Jiangsu Siyuan Hertz transformer Co., LTD

EPGA Rubber immersion paper capacitive GIS sleeve

Instructions for transportation, installation and maintenance

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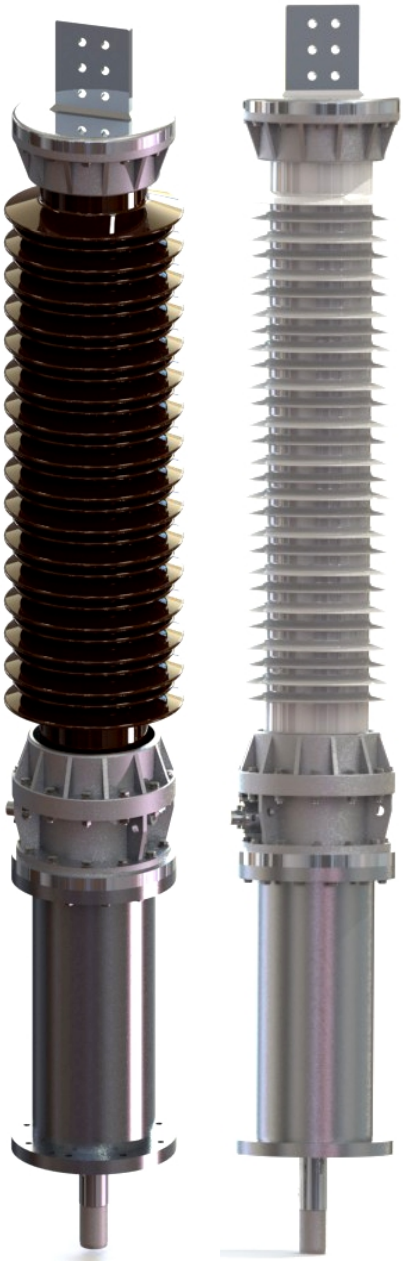

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Safety instructions

This specification is applicable to the installation, operation and maintenance of EPGA adhesive paper capacitive GIS sleeve.

The installation, operation and maintenance works involve the following safety risks:

-High-handed

-Mobile mechanical equipment

-Overload

-Personnel are injured by slipping, tripping, or falling

During the operation process, the relevant provisions of this instruction manual shall be observed.

In addition to the requirements specified in this specification, the relevant local national safety requirements shall be observed.

Table of Contents

1 Scope of application

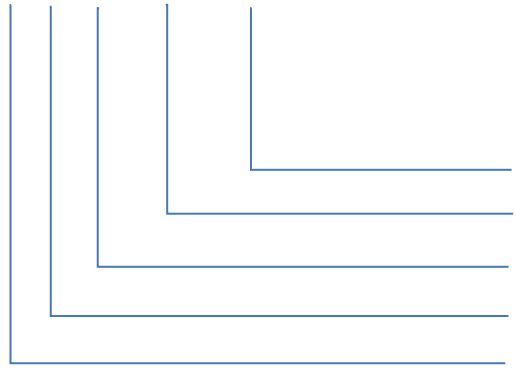
This instruction manual is suitable for rubber immersion paper capacitive GIS sleeve, which is used for GIS inlet and outlet line interval, connecting the bus and GIS body, acting as current carrier, insulation and mechanical support.

The manual provides the relevant installation operation, use, maintenance instructions and precautions of the above products after the factory.

2 Product model number and structure

2.1 Name rules of product model

E P GA 126 / 2000



Rated current,A

Applapplicable system or equipment, kV

GIS drivepipe

Goffered paper

Epoxy resin

2.2 Product Structure

The overall structure of the product is shown in Figure 1.

1) Air-side connection terminals

Air side terminals are usually made of copper alloy material.

2) Electrical insulator

The external insulation form is a porcelain insulator or a silicone rubber composite insulator.

3) Spacer flange

The installation flange is made of aluminum alloy for mechanical support and connection.

4) Test the head

Interface for measuring the dielectric loss factor, electrical capacitance, and local discharge amount.

5) Capacitive core

The capacitor core is made of capacitor screen structure and vacuum pouring of epoxy resin.

6) Elevated seat

The elevation seat is made of weather-resistant aluminum alloy for the connection between casing and GIS. The elevation seat size can be specified according to customer requirements.

7) Install the contact

The installation contact is a part of the intermediate conductive pipe of the capacitor core, and the surface has a silver plating layer. Attention should be paid to the protection during transportation and installation. The specific size of the installation contact can be specified by the customer.

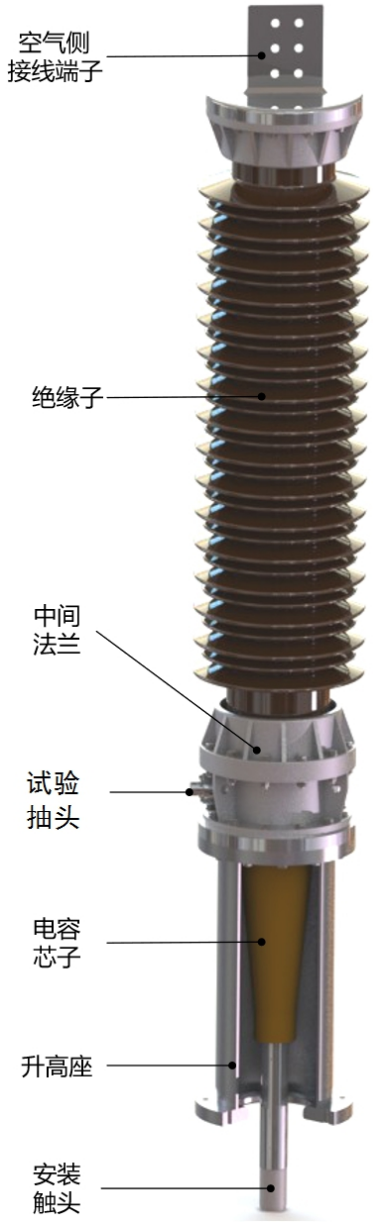


Figure 1. Schematic diagram of the product structure

3 Factory documents

The factory documents packaged along with them are:

A) Packing list

B) Certificate of test qualification

C) Operating instructions (including technical parameters required by the user)

D) Outline and installation dimensions drawing

E) Factory test report

4 Transportation

4.1 Lie down and transport. The mode of transportation used (such as road transportation, railway transportation, sea, river transportation, air transportation, etc.) depends on the distance and scope of product transportation.

4.2 Carefully check all the transportation marks on the packing box before transportation. The transportation packaging should be equipped with the necessary supports and liners to prevent damage in transportation.

4.3 Secondary transport Transfer requirements

A) During the secondary transfer, use the forklift to target the shovel moving area of the packing box for smooth shoveling;

B) Pay attention to no stacking on the packing box during circulation.

5 Installation

5.1 Unpacking

5.1.1 Internal structure of the box

The casing is made of wooden packing box, which has sufficient mechanical strength and certain buffer performance to ensure that the casing products are free from external impact and vibration in transportation. In the packing box, the upper and lower flange of the casing and the middle installation flange use pillow support, and the casing is equipped with a metal protective cover on the gas side, and the interior is filled with 0.03~0.05MPa N_2。

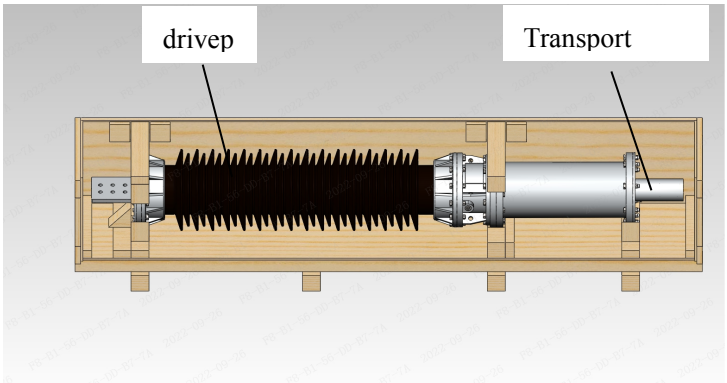


Figure 2 Internal diagram of the product after unpacking

5.1.2 Check packing boxes and internal products immediately after the arrival at the installation site:

A) Check the appearance of the box Whether it is still intact;

B) Check whether the casing model, code and specification meet the requirements of the order;

C) Check whether the parts and documents are complete according to the packing list;

D) After removing the outer package of the casing, check whether the surface of the casing insulator is knocked or damaged;

E) After removing the metal protective cover, check whether the core surface has any defects such as bumps and scratches.

5.1.3 Possible damage

— Damage caused by vibration (including porcelain cover damage, silicone rubber umbrella skirt, etc.);
— Bending of the metal parts;

— Other defects that affect the normal operation of the product;

If any damage is found during the inspection, the following measures shall be taken:

a) Notice the insurer immediately
b) On the receipt the responsibility of the carrier
c) In order to prevent exceeding the claim period, the carrier shall be notified and notified of its responsibility

If the transportation risk is borne by the Company, we shall inform the Company (sales department) of the damage as soon as possible.

5.2 Lifting and upright

Select the appropriate length and weight rope according to the size and weight of the casing, the nylon rope at the head and the hook rope at the tail.

For hoisting, as shown in Figure 3, fix the joint place of the casing insulator and the head flange and the connection flange lifting and climbing place with the lifting rope respectively. Then the whole casing will be lifted out of the packing box The weight of the casing can be checked from the nameplate, and the crane shall be able to withstand 2 times the weight of the casing.

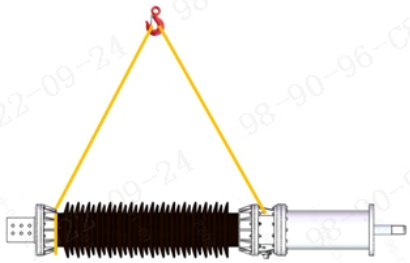


Figure 3

Using the lifting method shown in Figure 4, one lifting rope is fixed on the head of the casing, and the lifting hole of the casing connecting the flange is hung under the other lifting rope, and the upper part passes through the steering gourd. Through this lifting method, the angles of the casing are adjusted.

Figure 4

Figure 5

Figure 5 shows a typical scheme for vertical lifting of the casing. The hanging rope hangs the casing connection flange, and is bound and fixed at the junction of the upper insulator flange and the casing.

5.3 Preparation before installation

Before the casing is installed on the GIS, remove the protective cover and thoroughly clean the flange inner wall, flange surface and exposed core surface with a hairless cloth.

If necessary, the SF_6 gas side can be cleaned with anhydrous ethanol.

Apply grease to the silver plating layer of casing conductive rod. Before installation, use dust-free cloth and scrub gently with alcohol.

⚠ **Note: there is protective nitrogen in the elevation seat. Remove the nitrogen before removing the protective cover.**

5.4 Cannula installation

The casing is installed on the switch gear as specified by the switch gear manufacturer.

Before installing the casing, check whether the coating of the conductive rod is intact and whether the conductive rod has obvious scratches.

The casing can be lifted into the mounting position as described in 5.2.

In the lifting process, it should be noted that the porcelain cover and silicone rubber umbrella skirt should not be affected by the external impact and avoid the hanging rope directly on the umbrella skirt, causing damage or deformation of the umbrella skirt.

5.5 Linkage

5.5.1 Earthing

The elevation seat of the casing is reliably grounded with the GIS through the flange surface, so that the flange surface is flat and free from corrosion.

5.5.2 Air side connection terminals

Before wiring, use dust-free cloth dipped in alcohol to scrub clean the guide row, and the guide row is clean without burrs. By tightening the cable and cable, the tightening torque is shown in Table 1 below.

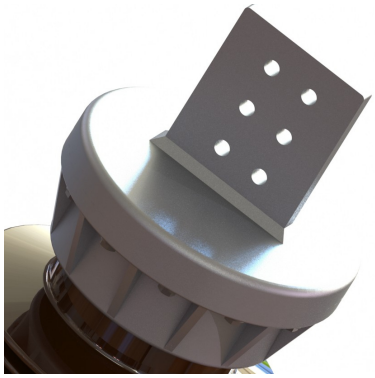


Figure 6 Air side wiring terminal

5.5.3 Gas side connection

Install attention to check the conductive rod within the range of silver plating coating in good condition, conductive rod has obvious scratches, using dust-free cloth dipped in alcohol and raise the conductive rod surface clean, conductive rod scratches using clean cloth dipped in alcohol grinding clean, no burr when conductive rod installation, installation is completed, diagonal fastening bolts and torque, fastening torque see table 1 below.

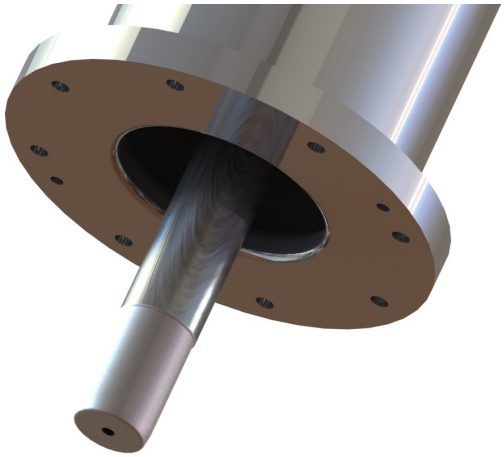


Figure 7 Installing the contact

Table 1. Moment requirements

Order number	Bolt specifications	Tightening torque N • m
1	M10	40
2	M12	65
3	M16	160

6 Recommended tests before commissioning

The product has been tested according to GB / T 4109 and IEC 60137 before leaving the factory, and all the tests meet the relevant provisions of the standard, see the factory test report.

It is generally recommended to measure the capacitance and dielectric loss factor of the main insulation before operation, see 7.3.

The values on the nameplate are the factory capacity and tan δ, which can be used as a reference for the first field test. However, due to the difference in test conditions and equipment accuracy, as well as the influence of stray capacitance, the field measured capacitance and tan δ are slightly different from the measurement in the factory, so it is recommended for the first measurement after installation as the benchmark for future maintenance inspection comparison, which ensures that the measurement conditions are the same.

7 Maintenance

7.1 Recommended inspection and maintenance

GIS casing can be checked simultaneously for contamination and corrosion during GIS maintenance, and cleaned up if necessary. At the same time, the casing capacity and electric loss retest

7.2 Cleaning of the insulator surface

Composite insulation casing cleaning, available in soapy water, detergent, absolutely do not allow using mineral oil, trichloro ethylene, chloroform, toluene and other chemicals.

When the porcelain sleeve is seriously polluted and accompanied by humidity, there will be different phenomena from the surface corona discharge to flash over. The porcelain sleeve should be cleaned according to the different

situation and experience in different places.

7.3 Electrical control measurement

7.3.1 Description of medium power capacity on the nameplate:

C1: High voltage conductor pair test tap capacity

C2 (if any): test tap ground capacity

7.3.2 Measurement method

For the installed casing with the high voltage terminal disconnected, the casing capacitor and tan δ can be measured by the bridge method, and the flange is reliably grounded as follows:

1) Remove the end cover of the test tap, but do not remove and rotate the test tap.

2) Measuring C1

- The test voltage shall be applied between the external terminal and the test tap. Generally, the high voltage lead of the measuring bridge is connected to the casing wiring terminal, and the test tap is connected to the measuring bridge through the measuring line;
- The test voltage is recommended for 10kV, measuring the capacitance and tan δ, and the ambient temperature and humidity are recorded simultaneously.

3) Measure the C2 (if any)

- Using the reverse connection method, the test voltage is applied between the test head and the ground;
- The test voltage was recommended for 1kV, measuring the capacitance and tan δ, and the ambient temperature and humidity were recorded simultaneously.

4) After the test, the end cover must be reassembled to ensure the reliable grounding of the test terminal.

After installation, the capacitor C 2 may deviate from the value on the nameplate, which is normal. Therefore, it is recommended that C 2 be measured and recorded after installation for later comparison.

If the measured tan δ is below the standard limit, and the electrical capacity is not significantly different from the first field test results, the casing is in good condition.

Note: The test tap structure and precautions are as follows:

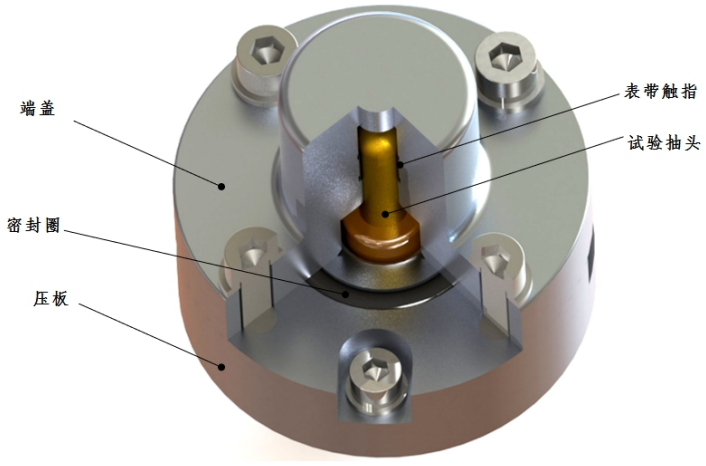


Figure 8. Schematic diagram of the test tap structure

Test the tap to the end screen of the casing capacitor screen. The end cover is equipped with a watchband touch finger for equipotential connection, reliably connecting and grounding the test tap to the mounting flange. During normal operation, the end cover bolts for the test tap shall be fastened in place (standard torque requirements 5N • m).

When the GIS is powered off, the casing capacity and the tan δ test shall be installed immediately.

Warning
Test tap is not self-grounded! In the normal operation of the casing, the test tap must be grounded, that is, the end cover must always be reliably fixed! It is recommended to check whether the end cover is fixed and reliable, otherwise it will cause the test tap to generate over voltage during operation, which may lead to catastrophic failure. During operation, the test tap shall not be exposed, otherwise it causes damage to the test tap insulation and further damage to the casing!

8 Storage and transport

1) When the casing should be stored for a long time, the packaging should be well guaranteed, and the storage place should have no corrosive gas and well ventilated, and not be directly exposed to sun and rain; long-term outdoor storage is not recommended, such as short-term outdoor storage, necessary rain shelter measures should be adopted.

2) For long-term storage, such as for spare parts, the sealing protective cover is required. The rubber immersion paper sleeve has moisture absorption, can absorb water, especially in the case of long storage time.

3) If the product is damaged under the storage, installation and use rules.