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

GB/T 10079-2018

Replacing GB/T 10079-2001

Single-stage reciprocating refrigerant compressor (unit)

活塞式单级制冷剂压缩机（组）

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Table of Contents

1 Scope	
2 Normative references	
3 Terms and definitions	
4 Basic parameters...	
5 Technical requirements	
5.1 General requirements	
5.3 Performance requirements	
6 Test methods...	
6.2 Content of test method	
6.2.4 Internal impurity content test	
6.2.12 Accelerated life test	
6.2.12.1 Connect the compressor (unit) that has completed the tests of	
6.2.12.3 After the test, re-conduct the tests of	
7 Inspection rules...	
8.3 Transportation and storage	
Annex A	
Annex B	

1 Scope

GB/T 10079-2018 is the Chinese national standard on single-stage reciprocating refrigerant compressor (unit), 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 28 December 2018 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 July 2019. 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 Standard specifies the terms and definitions, basic parameters, technical requirements, test methods, inspection rules and marks, packaging, transportation and storage FOR single-stage reciprocating refrigerant compressor (hereinafter referred to as

"compressor") AND single-stage reciprocating refrigerant compressor unit (hereinafter referred to as "compressor unit"). This Standard applies to single-stage reciprocating refrigerant compressor and single-stage reciprocating refrigerant compressor unit. This Standard does not apply to the compressor (unit) that uses R744 as refrigerant and the compressor (unit) in the following products: - household refrigerators and household freezers; - refrigeration and air-conditioning equipment for transportation and special purpose.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

GB/T 191, Packaging and storage marks

GB 4706.17, Safety of household and similar electrical appliances - Particular requirements for motor-compressors

GB 4706.32-2012, Household and similar electrical appliances - Safety - Particular requirements for heat pumps, air-conditioners and dehumidifiers

GB/T 5773, The method of performance test for positive displacement refrigerant compressors

GB/T 6388, Transport package shipping mark

GB/T 9237, Refrigerating systems and heat pumps - Safety and environmental requirements GB/T 13306, Plates

GB/T 19410-2008, Screw refrigerant compressors

GB/T 34619, Test method for volume flow of positive displacement refrigerant compressors

JB/T 4330-1999, Determination of noise emitted by refrigerating and air conditioning equipment

JB/T 5446-1999, Reciprocating single-machine double-stage refrigerating compressor

JB/T 7249, Refrigeration and air-conditioning equipment - Terminology

JB/T 9058, Measuring method of refrigerating equipment cleanliness

JB/T 10597-2006, Three phase asynchronous motors for hermetic refrigeration compressors - General specifications

3 Terms and definitions

For the purposes of this document, the terms and definitions defined in GB/T 5773 and

JB/T 7249 as well as the followings apply.

3.1 open-type single-stage reciprocating refrigerant compressor A single-stage refrigerant compressor that relies on a prime mover to drive a shaft protruding from the housing or other moving parts. NOTE: Hereinafter referred to as "open-type compressor".

3.2 semi-hermetic single-stage reciprocating refrigerant compressor A single-stage reciprocating refrigerant compressor in which the compressor and motor are housed in a field disassembled housing. NOTE: Hereinafter referred to as "semi-hermetic compressor".

3.3 hermetic single-stage reciprocating refrigerant compressor A single-stage reciprocating refrigerant compressor in which the compressor and motor are housed in a welded or brazed housing. NOTE: Hereinafter referred to as "hermetic compressor".

3.4 single-stage reciprocating refrigerant compressor unit A unit that is assembled by a single-stage reciprocating refrigerant compressor, and/or prime mover and other accessories (such as an oil pump, oil cooler, oil separator, etc.)

5.1 General requirements

5.1.1 The compressor (unit) shall be manufactured in accordance with the provisions of this Standard as well as the drawings and technical documents approved by the prescribed procedures (or the agreement between the user and the manufacturer).

5.1.2 For the compressor (unit) with safety valve, the valve action shall be sensitive, air-tight, safe and reliable.

5.1.3 The compressor (unit) lubrication system shall meet the following requirements: - When the ambient temperature is as high as 43°C or the cooling water temperature is 33°C, the temperature of the refrigerating machine oil in the crankcase of the semi-hermetic compressor (unit) shall not be higher than 80°C. For the open-type compressor (unit), it shall not be higher than 70°C. - For compressors (units) using a pressure lubrication system, the difference between the oil pressure of the lubrication system and the pressure of the refrigerant in the compressor crankcase shall ensure that the compressor (unit) works normally and reliably when the oil circuit is not blocked. Compressors (units) using splash lubrication shall ensure that the lubrication system can work reliably when the motor is running forward or reverse (when reverse rotation is allowed). - The oil leakage at the shaft seal of the open-type compressor (unit) shall not exceed

0.5 mL/h.

5.1.4 The outer surface of the compressor (unit) shall be clean. The paint layer shall adhere firmly. There shall be no defects affecting the appearance quality.

5.2 Safety requirements The safety requirements for the compressor (unit) shall comply with the provisions of GB/T 9237 and GB 4706.17.

5.3 Performance requirements

5.3.1 Air tightness The airtightness of the compressor (unit) shall meet the following requirements: - When the leak detection medium is dry, clean air or nitrogen, there shall be no leakage at all parts of the compressor (unit) or its housing and other pressure parts. - When the leak detection medium is helium, there shall be no leakage when the pressure parts such as the compressor (unit) or its housing are tested with a

6.1.3 The instruments and meters used for the test shall pass the inspection by the legal metrology inspection department and be within the validity period.

6.1.4 In addition to the test instruments and meters specified in this document, the type and accuracy requirements of relevant test instruments and meters are as follows: - The type and accuracy requirements of pressure, temperature, flow, and electrical measuring instruments shall comply with the provisions of GB/T 5773. - The type and accuracy of noise measuring instruments shall comply with the provisions of JB/T 4330. - The type and accuracy of vibration measuring instruments shall comply with the provisions of GB/T 19410-2008.

6.2 Content of test method

6.2.1 Air tightness test The method for air tightness test shall be in accordance with the provisions in Annex A of GB/T 19410-2008.

6.2.2 Volume flow test The method of volume flow test shall be in accordance with the provisions of GB/T 34619.

6.2.3 Cooling (heating) capacity, input power and performance coefficient tests Under the nominal operating conditions and nominal speed specified in 4.2 (applicable to open-type compressors), conduct the test according to the method specified in GB/T 5773.

6.2.4 Internal impurity content test

6.2.4.1 Test instruments and meters Test instruments include: - Balance with a sensitivity of 0.1 mg. - 400-mesh filter screen (open-type) or filter paper with a porosity of 5 μm (hermetic, semi-hermetic).

6.2.4.2 Test procedure 6.2.4.2.1 For hermetic compressors:

a) Take a filter paper with a porosity of 5 μm . Put it in an oven. Heat to 60°C~70°C. The compressor (unit) is connected to the pipeline as shown in Figure 3. Open the pressure equalizing valve and shut-off valve first. After evacuating it, fill it with an appropriate amount of refrigerant. Close the pressure equalizing valve. Start and run the compressor (unit). Adjust the opening of the shut-off valve. Make the exhaust pressure and suction pressure stable at the nominal operating conditions specified in Table 2 or Table 3. Then shut down.