

CERTIFIED PRODUCT DIRECTORY



Transport Refrigeration: 1110

2009 Edition
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This directory, and the directories listed below, are mailed regularly and free on a limited basis upon written request on business letterhead to AHRI from an individual or company in the air-conditioning or allied industries. A directory will be sent automatically whenever a new printed edition is issued, unless AHRI is requested to stop sending them, or the Post Office Department advises that the new address is no longer deliverable.

The latest issue of the directory may be downloaded, at no charge, from www.ahridirectory.org.

For all other requests, price per copy is \$2.00.

Other certified products are published in AHRI directories and on www.ahridirectory.org as follows:

1. Directory of Certified
 - Unitary Small Air-Conditioners
 - Unitary Small Air-Source Heat Pumps
2. Directory of Certified Applied Air Conditioning Products
 - Air-to-Air Energy Recovery Ventilators
 - Air-Cooled Chilling Packages
 - Central Station Air-Handling Units
 - Forced Circulation Air-Cooling and Air-Heating Coils
 - Liquid to Liquid Heat Exchangers
 - Non-Condensable Gas Purge Equipment
 - Packaged Terminal Air Conditioners
 - Packaged Terminal Heat Pumps
 - Room Fan-Coil Air Conditioners
 - Single Package Vertical Systems
 - Unitary Large Equipment
 - Unit Ventilators
 - Variable Air Volume Terminals
 - Water-to-Air and Brine-to-Air Heat Pumps
 - Water Cooled Chilling Packages
3. Directory of Automatic Commercial Ice-Cube Machines and Ice Storage Bins
4. Directory of Certified Commercial Refrigerated Display Merchandisers and Storage Cabinets
5. Directory of Certified Direct Geexchange Heat Pumps
6. Directory of Certified Refrigerant Recovery/Recycling Equipment
7. Directory of Certified Reclaimed Refrigerants
8. Directory of Certified Refrigerant Testing Laboratories
9. Directory of Certified Transport Refrigeration Units

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NOTICE

This Program is sponsored and administered by the Air-Conditioning, Heating, and Refrigeration Institute (AHRI).

At any time there may be some participants added or removed from the Program; also some models may be added, deleted or revised. The latest issue of the directory may be downloaded, at no charge, from www.ahridirectory.org. In the event of any question regarding the listing of any model or participant, communicate directly with

Air-Conditioning, Heating, and Refrigeration Institute
2111 Wilson Boulevard, Suite 500
Arlington, VA 22201
Phone: 703-524-8800

To the User of This Directory

This directory lists certified mechanical transport refrigeration units.

The Air-Conditioning, Heating, and Refrigeration Institute sponsors and administers certification programs to help ensure that industry products perform as rated.

PERSPECTIVE

The Air-Conditioning, Heating, and Refrigeration Institute (AHRI) is a voluntary, nonprofit organization comprised of the manufacturers of air conditioning, refrigeration, and heating products. Members of AHRI produce more than 90 percent of the air conditioning and refrigeration machinery and components manufactured in the United States.

AHRI traces its history back to 1903 when the Ice Machine Builders' Association of the United States started. Air-Conditioning and Refrigeration Institute (ARI) was formed in 1953 through a merger of two related trade associations. Since that time several other related trade associations have been merged into AHRI, making it the strong association that it is today.

Over the past 30 Years, AHRI has emerged as the major voice for the HVACR industry. Manufacturers are drawn to AHRI membership in part because of the variety of services and benefits afforded those who participate in AHRI activities. These activities include:

- Establishing standards for testing and rating products.
- Testing products to verify certified performance ratings, and publishing certification rating data.
- Providing representation and technical assistance to government entities on federal, state, and local legislative and regulatory matters.
- International trade research and analysis.
- Public relations and promotional programs for the industry.
- Consumer education programs.
- Credit information services.
- Regular statistical reports on product shipments.

WHAT CERTIFICATION MEANS

Two of AHRI's most important functions are the development of performance rating standards and the administration of performance certification programs for eligible products. Each product section, with the support of the AHRI engineering staff, may develop certification programs for eligible products. Participation in the program is voluntary and open to members and nonmembers of AHRI on an equal level basis.

AHRI regularly selects random samples of equipment to be tested by an independent laboratory under contract to AHRI. The equipment is tested, using procedures stipulated in the corresponding AHRI standard, to verify that it meets the manufacturer's certified published performance ratings.

The AHRI certification label appearing on products has been an indication of verified performance for more than 40 years. Once a product is certified it is listed with its performance ratings in the appropriate AHRI directory. These directories serve as authoritative sources of specification and performance rating for manufacturers, wholesalers, retailers, contractors, utilities, architects, engineers, and consumers. The AHRI certification directories serve as reference manuals for many government agencies.

This Directory of Certified Mechanical Transport Refrigeration Units lists all eligible models of this type of equipment produced by each manufacturer participating in AHRI Certification Program.

Listing in the directory means that the models have been certified for the manufacturers to AHRI, under the applicable standard, to meet the performance ratings claimed under test conditions described in the standards. Listing does not constitute a recommendation by AHRI regarding safety or reliability of any listed product.

The mechanical transport refrigeration units listed herein represent more than 90 percent of the total U.S. output of this type of equipment falling within the scope of the program.

Under the program, participating manufacturers must file certification data with AHRI on all models produced within the scope of the program. Through the random testing program AHRI conducts standard performance tests of each manufacturer's models each year.

In addition to the evaluation of the certified data by the AHRI ongoing random testing program, participating manufacturers which question certified ratings of competitors' models may challenge those models separately.

The manufacturer of a model which fails to pass the specified tests has two basic alternatives: re-rate the model in question to reflect its tested performance, or immediately stop production of that model.

If neither of the above solutions is accomplished, the manufacturer's right to use the AHRI certification symbol on *all* of his models is withdrawn, and the manufacturer's name and listings are removed from the directory.

The AHRI certification programs are designed to assure contractors and other equipment specifiers as well as consumers, that products manufactured by a program participant have been accurately rated and thus are eligible for the AHRI certification label.

AHRI STANDARD COVERED

AHRI Standard 1110-2006, *Performance Rating of Mechanical Transport Refrigeration Units*, was prepared to establish definitions; test requirements; rating requirements; minimum data requirements for Published Ratings; operating requirements; marking and nameplate data; and conformance conditions.

Copies of this standard may be downloaded from the AHRI website, www.ahrinet.org.

TOLERANCES

Directory users should note the tolerance provisions included in Standard 1110-2006, *Performance Rating of Mechanical Transport Refrigeration Units*. These tolerances are included in the standard and in the AHRI certification program for Mechanical Transport Refrigeration Units for the following reasons: Testing instrumentation accuracies, variations between laboratories and manufacturing tolerances.

Scope of Program

A. Standard

The Program references Standard 1110-2006, *Performance Rating of Mechanical Transport Refrigeration Units* (formerly ARI Standard 1110-2006, *Performance Rating of Mechanical Transport Refrigeration Units*).

Certification by manufacturers of transport refrigeration units under this standard requires that their certified ratings, including Standby Ratings, are established at the Standard Rating Conditions indicated in Table 1.

B. Equipment Covered and Exclusions

AHRI Standard 1110-2006 and this Program apply to encased direct expansion vapor compression-type Mechanical Transport Refrigeration Units with the following components:

- a. Compressor
- b. Air-cooled condenser
- c. Refrigerant flow control(s)
- d. Forced-Circulation Air-Cooler
- e. Base or frame
- f. Prime-Mover as described in the unit manufacturer's literature
- g. Power Train (coupling, power take-off or transmission, or V-belt drive) connecting the unit to the Prime-Mover

A *mechanical transport refrigeration unit* is a combination of one or more factory-made assemblies, which normally includes a compressor, drive, and condenser combination; a Forced-Circulation Air-Cooler; all necessary refrigerant lines and electrical wiring; and means whereby the unit can be suitably mounted and installed on a vehicle which it is intended to serve. Where such equipment is used in more than one assembly, the individual assemblies are designed to be used together, and the requirements of rating outlined in AHRI Standard 1110-2006 are based upon the use of matched assemblies.

A *forced-circulation air-cooler* is a factory-made assembly including means for forcing air circulation and elements by which heat is transferred from air to refrigerant. The purpose of this unit is to transfer heat from a refrigerated space, through the medium of air, to the refrigerant.

A *power train* is a mechanical device whereby power received from a primary source of power at a given rotating speed is transferred to a driven device at the same or a different rotating speed.

A *prime mover* is an engine, motor or similar device that drives a refrigeration system at a known speed.

C. Extent of Certification

All standard production models and sizes, of participating manufacturers eligible under the scope of the standard, shall be certified. A standard production model is one for which a manufacturer regularly publishes data, catalogs, specification sheets, literature or advertising, and which is intended for regular production or sale.

D. Basis of Participation

Participation in this Program consists in general of the following:

1. Certification by the manufacturer that its models comply with all the applicable requirements of AHRI Standard 1110.
2. Participation by the manufacturer in the random testing program. Units for testing are selected from manufacturers' stock by the AHRI staff.

E. Evidence of Certification

The participating manufacturer may indicate his participation in the Program by:

1. Display of the AHRI Performance Certified logo on all units of certified models.
2. Display of the AHRI Performance Certified logo on literature and advertising. (Where ratings are shown, or participation in this Program claimed, display of the logo is mandatory).
3. Distribution of this Directory of participating manufacturers, carrying the name of each participating manufacturer, and a list of the manufacturer's certified models and sizes together with their Standard Ratings.

THE LOGO

The AHRI Certified Mark is illustrated below.



This logo has been registered with the U.S. Patent Office. The logo may not be reproduced or copied except by permission of AHRI. The logo may be displayed on qualified units in the form of a label obtained from AHRI, or may be an integral part of the unit nameplate.

THE DIRECTORY

In this or future issues of the Directory of Certified Transport Refrigeration Units will be found:

- The names, addresses, and trade or brand names of the participating manufacturers
- Listings of participating manufacturers
- Withdrawals of listings for any reason
- Any announcements concerning the Program

STANDARD CAPACITY RATING DEFINED

Standard Rating. A *Standard Rating* is a rating based on tests performed at Standard Rating Conditions. Standard Ratings shall be determined by tests, using the methods of testing set forth in AHRI Standard 1110-2006.

TABLE 1. STANDARD RATING CONDITIONS				
Standard Rating	Return Air Temperature to Forced-Circulation Air-Cooler		Entering Air Temperature to Condenser	
	□F	□C	□F	□C
High Temperature	35	1.7	100	37.8
Low Temperature	0.00	-17.8	100	37.8
NOTE: The unit shall be rated at a compressor driven speed in accordance with manufacturer's recommended high speed setting ± 50 rpm [± 0.83 rev/s].				

APPLICATION RATINGS

Many applications of transport refrigeration units require ratings under conditions other than Standard Rating Conditions specified above. Specification sheets may show such application ratings, provided they include or are accompanied by the Standard Ratings, clearly designated as such.

TOLERANCES

The consumer or user of this Directory should note the tolerance that is included in AHRI Standard 1110-2006. For equipment which has been certified to AHRI as being rated in accordance with the AHRI Standard, it is required that any production unit selected at random will have cooling capacity of not less than 95 percent of the certified rating.

This tolerance is included in the AHRI Certification Program for the following reasons:

1. The degree of accuracy of the laboratory instrumentation available to measure various factors, such as temperature, requires tolerances in the degree of accuracy of the test result.
2. Due to the above and to the manufacturing tolerances in various makes of instrumentation, it is not feasible to expect that tests on a given unit in the AHRI Independent Laboratory and repeated in any participating manufacturer's laboratory will produce exactly the same test result even though the tests may have been run under presumably identical test conditions.
3. Although each major component utilized in all units of a specific model or system, i.e., the compressor, evaporator blower coil, and condenser coil, is of carefully specified design, each component can only be manufactured within specific tolerances. Consequently, when the manufactured components are assembled into a system, variations in the delivered capacity and performance between units must be expected, but should be held within reasonable limits.

Therefore, AHRI has incorporated the tolerance indicated above for the protection of the consumer and to assure the user that products certified to AHRI as being in compliance with the AHRI Standard and within the permitted tolerance will perform satisfactorily when properly applied and installed.

FAILURE TO COMPLY WITH PROVISIONS OF THE PROGRAM

If, under the procedure agreed to by the participating manufacturers, it is demonstrated that a manufacturer has failed to comply with the provisions of the Program or performance requirements of the Standard, and has failed to make proper correction, the right to claim AHRI certification and/or the use of the Certification Symbol will be withdrawn, not only for the specific model concerned, but for all models produced by that manufacturer, and the manufacturer's name and listing will be removed from the Directory.

BASIC ORDER OF CLASSIFICATION

<i>Type</i>	<i>Description</i>
	Speed-Governed Units
SP	Single-Package, All-electric
SP-D	Single-Package, Diesel-Engine Driven
SP-E	Single-Package, Electric-Motor Driven
SP-G	Single-Package, Gasoline or Gas-Engine Driven
RCU-D	Remote Condensing Unit, Diesel-Engine Driven
RCU-E	Remote Condensing Unit, Electric-Motor Driven
RCU-G	Remote Condensing Unit, Gasoline or Gas Engine Driven

INDEX OF MANUFACTURERS

CARRIER TRANSICOLD DIVISION, CARRIER CORPORATION

P.O. Box 4805, Syracuse, New York 13221 8

THERMO KING CORPORATION

314 West 90th Street, Minneapolis, Minnesota 55420 9

AHRI STANDARD RATINGS

ELECTRIC STANDBY RATINGS

Type	Designation	Refrigerant Used	High Temp (Btuh)	Compressor Speed (rpm)	Low Temp (Btuh)	Compressor Speed (rpm)	High Temp (Btuh)	Compressor Speed (Rpm)	Low Temp (Btuh)	Compress or Speed (Rpm)
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Carrier Transicold Division, Carrier Corporation

Trade Name: Supra 550										
SP-D	TDB-13	R404A	14,500	1200	8500	1200	-	-	-	-
SP-D,E	TBS-13	R404A	14,500	1200	8500	1200	13,000	1060	7,000	1060
Trade Name: Supra 650										
SP-D	TDB-16	R404A	17,500	1820	10,000	1820	-	-	-	-
SP-D,E	TDS-16	R404A	17,500	1820	10,000	1820	15,000	1420	10,000	1420
Trade Name: Supra 750										
SP-D	TDB-19	R404A	20,000	1950	12,000	1950	-	-	-	-
SP-D,E	TDS-19	R404A	20,000	1950	12,000	1950	18,000	1550	11,000	1550
Trade Name: Supra 850										
SP-D	TDB-24	R404A	23,000	1185	15,500	1185	-	-	-	-
SP-D,E	TDS-24	R404A	23,000	1185	15,500	1185	19,000	1050	14,000	1050
Trade Name: Supra 950										
SP-D	TDB-36	R404A	32,000	1470	20,000	1470	-	-	-	-
SP-D,E	TDS-36	R404A	32,000	1470	20,000	1470	30,000	1370	18,000	1370
Trade Name: X2 1800										
SP-D	NDL-935	R404A	51,000	1700	32,000	1700	-	-	-	-
Trade Name: X2 2100										
SP-D	NDL-934	R404A	64,000	1700	33,000	1700	-	-	-	-
Trade Name: X2 2100A										
SP-D	NDL-934	R404A	64,000	1700	33,000	1700	-	-	-	-
Trade Name: X2 2500A										
SP-D	NDL-933	R404A	66,000	2200	37,000	2200	-	-	-	-

† Certified only for Electric Standby Ratings.

* Revised.

WAS indicates a rating that has been involuntarily changed.

For Explanation of "Type," see page 5, Basic Order of Classification.

AHRI STANDARD RATINGS

ELECTRIC STANDBY RATINGS

Type	Designation	Refrigerant Used	High Temp (Btuh)	Compressor Speed (rpm)	Low Temp (Btuh)	Compressor Speed (rpm)	High Temp (Btuh)	Compressor Speed (Rpm)	Low Temp (Btuh)	Compress or Speed (Rpm)
Thermo King Corporation										
Trade Name: Thermo King										
SP-D	RD-II-30SR	R134A	27,000	1700	9,000	1700	-	-	-	-
SP-D,E	RD-II-50SR	R134A	27,000	1700	9,000	1700	22,500	1300	8,000	1300
SP-D	MD-100-30	R134A	16,000	1950	6800	1950	-	-	-	-
SP-D,E	MD-100-50	R134A	16,000	1950	6800	1950	13,500	1350	6400	1350
SP-D	MD-200-30	R134A	19,000	1950	7500	1950	-	-	-	-
SP-D,E	MD-200-50	R134A	19,000	1950	7500	1950	15,000	1350	6500	1350
SP-D	MD-300-30	R134A	19,500	1950	8500	1950	-	-	-	-
SP-D,E	MD-300-50	R134A	19,500	1950	8500	1950	16,000	1350	7500	1350
SP-D	RD-II-30SR	R404A	20,500	1700	15,500	1700	-	-	-	-
SP-D,E	RD-II-50SR	R404A	20,500	1700	15,500	1700	17,500	1300	14,000	1300
SP-D	MD-100-30	R404A	11,000	1950	8000	1950	-	-	-	-
SP-D,E	MD-100-50	R404A	11,000	1950	8000	1950	8500	1350	7000	1350
SP-D	MD-200-30	R404A	15,000	1950	10,000	1950	-	-	-	-
SP-D,E	MD-200-50	R404A	15,000	1950	10,000	1950	12,000	1350	8500	1350
SP-D	MD-300-30	R404A	18,000	1950	12,000	1950	-	-	-	-
SP-D,E	MD-300-50	R404A	18,000	1950	12,000	1950	13,500	1350	10,500	1350
SP-D	SB-110+30	R404A	43,500	2200	30,000	2200	-	-	-	-
SP-D	SB-110+30	R404A	53,000	2200	30,000	2200	-	-	-	-
ETV										
SP-D	SB-200TG	R404A	51,000	2200	32,000	2200	-	-	-	-
SP-D	SB-210+30	R404A	51,000	2200	32,000	2200	-	-	-	-
SP-D	SB-210+30	R404A	60,000	2200	32,000	2200	-	-	-	-
ETV										
SP-D	SB-210+50	R404A	60,000	2200	32,000	2200	36,000	1320	22,000	1320
ETV										
SP-D	SB-310+	R404A	64,000	2600	37,000	2600	-	-	-	-
SP-D	SB-310R	R404A	64,000	2600	37,000	2600	-	-	-	-
SP-D	SB-400	R404A	60,000	2200	40,000	2200	-	-	-	-
SP-D	TS-200-30	R404A	15,500	4000	11,000	4000	-	-	-	-
SP-D,E	TS-200-50	R404A	15,500	4000	11,000	4000	12,500	2850	9,500	2850
SP-D	TS-300-30	R404A	22,500	4150	12,500	4150	-	-	-	-
SP-D,E	TS-300-50	R404A	22,500	4150	12,500	4150	17,500	2940	10,500	2940
SP-D	TS-500-30	R404A	25,000	3850	18,000	3850	-	-	-	-
SP-D,E	TS-500-50	R404A	25,000	3850	18,000	3850	20,500	2880	16,000	2880

† Certified only for Electric Standby Ratings.

* Revised.

WAS indicates a rating that has been involuntarily changed.

For Explanation of "Type," see page 5, Basic Order of Classification.

TRADE OR BRAND NAME INDEX*Trade or Brand Name**Company*

Supra 550	Carrier Transicold Division, Carrier Corporation
Supra 650	Carrier Transicold Division, Carrier Corporation
Supra 750	Carrier Transicold Division, Carrier Corporation
Supra 850	Carrier Transicold Division, Carrier Corporation
Supra 950	Carrier Transicold Division, Carrier Corporation
Thermo King	Thermo King Corporation
X2 2100	Carrier Transicold Division, Carrier Corporation
X2 2100A	Carrier Transicold Division, Carrier Corporation
X2 2500A	Carrier Transicold Division, Carrier Corporation