

Installation of Advanced Energy Trek 3450 Probe in Vacuum Applications

The vacuum connector used must be of the high-voltage type due to the potential relative to ground on the conductors of the cables which reach up to the value of the measured potential. In the case of using a 3450 probe connected to an Advanced Energy Trek 341 Electrostatic Voltmeter, a potential up to $\pm 25,000$ volts can be reached between all conductors, taken as a group, and EARTH GROUND. However, the maximum voltage between any conductor within the cable, and any other conductor within the cable, is limited to less than ± 120 volts.

The 3450 probe may be applied and operated under vacuum conditions up to at least 10^{-6} Torrs.

The procedure is as follows for probe cable separation:

- A) Cut the cable at the appropriate position which allows the required cable length inside the vacuum chamber.
- B) Separate, dress, and solder the various cable connections for both ends of the cable using the following precautions:
 - 1) The shield for the BLACK wire, the GREEN wire, and the WHITE wire are at a common potential and therefore may be connected together as shown on page 2 Diagram as contact "B".

B) (cont.)

- 2) If the shells of the high-voltage connector and its mating connector are of a conductive (metallic) material and these conducting shells are connected to EARTH GROUND due to their contact to the metallic vacuum chamber walls, care must be taken to ensure that all conductors of the probe cable have sufficient clearance to these shells to prevent arc over between the cable and the shells. In the case of the Model 341 Electrostatic Voltmeter, the sufficient clearance must support up to $\pm 25,000$ volts.

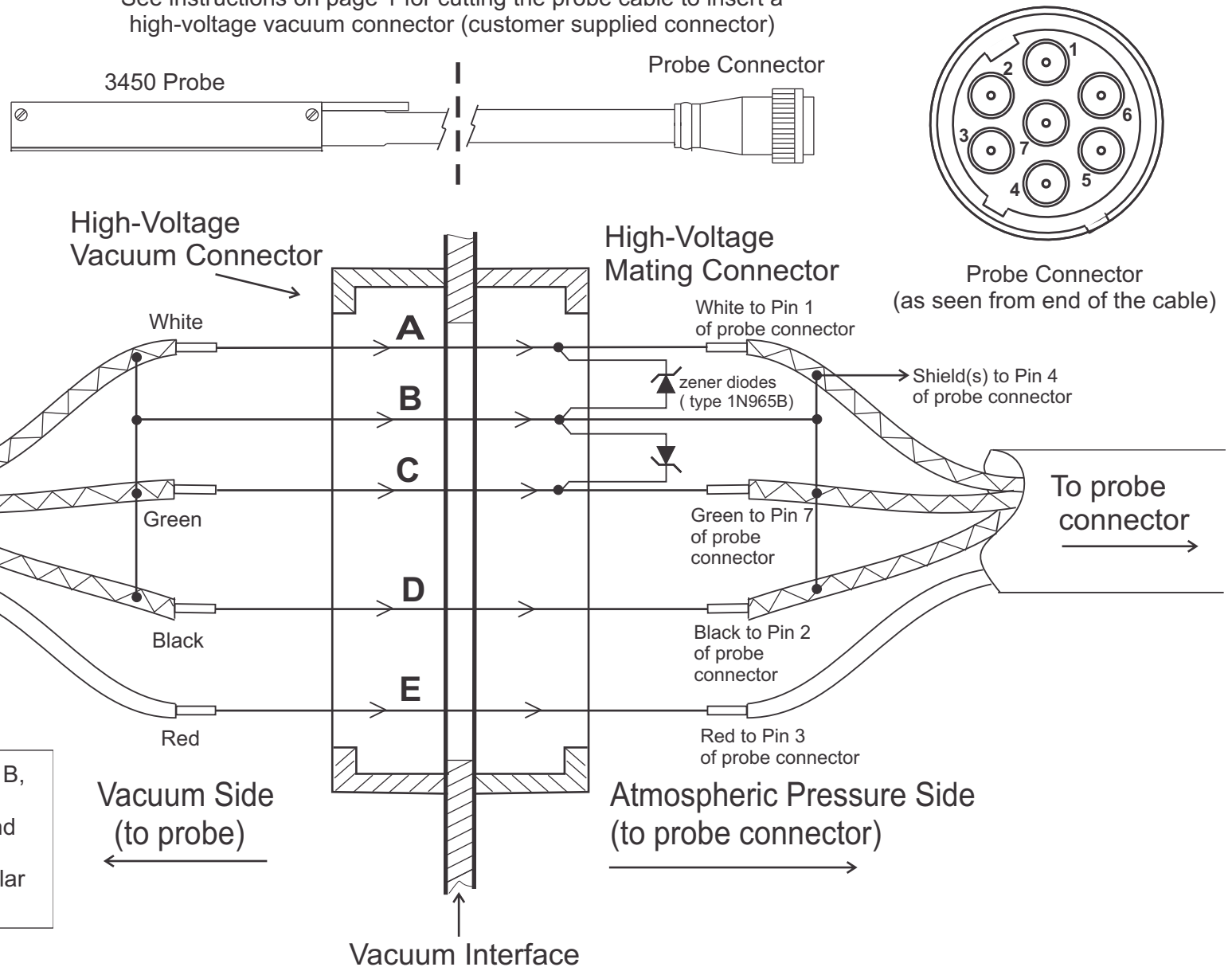
NOTE: Pin designations A, B, C, D, and E are used for reference purposes only and do not describe the pin designations on the particular connector being selected.

- C) Connect a zener diode (type 1N965B) between the WHITE wire at Pin A and the SHIELD wire at Pin B. Also connect a zener diode (type 1N965B) between the GREEN wire at Pin C and the shield wire at Pin B.

The zener diodes cathodes (the terminal normally denoted with a band) are connected to Pin A and Pin C of the vacuum connector, while the anodes of the zener diodes are both connected to Pin B.

Advanced Energy Trek 3450 Probe in Vacuum Applications Diagram

See instructions on page 1 for cutting the probe cable to insert a high-voltage vacuum connector (customer supplied connector)



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