

ICS 27.200
CCS J73



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

GB/T 22068-2025

Replacing GB/T 22068-2018

**Electrically driven compressor assembly for automobile air
conditioning**

汽车空调用电动压缩机总成

Issued on: January 24, 2025

Implemented on: August 1, 2025

**Issued by: State Administration for Market Regulation;
Standardization Administration of China**

Table of Contents

1	Scope
2	Normative references
3	Terms and definitions
4	Types and basic parameters
4.1	Types
5	Technical requirements
5.1	General
5.4.2	Pressure pulsation
5.4.3	Vibrations
5.6	Compressor with direct current motor
5.6.8	Corrosion resistance
6	Test methods
6.4	Tests of noise, pressure pulsation, and vibration
6.4.1	Noise test
6.4.2	Pressure pulsation test
6.4.3	Vibration test
6.6	Compressor with direct current motor
6.6.1	Internal cleanliness
6.6.2	Internal moisture content
6.6.3	Tightness test
6.10	Electromagnetic compatibility
6.10.1	Electromagnetic immunity
7	Inspection rules
7.1	Factory inspection
7.2	Sampling inspection
7.3	Type inspection
8	Marking, packaging, transportation and storage
8.1	Marking
8.2	Packaging
8.3	Transportation and storage

1 Scope

GB/T 22068-2025 is the Chinese national standard on electrically driven compressor assembly for automobile air conditioning, 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 24 January 2025 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 August 2025. 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 defines the terms and definitions of electrically driven compressor assembly for automobile air conditioning, specifies the types, basic parameters and technical requirements, describes the corresponding test methods, and specifies the inspection rules as well as marking, packaging, transportation and storage. This document applies to the manufacture of electrically driven compressor assembly in automobile thermal management systems.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the version corresponding to that date is applicable to this document; for undated references, the latest version (including all amendments) is applicable to this document.

GB/T 191, Packaging. Pictorial marking for handling of goods

GB/T 2423.17, Environmental testing - Part

3 Terms and definitions

For the purposes of this document, the following terms and definitions, as well as those given in JB/T 7249 and GB/T 5773, apply.

3.1 electrically driven compressor assembly A positive displacement refrigerant compressor device - composed of a compressor with direct current motor driven by the electric motor and a drive controller - for automobile thermal management systems of vapor compression refrigeration cycles.

3.2 compressor with direct current motor A fully enclosed or semi-enclosed structure consisting of a positive displacement refrigerant compressor and an electric motor.

3.3 drive controller A device, connected to the main power supply of the motor vehicle, consisting of an external control signal interface circuit, a motor control circuit, a power drive circuit and a protection circuit, which is used to control the energy transfer and conversion between the DC power supply and the compressor motor.

3.4 exciting force Periodic simple harmonic vibration caused by the unbalanced mass of the electric compressor and the pulsation of the running air flow as the vibration source.

3.5 continuous liquid durability test Durability test that simulates the compressor being able to run continuously without suction superheat and with a certain amount of liquid refrigerant at the suction port.

3.6 initiation of the liquid shock durability test Durability test that simulates the compressor being able to achieve a certain number of cycle starts with a certain amount of liquid refrigerant at the suction port.

4.1 Types

4.1.1 Electrically driven compressor assemblies (hereinafter referred to as "compressors") are classified according to the functions as follows:

4.1.2 Compressors are classified according to the structural types as follows:

4.1.3 Compressors are classified according to the sealing types as follows:

4.1.4 Compressors are classified according to the applicable vehicle models as follows:

4.1.5 Compressors are classified according to displacement range (see Table 1 for displacement range) as follows:

4.2 Basic parameters See Table 1 for the basic parameters of compressor.

4.3 Nominal working conditions See Table 2 for the nominal working conditions of compressor.

5.1 General

5.1.1 The compressor shall be manufactured in accordance with the drawings and technical documents approved in accordance with the prescribed procedures (or the agreement between the user and the manufacturer).

5.1.2 The requirements and tests for integral compressors are unified with those for the compressor with direct current motor.

5.2 Appearance The outer surface of the compressor with direct current motor and the drive controller shall not have any appearance defects such as oil stains, rust, sharp edges, etc. The wire sheath shall not be broken, and the connectors shall not be deformed or damaged.

5.3 Compressor refrigerating (heating) capacity, input power, refrigerating (heating) coefficient of performance

5.3.1 The measured compressor refrigerating (heating) capacity shall not be less than 95% of the nominal refrigerating (heating) capacity.

5.3.2 The measured input power of the compressor shall not be greater than 110% of the nominal input power.

5.3.3 The measured compressor refrigerating (heating) coefficient of performance shall not be less than 95% of the indicated value and shall not be less than the limit value specified in Table

3. For compressors with direct current motor without drive controller, the refrigerating (heating) coefficient of performance shall not be less than 110% of the limit value specified in Table 3.

5.4.1.2 Sweep frequency noise After the test, the sweep frequency noise value of the compressor shall meet the design requirements of the manufacturer or the requirements agreed upon by the supplier and the buyer.

5.4.3 Vibrations

5.4.3.1 Rated speed vibration acceleration The root mean square value of the vibration acceleration at three positions of the compressor shall meet the design requirements of the manufacturer or the requirements agreed upon by the supplier and the purchaser.

5.5 Exciting force Within the allowable speed range, the measured exciting force of the electric compressor in the horizontal front and rear (X axis), horizontal left and right (Y axis), and vertical (Z axis) directions shall not be greater than the maximum allowable exciting force (F_{max}). The maximum allowable exciting force is calculated according to Formula (1).

5.6 Compressor with direct current motor

5.6.1 Internal cleanliness The internal cleanliness of the compressor with direct current motor shall meet the following requirements.

5.6.2 Internal moisture content Within 24 hours after the compressor with direct current motor is assembled, the internal moisture content of the compressor with direct current motor shall not be greater than 500×10^{-6} when tested according to the method in 6.6.2.

5.6.3 Tightness The total leakage of the compressor with direct current motor shall not exceed 14 g/a.

5.6.7 Cyclic damp heat performance After the cyclic damp heat performance test, the compressor with direct current motor with closed suction and exhaust ports shall meet the