

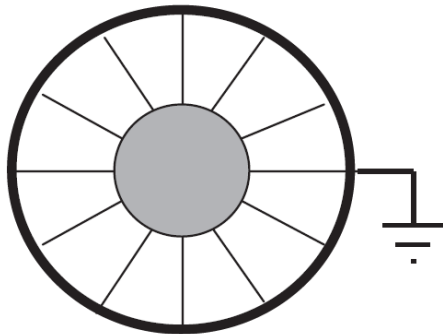
5.2 Splicing, Terminating, and Accessories:

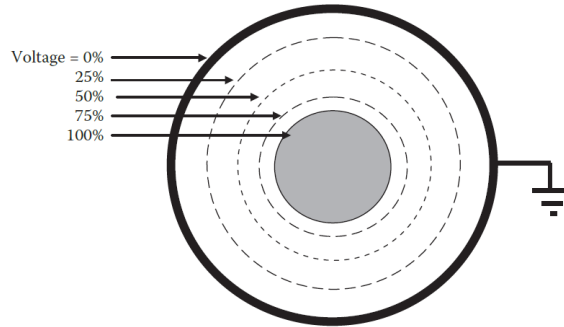
Termination Theory

- The electric fields in a cable, splice, or termination are depicted in two ways.
- These lines radiate outward from the center of the conductor toward the grounded shield.
- The lines are closer together near the conductor, which demonstrates the fact that the electric stress is higher near the conductor.
- The lines get farther apart near the shield and this shows that the voltage stress is lower near that area.
- These lines are at right angles to the flux lines described previously.
- This shows that the voltage difference for a given distance from the conductor is greater there than the same spacing near the shield.

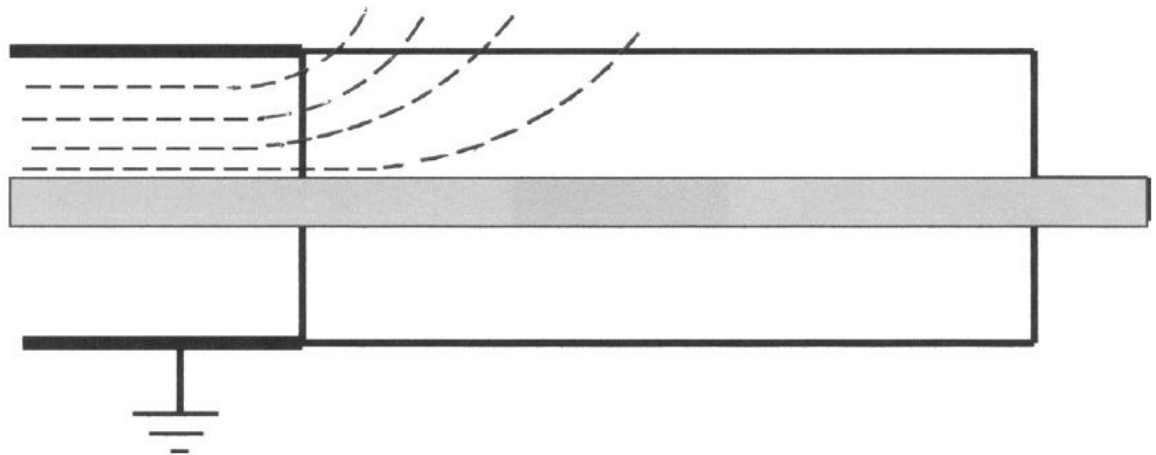
Purpose of a Termination:

- A termination is a way of preparing the end of a cable to provide adequate electrical, mechanical, and environmental properties.
- A discussion of the voltage distribution at a cable termination serves as an excellent introduction to this subject.





- Whenever a medium or high voltage cable with an insulation shield is cut, the end of the cable must be terminated so as to withstand the electrical stress concentration that is developed when the geometry of the cable has changed
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- As long as the cable maintains the same physical dimensions, the electrical stress will remain consistent.
- When the cable is cut, the shield ends abruptly and the insulation changes from that in the cable to air.
- The concentration of electric stress is now at the end of the conductor and insulation shield.



- To produce a termination of acceptable quality for long life, it is necessary to relieve voltage stresses at the edge of the cable insulation shield.

- The conventional method of doing this has been with a stress cone.
- A stress cone increases the spacing from the conductor to the shield.
- This spreads out the electrical lines of stress as well as provides additional insulation at this high stress area.
- The ground plane gradually moves away from the conductor and spreads out the dielectric field—thus reducing the voltage stress per unit length.
- The stress relief cone is an extension of the cable insulation.
- Environmental conditions play a significant role in the length of a termination.
- The total distance across any termination defines its leakage distance. A termination with skirts has a creep age distance that includes the whole surface from ground to the energized portion.

Voltage Gradient Terminations:

- Electrical stress relief may come in different forms.
- A high permittivity material may be applied over the cable end
- material may be represented as a long resistor connected electrically to the insulation shield of the cable.



Cold shrink termination with skirts.