Polymer Station Post Insulators for 69 to 345 kV Applications

NGK-Locke Polymer Insulators, Inc.
Virginia Beach, Virginia, U.S.A.
Polymer Station Post Insulators

NGK-Locke Polymer Insulators (NLPI) provides polymer station post (SP) insulators that are manufactured using the same unsurpassed designs, materials, and quality control used in our polymer suspension & line post insulators. Our end fitting sealing system employs double O-rings plus an RTV sealant that have demonstrated excellent protection against moisture penetration. The housing material is silicone rubber, which provides excellent contamination performance. This housing is formed by compression molding silicone rubber onto the core as one continuous part free of any joints. Both housing and core are chemically bonded together during the vulcanization process. The strength of this bond is greater than the tearing strength of the silicone housing material itself. End fittings are then assembled by a pressure controlled, multi-step, crimping process. Overall length and hole alignment are controlled by NLPI’s unique design and manufacturing process.

Polymer SP Structure
This process provides the SP with more severe tolerances required for substation equipment. As shown below, NLPI’s polymer station post insulators have excellent seismic performance due to their flexibility. NLPI produces polymer SP with a 2.5” and a 3.5” diameter solid core.

Application Guidelines for Polymer Station Posts (SP)

- NLPI’s SP complies with dimensional and electrical values in accordance with ANSI C29.9 Technical Reference (TR) Number. The cantilever and tension strengths exceed the required values of the ANSI standard. Compression and torsion strengths are given as guaranteed values.
- Specified Cantilever Load (SCL) is breaking load guaranteed by manufacturer and should be less than Cantilever Breaking Load (CBL), which is the maximum load reached during a cantilever breaking test.
- The deflection values shown in this catalog correspond to the deflections measured at the relevant ANSI TR porcelain’s Maximum Working Load (MWL is specified as 40% of the ANSI TR porcelain’s cantilever strength).
- SP for underhung applications are also available. Contact your NGK representative for more information.
Corona Ring Application

Ring Mounting Detail

- **Side View**
- **Front View**
- **Bottom View**

**Mounting Arm**
- Cap Screw 1/2"-13 UNC
- Corona Ring
- Stop Ring
- Clamp
- Spring Washer
- Nut

**This spherical surface must face the rubber weatherproof**

**Recommended Mounting Direction**

- **Conductor Opening Side**
  - For double conductor application
  - For single conductor application

**Type of Insulator**
- **S**: Station Post

**Core Dia.**
- 2: 2.5"
- 4: 3.5"

**Shed Shape**
- **N**: Standard Leakage
- **G**: Bigger Sheds on Both Ends for 2.5" SP
- **H**: Bigger Sheds on Both Ends for 3.5" SP

**Design Variation**
- **none**: BIL750kV & below
- **W**: 11" ring for 2.5" SP
- **X**: 15" ring for 3.5" SP

**Catalog Number System**

- **S 2 – S N 4 7 1 – 2 2 – W**
  - **Type of Insulator**
    - **S**: Station Post
  - **Core Dia.**
    - 2: 2.5"
    - 4: 3.5"
  - **Shed Shape**
    - **N**: Standard Leakage
    - **G**: Bigger Sheds on Both Ends for 2.5" SP
    - **H**: Bigger Sheds on Both Ends for 3.5" SP
  - **Number of Sheds**
  - **Top Flange Base**
  - **Bottom Flange Base**
  - **Design Variation**
  - **Grading Ring Application**
    - **None**: BIL750kV & below
    - **W**: 11" ring for 2.5" SP
    - **X**: 15" ring for 3.5" SP

**“W” Grading Ring**
- **11”**
- **9.4”**
- **3.1”**

**“X” Grading Ring**
- **15”**
- **11.8”**
- **3.1”**
# Standard Strength Station Post Application with 2.5” Core

<table>
<thead>
<tr>
<th>TR#</th>
<th>NGK Catalog #</th>
<th>BIL and Impulse Withstand, kV</th>
<th>Height, inch</th>
<th>Leakage distance, inch</th>
<th>Cantilever SCL, K lbs.</th>
<th>Compression, K lbs.</th>
<th>Deflection, at TR's MWL, in.</th>
<th>MWL, inch</th>
<th>Critical Impulse Pos., kV</th>
<th>Power-Frequency Wet Withstand, kV</th>
<th>Max. RIV, µV/kV</th>
<th>Approx. Weight lbs.</th>
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<td>30</td>
<td>78.9</td>
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*1: ANSI Technical Reference Number  
*2: Specified Cantilever Load was determined using high strength bolts.  
Depending on the grade of bolt, a bolt failure may occur before core failure.  
*3: Compression values are based on testing per the procedure specified in ANSI C29.9-1983 using fixed ends.  
Actual application conditions may result in different compression strength values.  
*4: Deflection measured at the relevant ANSI C29.9-1983 TR porcelain’s maximum working load.

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**Flange End Fitting Detail**

**Top Flange**  
[2-]  
- \(9.5 (149)\)  
- \(2.9 (74)\)  
- \(1.5 (37.5)\)  
- \(5.4 (137)\)  

**Bottom Flange**  
[-1] [-2]  
- \(3/4 (19)\)  
- \(4.5/8 11UFS Tapped Through Holes\)

The dimensions are in inches.  
The metric equivalents (millimeters) are shown in (   ).

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**Tensile Strength:** 25K lbs.  
**Torsion Strength:** 30K in-lbs.
NGK-Locke Polymer Insulators, Inc. Station Post Insulators

High Strength Station Post Application with 3.5” Core

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*1: ANSI Technical Reference Number
*2: The mechanical load was determined using a 7-inch BCD mounted specimen. Care should be taken when a specimen is mounted using 5-inch BCD.
*3: Specified Cantilever Load was determined using high strength bolts. Depending on the grade of bolt, a bolt failure may occur before core failure.
*4: Compression values are based on testing per the procedure specified in ANSI C29.9-1983 using fixed ends. Actual application conditions may result in different compression strength values.
*5: Deflection measured at the relevant ANSI C29.9-1983 TR porcelain’s maximum working load.
*6: BCD at bottom flange is 5 inch though the porcelain’s TR specifies 7 inch BCD.

Tensile Strength: 25K lbs.
Torsion Strength: 55K in-lbs.

Flange End Fitting Detail

The dimensions are in inches. The metric equivalents (millimeters) are shown in (   ).

NGK
Research & Development
The station post insulators were subjected to various mechanical, electrical, and aging tests to validate the design. Some tests and the facilities are introduced in the following.

Packaging
All of NLPI’s insulators are packed in weatherproof containers in order to protect the products during land, air, and sea transportation. Several different grades of packaging can be offered depending on the mode of transport and the expected storage conditions. The packaging options that we offer are 1) standard grade/prefabricated packing, 2) economical grade/cardboard carton, and 3) best grade/closed wooden crate. Since the user best knows their crate requirements, they should select the option that is most suited to their needs and include that information in the purchasing specification. Special packaging arrangements can be accommodated upon request.

Each container is marked with the number of insulators it contains, the catalog number, the manufacturer’s name, and any other customer requests. Also, a “Polymer Station Post Insulator Handling Instruction” sheet is included with all containers. This sheet states any necessary cautions during handling, transportation, and installation. If corona rings are to be included, a corona ring installation sheet is also provided.
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