

Gas Discharge Tube (GDT) based Arrestors - Servicing/Testing

NOTE: This input will apply to any Gas Discharge Tube based arrestor, i.e. the NexTek [PTC](#) and [PTR](#) series of coaxial surge protection devices

Since GDTs need significant voltage to "turn-on," it is difficult to assess the health of a unit with handheld tools like a multimeter. However, there are some useful tests can be done.

- I. Visual Inspection - Look for discoloration, blackening, melting - i.e. any signs of a significant surge event and resulting damage
- II. Verify Radio Operation - As an alternative to a full-scale Network Analyzer sweep, units can be checked for normal operation on an example radio system, either in the field or in a test setup
- III. Check Gas Discharge Tube Operation - Apply a slow-rising DC Voltage to the arrestor to verify basic operation and "Turn-On" Voltage.

If a unit passes a visual inspection and works OK in a radio system, the best way to test the unit's readiness is to verify the GDT Turn-On Voltage (i.e. check GDT Operation)

Testing GDT Turn-On Voltage

This can be done with any current-limited slow rising DC power supply; After disconnecting from the radio system, apply a slow-rising voltage to between center pin and shield (main body) of the arrestor. Some "surge arrestor" test boxes have a built-in Vpk meter, or if another DC supply is used then the Voltage Across the unit can be measured with a multimeter during the test.

Example Test Limit - For GDT-based arrestors that have been installed and used in the field, the allowable test range should be +50%/-30% from the Rated DC Protection Voltage.

For 90V rated units, the DC Voltage should rise to 63-180Vpk before the GDT forms a shunt and the power supply goes into current-limiting mode.



Sample NexTek Test Setup

With a visual inspection to check for damage, a Turn-On voltage test to verify operation, and a Radio Operation test to prove that RF thru performance is adequate...It should be possible to screen and re-install used arrestors and minimize unneeded replacement & procurement.

RESOURCES: (links to .PDF files on nexteklightning.com)

[Gas Discharge Tube Maintenance](#)

[Repair Guide for NexTek's Replaceable GDT Arrestors](#)