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

GB/T 10230.1-2019

**Tap-changers -- Part 1: Performance requirements and test
methods**

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Foreword

GB/T 10230 `` Tap Switch " is divided into the following two parts.

--- Part 1. Performance requirements and test methods;

--- Part 2. Application guidelines.

This part is the first part of GB/T 10230.

This section is drafted in accordance with the rules given in GB/T 1.1-2009.

This section replaces GB/T 10230.1-2007 "Tap tap part 1. Performance requirements and test methods", and GB/T 10230.1-

Compared with.2007, the main technical changes are as follows.

--- Added the terms and definitions of vacuum on-load tap-changer and non-arc on-load tap-changer (see Chapter 3);

--- Increased vacuum load tap changer load test requirements and test methods (see Chapter 5).

--- Modified the partial discharge test requirements and test methods of the tap changer (see Chapters 5 and 7);

--- Adjusted the insulation withstand voltage test values in Tables 3 and 5 (see Chapters 5 and 7).

This part uses the redrafting method to modify and adopt IEC 60214-1..2014 "Tap Switch Part 1. Performance Requirements and Test Methods".

There are technical differences between this part and IEC 60214-1..2014.The terms related to these differences have passed through the margins on the outside.

The vertical single line (|) of the position is marked, and a list of corresponding technical differences and their causes is given in Appendix A.

The following editorial changes have also been made in this section.

- Adjust the original 3.5 of the IEC to 3.6 of this part, and adjust the content of the note;
 - Adjust 3.6 of the original IEC text to 3.7 of this part, and adjust the content of the note;
 - Deleted Note 3 in Table 1 of the original IEC text;
 - "Note 2. Tap test without separate oil chamber or air chamber need not be sealed test" was added to -5.2.1;
 - "Note 3. For the selection of test leads, refer to GB/T 14048.1 and GB/T 7251.1" has been added to -5.2.2.
 - 5.2.4 was added "Note. The multiple of the short-circuit current of the on-load tap-changer for distribution transformer is the inverse of the short-circuit impedance of the distribution transformer.
number";
 - Move Table 3 in the original IEC 5.2.8.1 to 5.2.8.3;
 - "Note. See Appendix H for working principle and characteristics of non-arc tap-changer" in -5.2.9;
 - 6.1.12 deleted the content of the original IEC note;
 - 6.2.1 changed the second paragraph of the original IEC text from the main body to the content of the note;
 - 7.2.3 was added "Note. The multiple of the short-circuit current of the non-excitation tap-changer for distribution transformer is the reciprocal";
 - Adjust the original IEC 7.3.1 and 7.3.2 to 7.3.2 and 7.3.3 of this part respectively;
 - 8.2.1 The second paragraph of the original IEC text was changed from the main text to the content of the note; the "Note. Controller (or display) technical requirements" was added See Appendix J ";
 - Adjusted Appendix A of the original IEC text to Appendix B, Appendix B to Appendix C, Appendix C to Appendix F, and Appendix D
- For Appendix E (and added E.4 compensation method and E.5 resonance method), Appendix E is adjusted to Appendix D; Appendix G ~ Appendix J have been added;
- Readjusted references.

This section is proposed by China Electrical Equipment Industry Association.

This section is under the jurisdiction of the National Transformer Standardization Technical Committee (SAC/TC44).

This section was drafted. Shenyang Transformer Research Institute Co., Ltd., Zunyi Product Quality Inspection and Testing Institute, Shanghai Huaming Power

Equipment Manufacturing Co., Ltd., Guizhou Changzheng Electric Co., Ltd., Shandong Transmission and Transformation Equipment Co., Ltd., Zhejiang Tenglong Electric Co., Ltd., TBEA

Hengyang Transformer Co., Ltd., Taikai Power Equipment Co., Ltd., Jiangsu Huapeng Transformer Co., Ltd., Zhejiang Yongjiang Power Technology Co., Ltd.,

Guangdong Zhongpeng Electric Co., Ltd., Zhejiang Jiangshan Transformer Co., Ltd.

1 Scope

This part of GB/T 10230 specifies the terms and definitions of tap-changers, conditions of use, technical requirements for on-load tap-changers, on-load

Technical requirements for the electric mechanism of the tap-changer, technical requirements for the non-excited tap-changer, technical requirements

Brand, non-excitation tap-changer warning label and manufacturer's instruction manual.

This section applies to resistive and reactive on-load tap-changers, non-excitation tap-changers and their electric mechanisms.

This section applies to tap changers immersed in mineral insulating oil in accordance with GB 2536. If conditions are right, it can also be applied to gas

Taps insulated or immersed in other insulating liquids.

This section mainly applies to on-load tap-changers with arc contacts. If conditions apply, it can also be applied to on-load tap-changers without arcs.

(For example. electronic conversion).

This section applies to all types of tap-changers for power transformers and distribution transformers and reactors.

This section does not apply to the tap changer for traction transformers and traction reactors, and the capacity tap changer for capacity transformers.

2 Normative references

The following documents are essential for the application of this document. For dated references, only the dated version applies to this article

Pieces. For undated references, the latest version (including all amendments) applies to this document.

GB/T 1094.7 Power transformers Part 7. Load guidelines for oil-immersed power

transformers (GB/T 1094.7-2008,
(IEC 60076-7..2005, MOD)

GB 2536 Unused mineral insulating oil for electrical fluid transformers and switches (GB 2536-2011, IEC 60296.
2003, MOD)

GB/T 2900.95 Electrical terminology transformers, voltage regulators and reactors (GB/T 2900.95-2015, IEC 60050-421.

1990, NEQ)

GB/T 4109 Insulation bushing with AC voltage higher than 1000V (GB/T 4109-2008, IEC 60137Ed.6.0, MOD)

GB/T 4208 enclosure protection grade (IP code) (GB/T 4208-2017, IEC 60529..2013, IDT)

GB/T 7354 High Voltage Test Technology Partial Discharge Measurement (GB/T 7354-2018, IEC 60270..2000, MOD)

GB/T 10230.2 Tap changer Part 2. Application guidelines (GB/T 10230.2-2007, IEC 60214-2..2004, MOD)

GB/T 16927.1 High-voltage test technology Part 1. General definition and test requirements (GB/T 16927.1-2011,
(IEC 60060-1..2010, MOD)

3 terms and definitions

The terms and definitions defined in GB/T 2900.95 and the following apply to this document.

3.1

On-load tap-changer; OLTC

A device for changing the tap position of a winding suitable for operation under transformer excitation or load.

Note. On-load tap-changers are sometimes referred to as LTC.