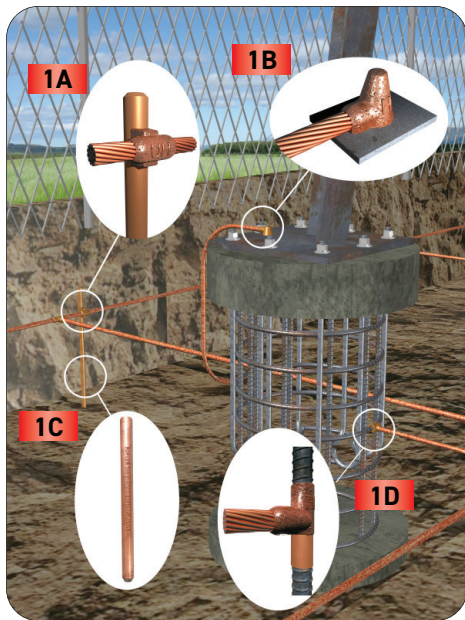


SUBSTATION GROUNDING



HARGER[®]

grounding • exothermic • lightning protection



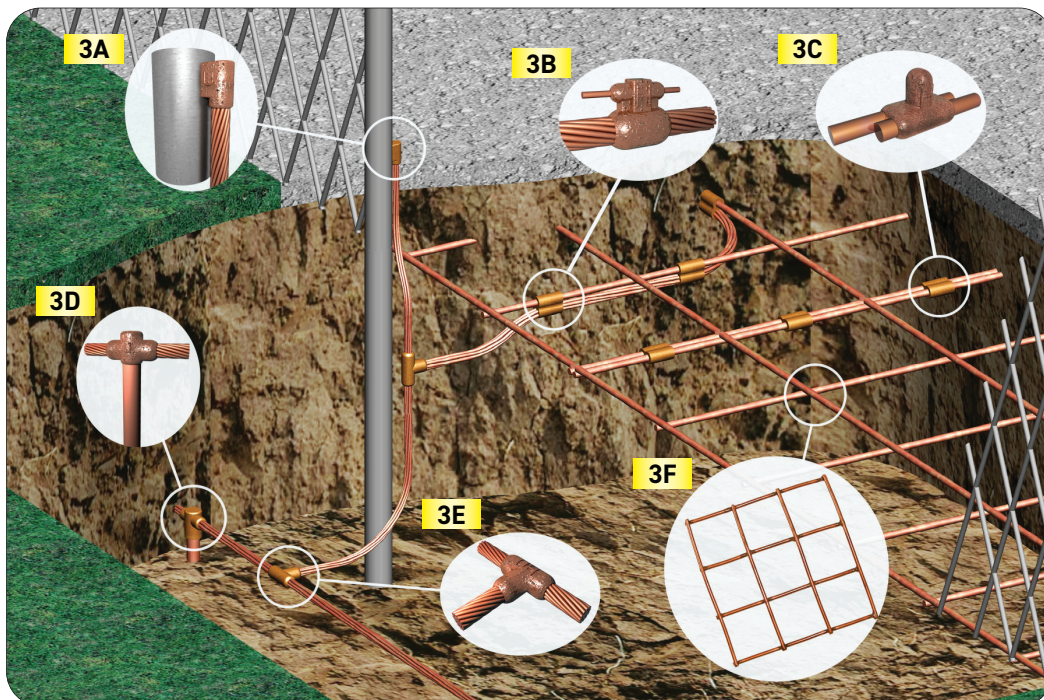
1

- 1A.** GS Ultraweld Connection
- 1B.** HD Ultraweld Connection
- 1C.** Copper Clad Ground Rod
- 1D.** RE Ultraweld Connection



2

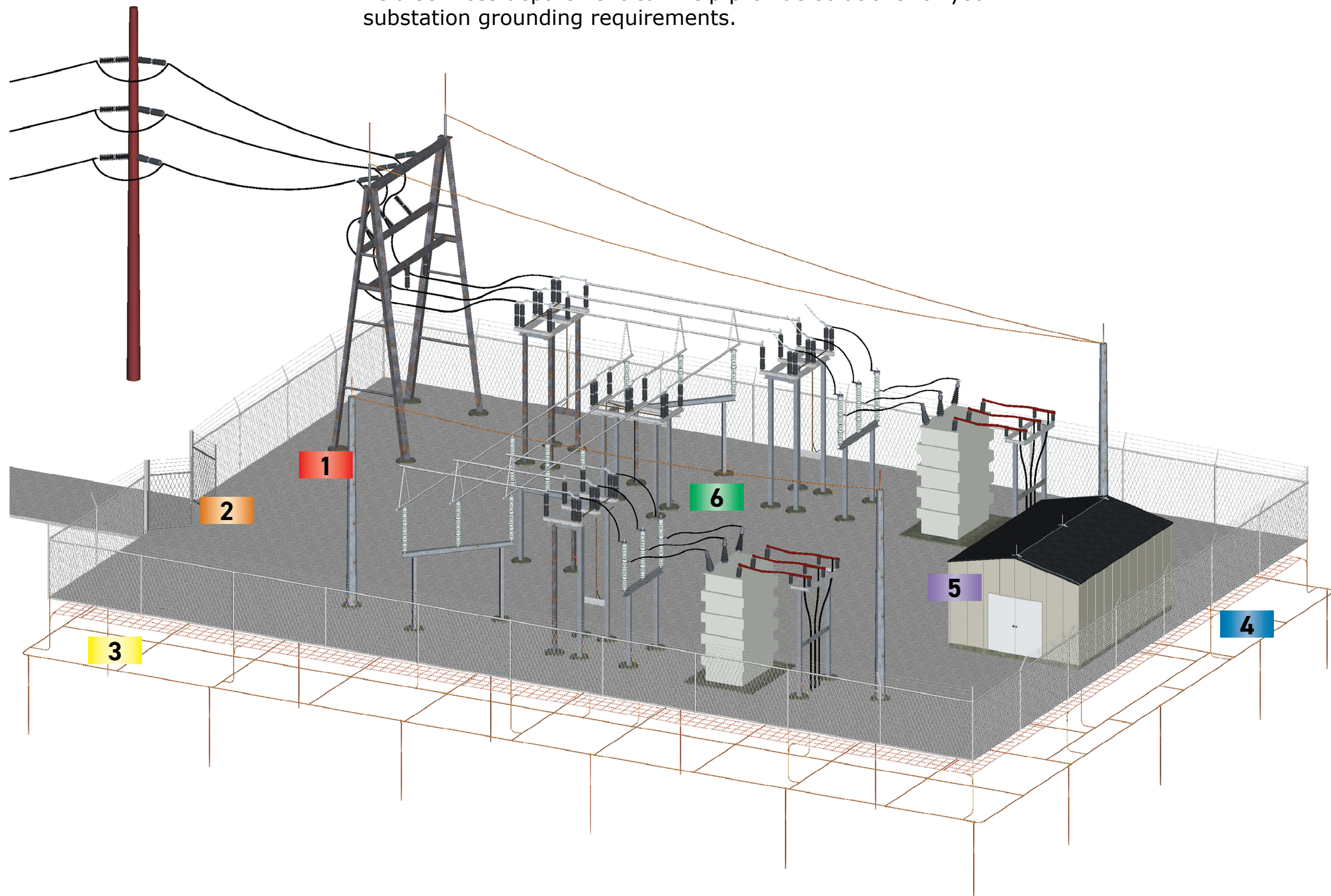
- 2A.** CPC Series Pipe Clamp
- 2B.** Tinned Conductor
- 2C.** Fence Fabric Grounding Clamp
- 2D.** VD Pipe Ultraweld Connection
- 2E.** Flexible Gate Jumper

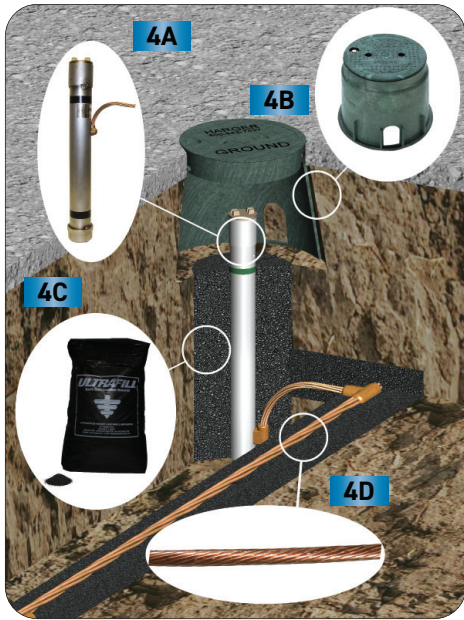


3

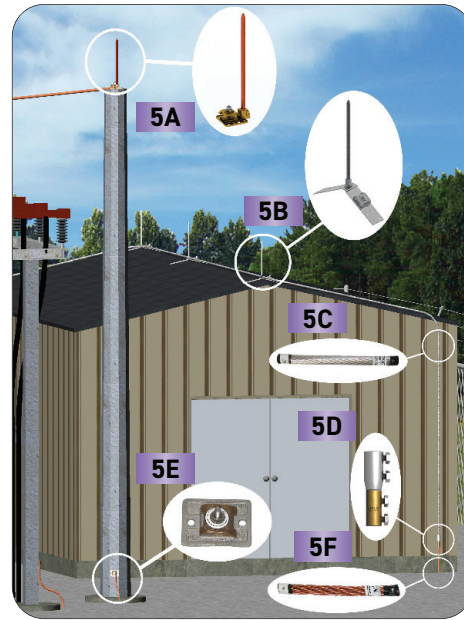
- 3A.** VD Pipe Ultraweld Connection
- 3B.** PT Ultraweld Connection
- 3C.** PS Ultraweld Connection
- 3D.** GO Ultraweld Connection
- 3E.** RT Ultraweld Connection
- 3F.** Copper Ground Mesh

Harger provides a complete line of grounding, bonding and lightning protection products for substations. Harger's leading field services department can help provide solutions for your substation grounding requirements.

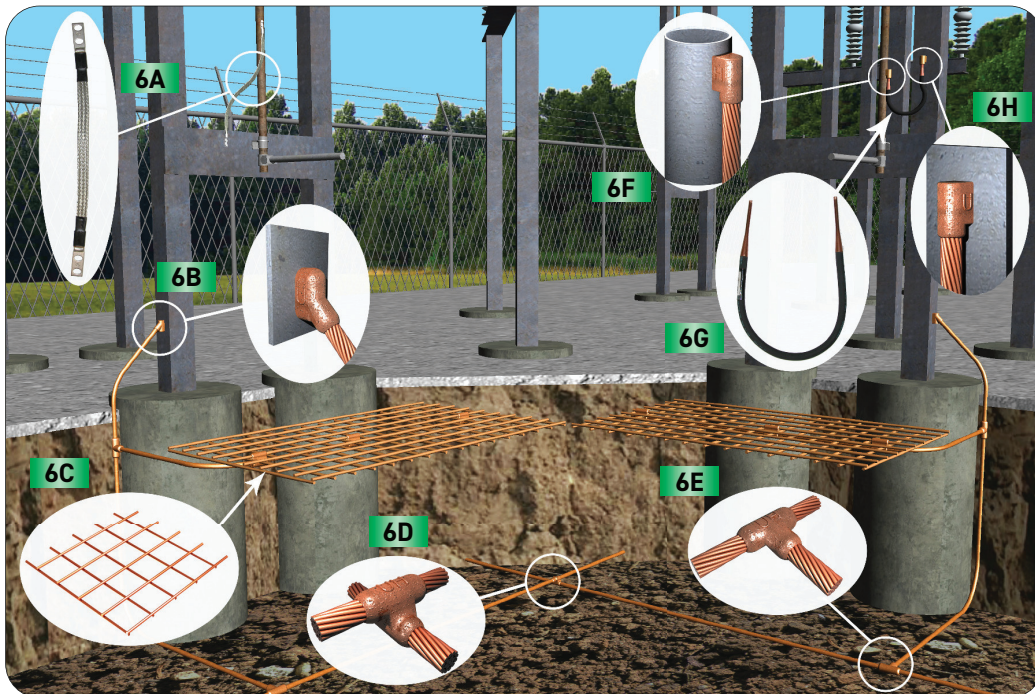




- 4**
- 4A.** Stainless Steel Enhanced Ground Rod
 - 4B.** Ground Access Well
 - 4C.** Ultrafill
 - 4D.** Grounding Conductor



- 5**
- 5A.** Air Terminal Assembly
 - 5B.** Ridge Saddle Assembly
 - 5C.** Aluminum LP Conductor
 - 5D.** Bi-Metal Cable Connector
 - 5E.** Bonding Plate
 - 5F.** Copper LP Conductor



- 6**
- 6A.** Flat Braid Bonding Strap
 - 6B.** VA Ultraweld Connection
 - 6C.** Personnel Safety Mat
 - 6D.** XO Ultraweld Connection
 - 6E.** RT Ultraweld Connection
 - 6F.** VD Pipe Ultraweld Connection
 - 6G.** Flexible Gate Jumper
 - 6H.** VD Ultraweld Connection

Exothermic Connections

Properly installed exothermic connections are essential to the grid integrity and system reliability for the life of the substation, as well as ensuring safe conditions for workers and the general public.

Harger offers two systems for making exothermic connections, UltraShot® & NUWTube®.

ULTRAWELD
ULTRASHOT

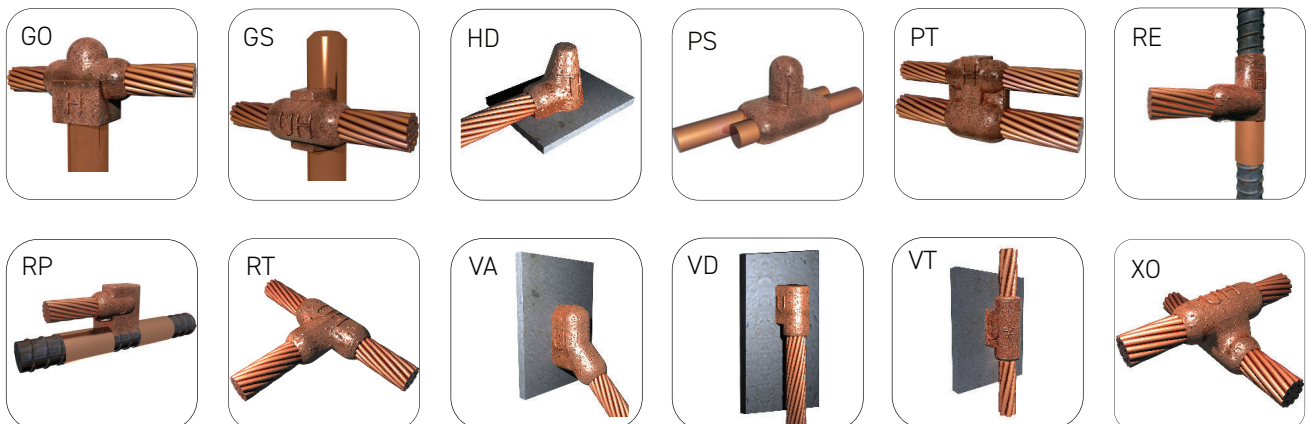


- The Drone, Harger's patent pending handheld electronic ignition system with audible ignition alert produces a high quality connection while eliminating issues associated with starting powder. Eliminating the use of starting powder drastically reduces emissions and extends mold life.
- The Drone uses an 18 volt Milwaukee® lithium ion battery with built-in fuel gauge and makes over 1,000 connections on a single charge.
- The system provides superior safety by allowing the user to maintain a safe distance from the reaction during ignition.
- Reduces labor and material costs due to misfires.

ULTRAWELD
nuw
TUBE



- Uses the traditional method of ignition with starting powder.
- Innovative dual chamber design keeps weld metal and starting powder separate until point of use.
- Reduces material and labor costs by eliminating migrating starting powder issues.



Step & Touch Voltage

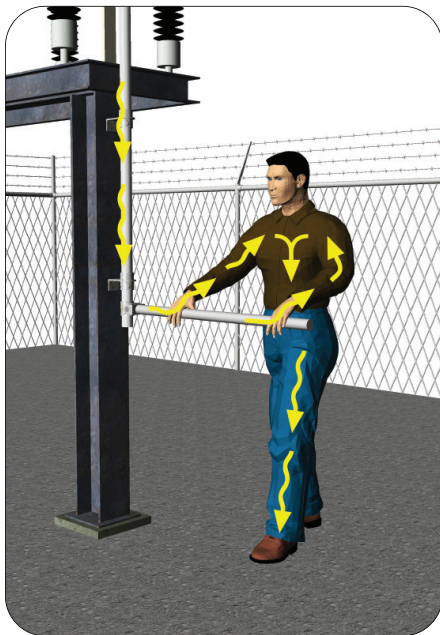


Step Voltage

Eliminate Step Voltage Threats by providing additional ground conductors (electrodes) in the area of the step voltage hazard such as the perimeter of the Substation Grid.

Options include:

- Additional Grid Conductor
- Additional Ground Rods
- Use of Deep Driven Ground Rods
- Prefabricated Wire Mesh



Touch Voltage

Eliminate Touch Voltage Threats by providing additional ground conductors in the area of the Touch Voltage hazard such as a switch handle.

Options include:

- Personnel Safety Mats
- Counterpoise Wires



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