHRI Directory of Certified Product Performance (Directory). AHRI shall inform the Participant, in writing, of the sample(s) selected for test.

3.4 Method for Acquiring Test Samples. AHRI or the Laboratory personnel shall make a Random Sample Selection from the Participant's stock inventory within 30 calendar days of a selection by AHRI. Selected samples shall be shipped to the Laboratory accompanied by the Participant's published installation instructions in printed or electronic format. Refer to Section 9 of the AHRI General Operation Manual.

3.5 Sample Acquisition Timeframe. The Participant shall deliver the selected sample(s) to the Laboratory within 14 calendar days of Random Sample Selection by Laboratory personnel.

3.6 Certified Data.

3.6.1 Automatic Commercial Ice-Makers Certified Data In accordance with the Standard, the following certified ratings are verified by test:

- Ice Harvest Rate, lb/24h
- Potable Water Use Rate, gal/100 lb of ice
- Condenser Water Use Rate, gal/100 lb of ice (Water-cooled units only)
- Energy Consumption Rate, kWh/100 lb of ice
- Ice Hardness Factor, % (Continuous Type Ice-makers only)

3.6.2 Ice Storage Bin Certified Data. In accordance with the Standard, the following certified ratings are verified by test:

- Measured Internal Volume, ft³.

3.7 Test Failures.

3.7.1 Options Following First Sample Failure. When the Participant is notified of a first sample certified rating failure, it has seven (7) calendar days to select one (1) of the following options:

- Re-rate all models within the failed sample's BMG proportionate to the failed test's results;
- Test second sample of the same model (sample must be available within the timeframe and procedure allotted in Section 3.4 following notification of decision to AHRI via Manufacturer's Decision Form [MDF]); or
- Obsolete the model, which also obsoletes all models within the corresponding BMG.

3.7.2 Options Following Second Sample Failure. When the Participant is notified of a second-sample certified rating failure, the Participant has seven (7) calendar days to select one of the following options:

- Re-rate all models within the failed sample's BMG proportionate to the failed test's results; or
- Obsolete the model, which also obsoletes all models within the corresponding BMG.

4. Challenge Tests

Refer to Section 10 of the AHRI General Operations Manual.

5. AHRI Directory of Certified Product Ratings

All certified products shall be listed in the Directory, www.ahridirectory.org. Certification shall not be implied nor claimed for any product not listed in the Directory. Except as noted below, the Participant shall follow the steps outlined in Section 11 of the AHRI General Operations Manual.

5.1 Publication of Ratings in Certified Directory.

5.1.1 Automatic Commercial Ice-Makers Publication of Ratings in Certified Directory. The following information pertaining to each model certified shall be published in the Directory:

- AHRI Certified Reference Number
- Model Status
- Brand Name
- Series Name;
- Model Designation
- Condenser/Condensing Unit Model Designation (Split systems only)
- Ice Harvest Rate, lb/24h
- Potable Water Use Rate, gal/100 lb of ice
- Condenser Water Use Rate, gal/100 lb of ice (Water-cooled only)
- Energy Consumption Rate, kWh/100 lb of ice
- Ice Hardness Factor, %
- Measured Internal Volume, ft³ (Self-contained Ice-makers only)

5.1.2 Ice Storage Bin Publication of Ratings in Certified Directory. The following information pertaining to each model certified shall be published in the Directory:

- AHRI Certified Reference Number
- Model Status
- Brand Name
- Series Name
- Model Designation
- Measured Internal Volume, ft³
- Theoretical Storage Effectiveness, %

5.2 Data Forms. Each Participant shall list its products by BMG. OEM and PBM Participants shall submit/edit product data via the Directory.

5.3 AHRI Types. AHRI Types of Automatic Commercial Ice Makers can be found in the below table.

| Table 3. AHRI Types | |
|----------------------------|---|
| AHRI Type | Description |
| IBIN | Ice Storage Bin |
| IMH-A | Air Cooled Ice Making Head |
| IMH-W | Water Cooled Ice Making Head |
| RCRC-A | Air-Cooled Remote Condensing and Remote Compressing Ice Maker |
| RCRC-W | Water-Cooled Remote Condensing and Remote Compressing Ice Maker |
| RCU-A | Air-Cooled Remote Condensing Ice Maker |
| RCU-W | Water-Cooled Remote Condensing Ice maker |
| SC-A | Air-Cooled Self-Contained Ice Maker |
| SC-W | Water-Cooled Self-Contained Ice Maker |

6. Assessment and Payment of Certification Fees

Refer to Section 12 of the AHRI General Operations Manual.

7. Issuance of Violations and/or Termination

Refer to Section 14 of the AHRI General Operations Manual.

8. Program Hierarchy, Complaints, and the Appeals Process

Refer to Section 15 of the AHRI General Operations Manual.

9. Proper Use of the AHRI Certification Mark and Claims to Certification

Except as noted below, refer to Section 8 of the AHRI General Operations Manual.

For Participants electing to certify their Ice Storage Bins, the participants shall use both AHRI 810 and AHRI 820 Certification Mark for Self-Contained Units. For Modular systems, participants shall use AHRI 810 Certification Mark on the ice-making mechanism and AHRI 820 Certification Mark on the Ice-Storage Bins.