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Installation instructions Vacuum-proof connector

Answers for energy.

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Safety guidelines

Safety guidelines

All persons involved in the installation, start-up, maintenance and repair of the device must

- have adequate technical qualifications and
- follow these operating instructions exactly.

In case of incorrect operation or misuse there is a risk of

- injury or death,
- damage to the device or other property of the operator
- the device not functioning efficiently.

Three types of safety information are used in these operating instructions in order to highlight important information.

WARNING

indicates particular risk of injury or death. Failure to observe these instructions can lead to serious injuries or death.

CAUTION

indicates risks for the device or other property of the operator. The risk of injury or death can also not be ruled out.

NOTE

refers to important information on a particular topic.

Intended application

The vacuum-proof connector (VPC) is used for the voltage-resistant and vacuum-proof separation of oil-filled compartments in transformers.

NOTE

The device may only be used with the parameters described in the technical data (table on page 11).

Information for operating the device

The user must comply without fail with the applicable national accident prevention regulations.

It should be pointed out in particular that work on active parts, i.e. parts carrying a dangerous voltage are only permissible if these parts are disconnected from the supply, or are protected against direct contact. The national regulations must be observed for the electrical installation.

CAUTION

The installation and operating instructions specified in these installation and operating instructions must be strictly complied with.

CAUTION

Installation, electrical connection, start-up and maintenance of the device may only be carried out by qualified, trained personnel in accordance with these operating instructions. The operator must ensure that the device is used for its proper purpose. Unauthorized and inexpertly implemented installation and conversion work, electrical connection, start-up and maintenance – without consulting Siemens – are forbidden for safety reasons.

WARNING

The national fire safety regulations must be observed without fail.

Installation accessories



- 1 Flat gasket (NBR)
- 2 Hexagon nut M36x3 (Cu)
- 3 Thrust washer (Cu)
- 4 O-ring (NBR)
- 5 Clamping ring 8 (St)
- 6 Hexagon nut M8 (St)
- 7 Shielding cap (Al)

Step 1

Tools and installation material

1.1



Special wrench M36
(width across flats 55)

1.2



Connecting bolt –
is prefitted on the transformer terminal lead

ⓘ **NOTE**

The 4 locking bolts spaced at 90 degrees on the flange of the connecting bolt are used for fixing the connecting bolt in the cast resin body of the VPC.

1.3



Cast resin body of the vacuum-proof connector
(rear view)

ⓘ **NOTE**

The 4 locking holes spaced at 90 degrees on the copper flange of the cast resin body are used for fixing the connecting bolt.

Inserting the seals

Step 2

Insert the flat gasket (part 1) for sealing the vacuum-proof connector to the transformer tank/cover



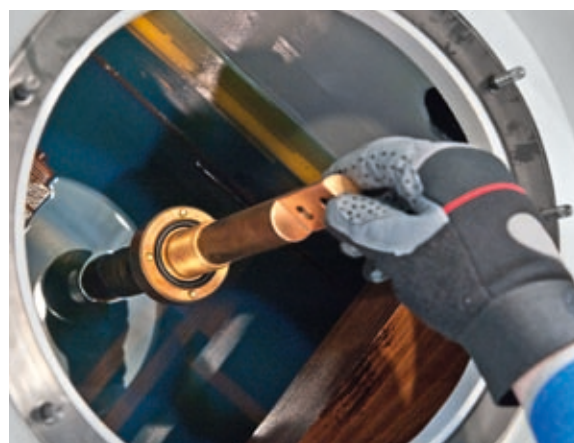
2.1

Insert the O-ring (part 4) in the sealing groove of the connecting bolt



2.2

Preadjust the connecting bolt and check that gasket and O-ring are both in the correct position



2.3

Step 3

Inserting the cast resin body

3.1



3.1 to 3.3

Installing the cast resin body – care must be taken to ensure that the cast resin body is not damaged, that the seals do not slip and that the locking bolts of the connecting bolt can engage in the adjusting holes of the cast resin body.

3.2



3.3



Check that the connecting bolt can be fixed in the cast resin body by attempting to twist it

ⓘ **NOTE**

If the connecting bolt cannot be locked in the fixing holes of the cast resin body, the cast resin body must be dismantled again and the connecting bolt must be aligned in the transformer once again.



3.4

Fixing the cast resin body

Step 4

Insert the shielding cap (part 7)



4.1

Insert the clamping ring (part 5)



4.2

4.3



Screw on M8 nut (part 6)

4.4



Tighten M8 nuts;
Torque: 12 Nm

ⓘ **NOTE**
Tighten the nuts crosswise.

4.5



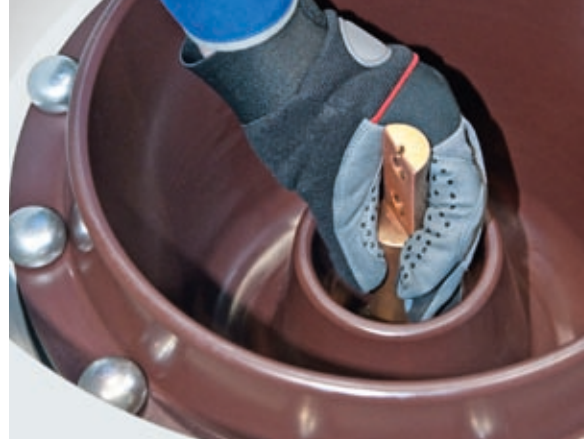
Close the shielding caps

⚠ **CAUTION**
All fixing elements must be completely covered.

Fixing the connecting bolt

Step 5

Check the correct position of the connecting bolt with respect to the cast resin body (it must not be possible to twist the connecting bolt any more)



5.1

Place the thrust washer (part 3) over the connecting bolt – the venting slot should point downwards



5.2

Screw nut M36x3 (part 3) onto the connecting bolt



5.3

5.4



Tighten the M36x3 nut lightly with the aid of the special M36 wrench

5.5



Make final check to ensure that the connecting bolt fits in the cast resin body correctly by attempting to twist it (the 4 locking bolts for the connecting bolt must be positioned in the locking holes of the cast resin body)

⚠ **NOTE**

To apply greater torque force a screwdriver can be used which is inserted through one of the two fixing holes.

5.6



Tighten the M36x3 nut fully on the connecting bolt with the aid of special wrench M36

⚠ **NOTE**

Proper sealing of the vacuum-proof connector depends crucially on the perfect fitting of the connecting bolt in the cast resin body. The fitter must set the torque for tightening the M36x3 nut according to the installation conditions. If a completely tight seal is not effected in this way, tighten the nut as necessary.

Technical information

- Make sure that the oil level in the transformer is below the height of the installation opening before installing the VPC in the transformer.
- The connecting bolt already preinstalled in the transformer and its connecting cable must be freely movable and must be able to be bent into the end position without any mechanical stresses.
- The end position is determined in the axial direction by the position of the connecting bolt in the VPC and radially by the position of the counterpart with respect to the connecting bolt in the cable terminal compartment.
- During the installation process strict care must be taken to ensure that no objects or dirt can get into the transformer.
- After completion of installation the VPC and the surrounding cable terminal compartment must be cleaned.

Technical Data

Type		VPC 650/145-800	VPC 650/145-1300
Rated voltage		145 kV	
max. service voltage	line/ground	83 kV	
Partial-discharge extinction voltage	PD intensity < 2 PC	≥ 220 kV	
Test voltage	50 Hz, 1 min.	302 kV	
Impulse test voltage, full wave	1,2/50 μs	650 kV	
Impulse test voltage, chopped wave		750 kV	
Rated current		800 A	1,300 A
max. service current		800 A	1,300 A
Conductor cross section	max.	300 mm ²	500 mm ²
Distance between VPC axis and grounded transformer wall under oil	min.	200 mm	
Oil temperature	min.	-30° C	
	max.	+120° C	
Mass	approx.	14 kg	

Overload conditions as per IEC 76-2 and Loading guide IEC 60076-7

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