

Insulator, Guy Strain



1. Scope

This standard details manufacturer requirements for guy strain insulators.

This standard applies to the following Seattle City Light Stock numbers:

| <u>Stock No.</u> | <u>Section Length (in)</u> |
|------------------|----------------------------|
| 690090 | 36 |
| 690092 | 12 |
| 690094 | 108 |
| 690096 | 24 |

Some manufacturers do not consider this product an 'insulator' because they are not intended to be connected directly to energized lines. They are also referred to as a 'guy strain' or 'isolator'. Seattle City Light will continue to refer to this product as an 'insulator'.

2. Application

Guy strain insulators are installed in-line with down guys on utility poles. They are installed to provide electrical insulation to the guy wire and anchor if a conductor makes contact to the guy. The insulator is installed to keep grounded guy wires out of hot working areas.

Standards Coordinator
Kathy Tilley

Standards Supervisor
John Shipek

Unit Director
Darnell Cola

3. Industry Standards

Guy strain insulators shall meet the applicable requirements of the following industry standards:

ASTM A153 / A153M - 09 Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware

ANSI C29.1-1988 (R2002) Test Methods for Electrical Power Insulators

4. Requirements

4.1 General

Guy strain insulators shall utilize glass-fiber filaments designed to meet cited strength requirements.

The guy strain insulator rod surface shall have a high-gloss finish to resist the adherence of contaminating materials and to minimize tracking and ultraviolet damage.

The guy strain insulator shall have excellent weathering characteristics, and remain stable and uniform in varying temperatures.

Guy strain insulators shall meet the requirements listed in Tables 4.1 and 4.2.

Table 4.1. General Requirements

| | |
|---|--------------------|
| End Fitting Material | Ductile iron |
| End fitting type (top/structure) | Clevis with roller |
| End fitting type (bottom/guy) | Clevis with roller |

The end fittings shall be hot-dip galvanized per ASTM A153.

The junction between the fiberglass rod and end fittings shall be sealed to prevent moisture ingress.

Rollers shall rotate freely between the clevis ears.

4.2 Detailed

Table 4.2. Detailed Requirements

| | Stock No. | | | |
|---|-----------|--------|--------|-------------|
| | 690090 | 690092 | 690094 | 690096 |
| Section Length, nom (in) | 36 | 12 | 108 | 24 |
| Ultimate Strength Rating, min (lb) | 21,000 | 15,000 | 21,000 | 36,000 |
| Roller Groove Radius (in) | 5/16 | 5/16 | 5/16 | 3/8 +- 1/32 |
| Flashover, Dry, min (kV) | 330 | 120 | 820 | 230 |
| Flashover, Wet, min (kV) | 195 | 70 | 506 | 130 |

5. Testing

Test data that establishes compliance with the requirements of ANSI C29.1 and this standard shall be provided upon request.

6. Product Marking

Each guy strain insulator shall be clearly and indelibly marked with:

- Manufacturer's name or symbol
- Year of manufacture

7. Packaging

Guy strain insulators shall be packaged in a manner that prevents damage during shipping, handling, and long-term outside storage.

Shipping containers shall be legibly marked with:

- Seattle City Light's Purchase Order Number
- Seattle City Light's Stock Number

8. Issuance

Stock Unit: EA

9. Approved Manufacturers

Manufacturers and Catalog Numbers

| Stock No. | Section Length, in | Hubbell Power Systems, Inc | Hughes Bros. | MacLean Power Systems | Aluma-Form |
|-----------|--------------------|----------------------------|--------------|-----------------------|-------------|
| 690090 | 36 | GS21036CC2 | CF694-36R2 | GCC21-36R2 | FGS21-36RR |
| 690092 | 12 | GS16012CC2 | CF692-12R2 | GCC15-12R2 | FGS16-12RR |
| 690094 | 108 | GS21108CC2 | CF694-108R2 | GCC21-108R2 | FGS21-108RR |
| 690096 | 24 | GS36024CC2 | CF696-24R2 | GCC36-24R2 | FGS36-24RR |

10. References

6900.5 (canceled); "Insulators – Guy Strain Glass-Fiber, Clevis-Clevis, Two Roller;" Material Standard; SCL

Panomvana, Tanya; SCL Standards Engineer, subject matter expert and originator of 6900.50 (tanya.panomvana@seattle.gov)