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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 27743-2025

Replacing GB/T 27743-2011

Inspection method for transformer of special equipment

变压器专用设备检测方法

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Foreword

This document was drafted in accordance with the provisions of GB/T 1.1-2020 "Directives for standardization - Part

1.Rules for the structure and drafting of standardizing documents". This document supersedes GB/T 27743-2011 "Inspection method for transformer of special equipment". Compared with GB/T 27743-2011, the main technical changes, apart from structural adjustments and editorial modifications, are as follows: - MODIFY the "scope" (see Clause 1 of this document; Clause 1 of the 2011 version); - ADD the requirements for "operating conditions" (see Clause 4 of this document); - MODIFY the requirements for "safety protection inspection" (see

5.2 of this document;

4.2 of the 2011 version); - MODIFY the requirements for "noise inspection" method (see

5.4 of this document;

4.4 of the 2011 version); - MODIFY the requirements for "specific inspection methods for cut-to-length line for transformer lamination" (see

6.1 of this document;

5.1 of the 2011 version); - MODIFY the requirements for "specific inspection methods for slitting line for transformer lamination" (see

6.2 of this document;

5.2 of the 2011 edition); - MODIFY the requirements for "specific inspection methods for

vertical winding machines" (see

6.3 of this document;

5.3 of the 2011 edition); - ADD the requirements for "specific inspection methods for horizontal winding machines" (see

6.4 of this document); - ADD the requirements for "specific inspection methods for foil coil winding machines" (see

6.5 of this document); - MODIFY requirements for "specific inspection method for pressure increase vacuum drying plants and vapour phase drying plants" (see

1 Scope

GB/T 27743-2025 is the Chinese national standard covering checking the machines a transformer factory is built around - the winding and coil forming equipment, the core cutting and stacking lines, the drying and vacuum impregnation plant, and the accuracy and performance each has to hold. Issued on 5 October 2025, it has been in force since 1 May 2026, replacing GB/T 27743-2011.

This document describes the operating conditions, general inspection methods, and specific inspection methods for transformer of specific equipment. This document applies to cut-to-length line for transformer lamination, slitting line for transformer lamination, vertical winding machine, horizontal winding machine, foil coil winding machine, pressure increase vacuum drying plant, and vapour phase drying plant used in transformer of specific equipment.

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 150.4 Pressure vessels - Part

3 Terms and definitions

For the purpose of this document, the terms and definitions defined in GB/T 150.4, GB/T 2900.39, JB/T 3857, JB/T 9658, JB/T 10918, JB/T 11054, JB/T 11056, JB/T 11146, and JB/T 11147 apply.

4 Operating conditions

The operating conditions for transformer of specific equipment include.

a) altitude not exceeding 1000 m;

b) ambient temperature -10 °C ~ +40 °C;

c) relative humidity of air within the range of 30 % ~ 85 % (at a temperature of 20 °C ± 5 °C);

d) power supply voltage. 220 V (AC)/380 V (AC), and the fluctuation value of the power supply voltage shall not exceed ±10 % of the rated voltage.

5 General inspection methods

5.1 Operating condition inspection Before the no-load operation performance test, the operating environment and voltage fluctuation of the equipment shall be inspected. Inspection tools include thermometers, hygrometers, voltmeters, etc.

5.2 Safety protection inspection

5.2.1 Insulation resistance measurement. Use a 500 V or higher insulation resistance meter to measure between the energized circuit of the electrical control device and the grounding device. Disconnect the low-voltage control circuit before measurement.

5.2.2 Grounding resistance measurement. Use a grounding resistance tester to measure between the main grounding terminal of the electrical control device and any metal component containing electrical equipment.

5.2.3 Safety protection devices with protective switches shall undergo at least three operational tests.

5.2.4 After the equipment is powered on, check that its operation meets the functional requirements of the equipment.

5.2.5 Inspection of other items shall comply with the relevant product specifications.

5.3 Appearance quality inspection

5.3.1 Visually inspect the installation and arrangement of oil, water, gas, and electrical pipes and lines.

5.3.2 Measure the misalignment of the mating surfaces using conventional measuring tools.

5.3.3 Visually inspect the appearance quality of the equipment.

5.4 Noise inspection Noise inspection is carried out under normal operating conditions, with a distance greater than 2 m between the equipment and walls or other noise-reflecting obstacles. A class 2 sound level meter as specified in GB/T 3785.1 is used. Measurement points are arranged around the equipment perimeter, with four standard measurement points located on the front, back, and both sides. The measurement points are (1.55 ±

0.075) m above the ground and 1 m horizontally from the equipment perimeter.

6.1 Specific inspection methods for cut-to-length line for transformer lamination

6.1.1 No-load operation performance test After equipment assembly, carry out no-load operation performance tests on each individual unit first, for no less than 2 h. The main unit shall be gradually increased from low speed to maximum speed and maintained at maximum speed for no less than 1 h, to check the flexibility and stability of the equipment operation. The method for inspecting equipment noise follows 5.4.After passing the initial test, a full-machine linkage no-load operation performance test is carried out for no less than 2 h, to check whether the equipment's procedures and actions meet the usage requirements.