

Section 7: Testing

XGIS switchgear is filled with the SF6 insulating gas in the factory and tested as a complete system.

Current and voltage tests may be conducted without removing cables or discharging the insulating gas.

Those tests can be performed directly using an empty cable bushing or by using the termination left for the lightning arrester (if applied). For the voltage test, the voltage transformer and lightning arrester must be isolated. Empty (unapplied) terminations must be covered by insulating cable caps. After disconnecting the cable from the load, a hi-pot rig can be used to test the entire cable run.

XGIS switchgear is designed to allow the dielectric testing of power cables while the power cables are connected to the switchgear. Any cables under test should be isolated from the main bus using the 3PDS. Once isolated, cable testing can be conducted with the main bus energized up to the rated nameplate value. To avoid damage to the switchgear and PFWV test equipment, cable test voltages should not exceed the following values:

- DC PFWV Tester - 80 kV
- VLF (very low frequency) PFWV Tester - 56 kV

7.1 Voltage test

NOTE: Any empty VT sockets or exposed cable terminations must be blocked by an insulated plug or cap.

Confirm that the equipment is de-energized.

Typical voltage tests that can be performed are:

- DC voltage ultra-low-frequency sine or square wave test on disconnected power cables.
- AC power frequency or impulse voltage withstand tests as desired.
- Hi pot testing of connecting cables. Use AC Hi-Pot testing equipment only, and apply 60 kV or 75% of the cable's rated voltage.
- Ac voltage system test can be performed using the voltage test cable (see **Figure 131**).
- When performing a field power frequency withstand test on the switchgear, the voltage transformer must be in one of the following states:
 1. VT installed and VT disconnect switch grounded, thereby removing the VT circuit from the PFWV test.
 2. VT is removed and an insulating plug is installed in the VT port with the VT disconnect switch connected (see below for information on how to plug the VT port).
 3. VT installed, primary VT fuse is removed, low voltage VT secondary circuit open (fuse removed or breaker open), and VT disconnect switch closed. In this case, the PFWV cannot exceed the field test level for the given service voltage (cannot perform PFWV test at type test levels for this option).

Removing a fused VT and installing an insulating plug

In order to satisfy the conditions of item 2. above, it will be necessary to remove a fused VT from its VT port on top of the tank, then plug the port with an insulating dummy plug. To do this,

1. Loosen the four bolts holding the fused VT assembly to the tank VT port.
2. Disconnect the fused VT signal cable plug from its VT receptacle.
3. Remove the VT from the VT port area (see **Figure 115**).
4. Install an insulating dummy plug, Eaton Catalog Number 87A1025H01.
5. Secure the dummy plug to the VT port. Tighten the bolts to 13 Nm (115 in.-lb.) See **Figure 130**, below.



Figure 130. VT port with insulating plug installed.

Contact Eaton engineering services for more information.



Figure 131. Voltage test cable.