

HIGH-VOLTAGE SCALING TRANSDUCER CHVT-500
User Guide for operation with SF6-filled equipment

MC2.727.002-01 UG1

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General

The transducer CHVT-500 is a capacitor operated under specific gas pressure, thus there are special requirements for its transportation and maintenance.

In the process of operation, the CHVT-500 must be filled with SF₆ gas up to an excessive operating pressure of 3.6 atm (0.36 MPa). The operating pressure is checked by means of the manometer installed in the lower part of the transducer. In the process of filling the CHVT-500 with gas, it is recommended to control the gas pressure also by the manometer of the Pressure Reduction Unit of the Gas Compressor.

Prior to transportation, the gas pressure inside the CHVT-500 must be reduced down to a transportation gauge pressure of 0.5 atm (0.05 MPa). The presence of the gauge pressure ensures gas-tightness of the transducer. The pressure is reduced with use of the Gas Compressor provided in the delivery package.

Before using the Gas Compressor, it is necessary to carefully read and understand all of the specifications and conditions of its user manual.

To provide long-term and trouble-free operation of the Compressor, it is necessary to regularly lubricate it as specified in its User Manual.

When the Compressor is operated, it is necessary to constantly check its temperature (you should not let the temperature rise above 60°C). If this happens, turn off the Compressor while not disconnecting the power supply, since the cooling fan of the compressor can reduce its internal temperature most efficiently.

Filling the transducer with SF₆ gas

Fill the CHVT with SF₆ gas in the following order:

1. Check the presence of transportation gauge pressure by viewing the manometer on the CHVT.

2. Assemble the filling system according to Fig. 7.

- 2.1 Connect the Pressure Reduction Unit to the gas cylinder (Fig.1), and connect the gas pipe to the Pressure Reduction Unit (Fig. 2). Make sure that the sealing pads are put into place.



Fig. 1 Connecting the Pressure Reduction Unit to the gas cylinder



Fig. 2 Connecting the gas pipe to the Pressure Reduction unit

2.2 Connect the pipe from the Pressure Reduction Unit to the input connector of the water-trap/oil SF₆ filter (Fig. 3). The correct direction of gas movement is: from the dark-coloured flange to the light-coloured one. In this case all contaminants remain inside the filter. Otherwise the contaminants will be brought into the gas container of the transducer, and it can be damaged as a result.



Fig. 3 Connecting the water-trap/oil SF₆ filter

2.3 Close the valve on the Gas Reduction unit.

2.4 Open the valve on the gas cylinder. If you don't hear any hissing sounds, therefore the threaded couplings are tightened securely. Otherwise tighten the nuts on the Pressure Reduction unit.

2.5 The system should be blown out with SF₆ gas during 3 seconds in order to clean it out from possible contaminants. To do this, open the valve of the Gas Pressure Reduction Unit, and then close it after 3 seconds.

2.6 Connect the output connector of the water-trap/oil SF₆ filter to the Charging Connector of the CHVT. You should make the connection as fast as possible. The SF₆ gas is considerably heavier than the air, thus it can flow out of the system and at last it can be replaced with the air.

3. Open the valve of the Pressure Reduction Unit. The process of filling the CHVT-220 with gas starts. The gauge pressure is checked by viewing the manometers on the CHVT and on the Pressure Reduction Unit (it is recommended to check the readings of one manometer with the readings of the other and vice versa).

4. The charging of the CHVT with SF₆ gas is finished on achieving a pressure of 3.6 atm (0.36 MPa).



Fig. 4 Powering the compressor from the 220V mains supply

After completion of high-voltage works, it is necessary to relieve the SF₆ gas pressure inside the transducer down to a transportation gauge pressure of 0.5 atm (0.05 MPa) by moving SF₆ gas from the gas container of the CHVT-500 to a gas cylinder. The gas is moved from the container to the cylinder with the Compressor from the delivery package.

Before using the Gas Compressor, it is necessary to carefully read and understand all of the specifications and conditions of its user manual.

The Compressor can be powered either from mains supply (220 V) through a power adapter supplied with the transducer, or from a car battery 12 V.

How to turn on the Compressor powered from 12 V car battery

1. Start the engine of your car
2. Connect the power supply cable to the Compressor. Connect the red clamp to the positive (+) terminal and the black clamp to the negative (-) terminal of the battery
3. If the connection has been made correctly, the cooling fan of the compressor will start automatically.

How to power the Compressor from mains (220 V)

The Compressor connected to a 220 V power supply via the power adapter from the delivery package is shown in Fig. 4.

How to move SF₆ gas from the transducer to gas cylinder

The connection scheme for moving gas from the transducer to a gas cylinder is shown in Fig. 8.

NOTE! It is recommended to lubricate the Compressor as specified in its user manual before each operation.

1. Connect the outlet filter of the Compressor to the gas cylinder (Fig.5).
2. Connect the gas pipe of the Compressor to the outlet valve of the Compressor (Fig.6).



Fig. 5 Connecting the outlet filter of the Compressor to the gas cylinder



Fig. 6 Connecting the outlet pipe of the Compressor

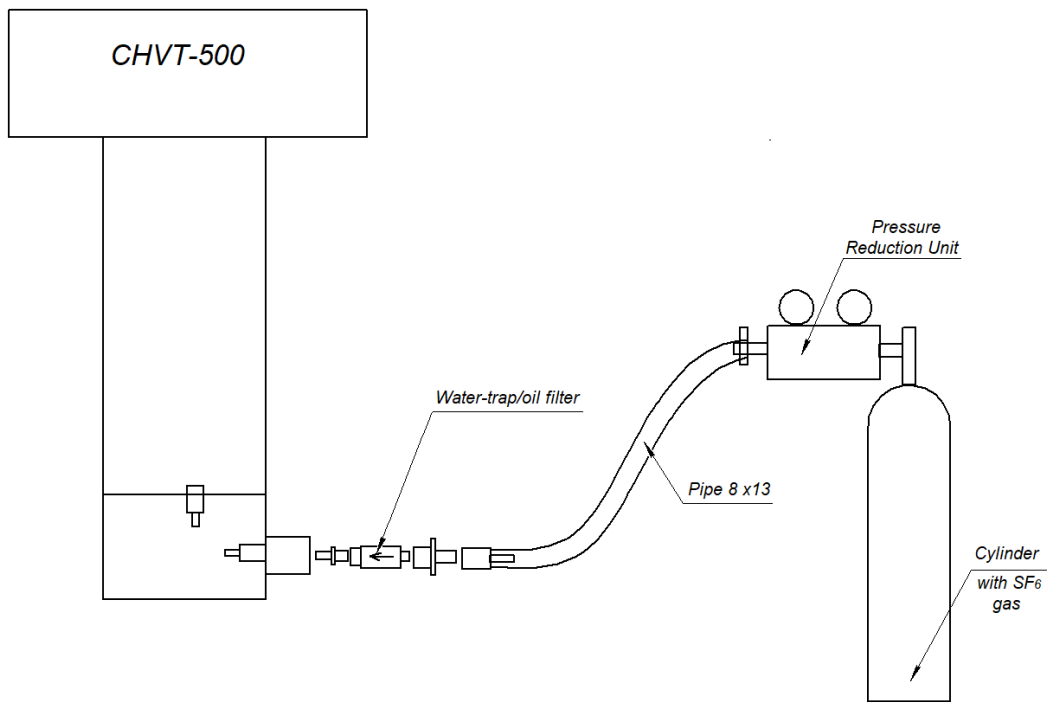


Fig. 7 Connection scheme for filling the transducer with SF₆ gas

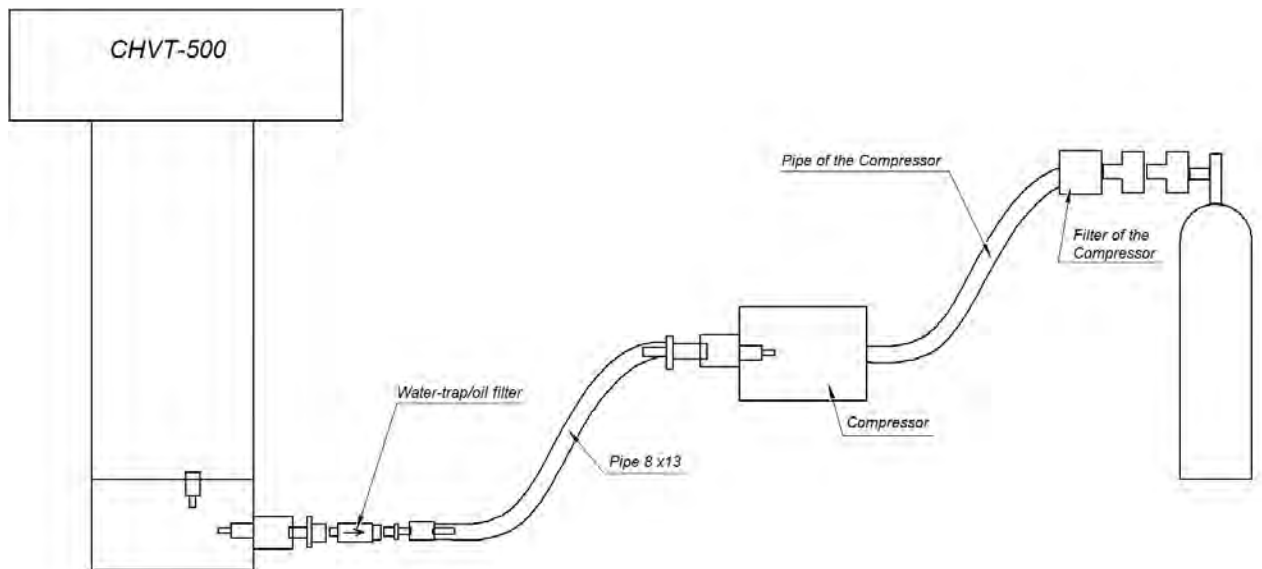


Fig.8 Connection scheme for moving gas from the transducer to gas cylinder

3. Connect the water-trap/oil SF₆ filter to the gas pipe (Fig. 10), and then connect the gas pipe to the Compressor (Fig.9).

Mind the direction of the filter. The correct direction of gas movement is: from the dark-coloured flange to the light-coloured one. In this case all contaminants remain inside the filter. Otherwise the contaminants will be brought into a filled tank.



Fig. 9 Connecting the gas pipe to the Compressor



Fig. 10 Connecting the water-trap/oil SF₆ filter

4. Connect the water-trap/oil SF₆ filter to the CHVT-500.
5. Apply power to the Compressor. Make sure that the cooling fan of the compressor works right.
6. Open the protective valve on the filter of the Compressor (Fig. 11).



Fig. 11 Protective valve on the filter of the Compressor

7. Turn on the Compressor for 5 seconds to blow out the system and to remove residual air.

8. Close the protective valve on the filter of the Compressor and open the valve on the gas cylinder. SF₆ gas starts to enter the cylinder.

8.1 When the Compressor is operated, it is necessary to constantly check its temperature (you should not let the temperature rise above 60°C). If this happens, it is necessary to turn off the Compressor while not disconnecting the power supply, since the cooling fan of the compressor can reduce its internal temperature most efficiently.

8.2 It is necessary to check the gas pressure in the cylinder with the manometer. When the gas pressure drops down to 0.5 atm (0.05 MPa), turn off the gas flow.

9. Turn off the Compressor in the following steps:

- Close the valve on the gas cylinder
- Open the protective valve shown in Fig. 11.

WARNING! Disconnection of the gas pipe under pressure can lead to a dangerous situation!

- Disconnect the gas pipe from the transducer.
- The CHVT-500 is ready for transportation.