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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 25861-2023

Replacing GB/T 25861-2010

**Water-source high temperature heat pumps using the vapor
compression cycle**

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1 Scope

GB/T 25861-2023 is the Chinese national standard on water-source high temperature heat pumps using the vapor compression cycle, in the field of energy and heat transfer engineering. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 17 March 2023 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 October 2023. Classification: ICS 27.200, CCS J73. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This document specifies the type and basic parameters, technical requirements, test methods, inspection rules, marking, packaging, transportation and storage of water-source high temperature heat pumps using the vapor compression cycle (hereinafter referred to as the "units"). This document is applicable to water-source heat pump units for industrial and commercial purposes, using vapor compression systems driven by electric motors, and with an outlet water temperature on the use-side of not less than 55 C.

2 Normative References

The contents of the following documents constitute indispensable clauses of this document through the normative references in the text. In terms of references with a specified date, only versions with a specified date are applicable to this document. In terms of references without a specified date, the latest version (including all the modifications) is applicable to this document.

GB/T 191 Packaging-Pictorial Markings for Handling of Goods

GB 2894-2008 Safety Signs and Guideline for the Use

GB 4706.32-2012 Household and Similar Electrical Appliances - Safety - Particular Requirements for Electrical Heat Pumps, Air-conditioners and Dehumidifiers

GB/T 6388 Transport Package Shipping Mark

GB/T 9237 Refrigerating Systems and Heat Pumps - Safety and Environmental Requirements

GB/T 10870-2014 The Methods of Performance Test for Water Chilling (heat pump) Packages Using the Vapor Compression Cycle GB/T 13306 Plates

GB/T 18430.1-2007 Water Chilling (heat pump) Packages Using the Vapor Compression Cycle - Part

1. Water Chilling (heat pump) Packages for Industrial & Commercial and Similar Application

GB 25131 Safety Requirements for Water Chillers (heat pump) Using the Vapor Compression Cycle

GB/T 26572 Requirements of Concentration Limits for Certain Restricted Substances in Electrical and Electronic Products

JB/T 4330-1999 Determination of Noise Emitted by Refrigerating and Air Conditioning Equipment

JB/T 7249 Refrigeration and Air Conditioning Apparatus - Terminology

3 Terms and Definitions

The terms and definitions defined in JB/T 7249 and GB/T 10870-2014, and the following are applicable to this document.

3.1 water-source high temperature heat pumps using the vapor compression cycle
Water-source heat pump units that use the vapor compression refrigeration cycle driven by electric motors to produce hot water of not less than 55 C.

4 Types and Basic Parameters

4.1 Types In accordance with the nominal operating conditions of the units, the hot water outlet temperature is classified into.

- a) H1N type. nominal outlet temperature is 55 C;
- b) H2N type. nominal outlet temperature is 60 C;
- c) H3N type. nominal outlet temperature is 70 C;
- d) H4N type. nominal outlet temperature is 80 C;
- e) H5N type. nominal outlet temperature is 90 C. NOTE. where N is a, b, c, d or e, indicating the sub-division in accordance with the water source temperature (on the heat source side), please refer to Table 2 for details.

4.2 Basic Parameters

4.2.1 The temperature range of the unit water source is shown in Table 1.

5.1.8 The insulation layer of the units shall have good insulation performance, and be non-toxic, odorless and flame-retardant.

5.1.9 The units shall have protection functions, such as motor overload protection, phase loss protection (three-phase power supply), water system water failure protection, antifreeze protection, and high- and low-pressure protection of the refrigeration system, etc. Various control functions are normal, and various protection devices shall meet the design requirements and be sensitive and reliable.

5.1.10 The heat exchange equipment shall have the corresponding anti-corrosion performance, and the units shall not contaminate the water source during use.

5.1.11 The outer surface of the units shall be clean and the painted surface shall be smooth. Pipeline accessories shall generally be installed horizontally and vertically. Before filling the refrigerant, the surface in the units that comes into contact with the refrigerant and lubrication shall be kept clean and dry.

5.1.12 The materials of the refrigeration system components of the units shall not deteriorate under the action of refrigerant, lubricating oil and their mixtures, and shall ensure the normal operation of the whole units.

5.1.13 The regulating device of the units with energy regulation shall be sensitive and reliable.

5.2.1 Air tightness, vacuum and pressure test

5.2.1.1 The air tightness requirements for the units shall comply with the provisions of

5.2.1 in GB/T 18430.1-2007.

5.2.1.2 The vacuum requirements for the units shall comply with the provisions of

5.2.2 in GB/T 18430.1-2007.

5.2.1.3 The pressure test requirements for the units shall comply with the provisions of

5.2.3 in GB/T 18430.1-2007.

5.2.2 Operation When the units are normally operating, the inspection items shall meet the design requirements.

5.2.3 Nominal heating capacity The measured nominal heating capacity of the units shall not be less than 95% of the indicated value.

5.2.4 Nominal heating power consumption The measured nominal heating power consumption of the units shall not be greater than 110%

6.3.1 Air tightness, vacuum and pressure tests

6.3.1.1 The air tightness test of the units shall be carried out in accordance with the provisions of "air tightness test" in

6.3.1 of GB/T 18430.1-2007.

6.3.1.2 Vacuum test. after passing the air tightness test, vacuumize the units to

80 Pa and maintain the pressure for at least 30 minutes.

6.3.1.3 The pressure test shall be carried out in accordance with the provisions of "pressure test" in

6.3.1 of GB/T 18430.1-2007.

6.3.2 Operation test The units shall be operated under conditions approximate to the nominal heating conditions, and the operating conditions of the units, the sensitivity and reliability of the safety protection devices shall be checked, and the actions of the temperature, electrical appliances and other control elements shall be checked to see whether they are normal.

6.3.3 Nominal heating capacity test The nominal heating capacity of the units shall be tested under the nominal heating conditions specified in Table 4 in accordance with the refrigerant method in GB/T 10870-2014.

6.3.4 Nominal heating power consumption test When the units are tested under the nominal heating capacity, the input power and current of the units shall be measured.

6.3.5 Test of coefficient of performance for heating The coefficient of performance for heating of the units is calculated based on the data measured in tests of