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Rules for the inspection of Buchholz relay

气体继电器检验规程

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Rules for the inspection of Buchholz relay

1 Scope

This Standard specifies the inspection cycle, inspection items, inspection conditions, inspection methods and rules of Buchholz relay.

This Standard applies to Buchholz relay (hereinafter referred to as relay), as the rules and basis for relay inspection.

2 Normative references

The following documents are indispensable for the application of this Standard. For dated references, only the dated version applies to this Standard. For undated references, the latest edition (including all amendments) applies to this Standard.

GB/T 191-2008, Packaging - Pictorial marking for handling of goods

GB 4208-2008, Degrees of protection provided by enclosure (IP code)

GB/T 7595-2008, Quality of transformer oils in service

DL/T 572-2010, Operation specification for power transformer

DL/T 573-2010, Maintenance guide for power transformers

DL/T 596-1996, Preventative test code for electric power equipment

DL/T 474.1-2006, Guide for insulation test on site insulation resistance, dielectric absorption ratio and polarization index test

JB/T 9647-1999, Gas relay

JJG 20-2001, Verification Regulation of Standard Capacity Measure (glass)

JJG 875-2005, Verification Regulation of Digital Pressure Gauges

JJG 1037-2008, Verification Regulation of turbine Flowmeter

3 Terms and definitions

3.1 Setting of the flow speed

6.3.1 Ambient temperature: 0 °C ~ 40 °C.

6.3.2 Relative humidity: ≤75%.

6.4 Working medium for inspection

Transformer oil that meets transformer operating standards.

7 Test methods and rules

7.1 Appearance inspection

7.1.1 The surface of the relay shell is smooth, no paint peeling off, no rust; the glass window scale shall be clear, and terminal outgoing lines shall be convenient for wiring; the screw shall not be loose; the air release valve and the probe shall be intact.

7.1.2 The nameplate shall be made of brass or stainless steel; the nameplate shall include the manufacturer, model, serial number, and parameters.

7.1.3 The internal parts of the relay shall be intact; the screws shall have spring washers and tightened; the fixing brackets shall be firm and reliable; the weld joints shall be well welded without missing welds.

7.1.4 The operation of the air release valve and probe shall be flexible.

7.1.5 The rotation of the open cup shall be flexible.

7.1.6 The reed switch shall be firmly fixed and have a buffer sleeve; the glass tube shall be intact and without oil leakage; the root lead wire shall be welded reliably; the lead hard column cannot be bent and is arranged and fixed by the soft plastic tube; the permanent magnet is firmly fixed in the frame.

7.1.7 The rotation of the baffle shall be flexible. The movable piece of dry reed contact faces the permanent magnet and keeps parallel; adjust the two contacts to break and close at the same time as much as possible.

7.1.8 Check the reed contacts that act on the trip. Rotate the baffle to the point where the reed contact just starts to move; the gap between the permanent magnet surface and the glass tube surface of the reed contact shall be kept within a reasonable range. Continue to rotate the baffle to the end position; the reed contact shall be reliably closed; the gap shall be kept within a reasonable range; otherwise, it shall be adjusted.

7.2 Dielectric strength test

7.4.4 During the relay inspection, the oil temperature shall be at 25 °C ~ 40°C.

7.5 Gas volume value

7.5.1 After the relay is filled with transformer oil, seal both ends; place horizontally; open the relay release valve; slowly drain the relay until there is a signal action output; measure the volume of the released oil, which is the operating value of the gas volume of the relay. Repeat the test three times.

7.5.2 $\phi 50$, $\phi 80$ relay: the range of the operating value of the gas volume is 250 mL ~ 300 mL.

7.5.3 When the relay test does not meet the setting, adjust the adjustable relay, to make it reach the setting.

7.6 Waterproof performance test

The waterproof performance test shall be carried out in accordance with Article 14.2.5 of GB 4208-1993.

7.7 Shock resistance

Fill the relay with clean transformer oil; connect an indicating device to the trip contact; then, install it on the vibrating table for a sine wave vibration test; the frequency is 4 Hz ~ 20 Hz (sine wave); the acceleration is 40 m/s²; respectively test for 1 minute from the three directions of X, Y, Z axis. If the indicating device does not send a signal, it is qualified.

Note: Take the axis of the pipe that is connected to the relay as the X axis, the axis perpendicular to the X axis on the same horizontal plane as the Y axis, and the axis perpendicular to the XY plane as the Z axis.

7.8 Reverse oil flow test

At the maximum oil flow speed of the relay, reverse impact 3 times. There shall be no deformation, displacement or damage to the components in the relay. Then, check the flow rate, gas volume, and insulation resistance again; the performance shall still meet the requirements.

7.9 Reed contact test

7.9.1 Reed contact interrupting capacity test

As shown in Figure 1, connect the reed contact into the circuit; make the reed switch break through the oil flow impact on the relay; repeat the test 3 times; it shall be able to connect and disconnect normally. When using DC 110 V power supply, select a 30 W bulb for testing of load; when using DC 220V power supply, select a 60 W bulb for testing of load.

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