GROUP C

Apparatus Bushing

PYUNGIL Co., Ltd.
경기도 안양시 동안구 관양2동 1475-10 번지 평일빌딩 Tel: 031,420,6600  Fax: 031,424,7300

www.pyungil.com
Epoxy Bushing for 25kV 630A

**APPARATUS BUSHING (125kV BIL)**

**VOLTAGE**

- System Voltage: 25 kV
- Impulse Voltage, 1.2 x 50 μs wave: 125 kV
- Withstand, 60 Hz, 1 min: 80 kV
- Withstand, DC, 15 min: 78 kV
- Corona Extinction: 23 kV

**CURRENT**

- Continuous (RMS): 630 A
- 8 Hour Overload (RMS): 900 A
- Short-time sym., 0.17 sec (RMS): 25 kA
- Short-time sym., 3 sec (RMS): 10 kA

**APPLICATIONS**

- Transformer
- Pole-mounted Switch-gear

**K650P2** will accept an elbow connectors designed for applicable ANSI/IEEE standards. The apparatus bushings are designed to be directly mounted in electrical apparatus on 630Amp, 25kV systems.

**PYUNGIL’s apparatus bushings** are for in-oil or SF6 gas applications. The bushing is molded of epoxy and fixed with the bolts. In installation, no special tools are required. Refer to PYUNGIL’s installation instruction.
25kV 630A EPOXY APPARATUS BUSHING(125kV BIL)

1. EPOXY
Tightly cross-linked molecular structure with exceptionally high mechanical, electrical, thermal and chemical resistance properties.

2. INTERFACE FIT
Molded epoxy exerts uniform concentric pressure on insulation of mating parts to provide required creep-path length and waterseal.

3. ELECTRICAL CIRCUIT
- Positions cable contact and mates with product accessories having studs.
- A 5/8-11UNC-2A stud permits internal connection to apparatus.

4. INTERNAL SENSOR RING
Detects the voltage which enables distribution automation.

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도면 Drawing

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1. EPOXY
우수한 기계적, 전기적, 열적 및 화학적 특성을 가지도록 조밀하게 가공된 분자구조를 가짐.

2. INTERFACE FIT
연결부의 요구되는 누설전류와 완전 방수를 실현할 수 있도록 일정한 동심원상의 압력을 가하여 기하적으로 IEEE 386 규격에 따라 설계됨.

3. 도체 부분
- 상부 도체 부분은 케이블의 도체를 위치시키며, 스티드 볼트를 장착한 제품과 연결되도록 설계됨.
- A 5/8-11UNC-2A 스티드가 기하의 연결되도록 설계됨.

4. 내부 센서링
내부 센서링은 봉전상태를 감지하여, 배진 자동화에 사용됨.
APPARATUS BUSHING (150kV BIL)

• 용도 APPLICATION

- 기공용 및 저중용 개폐기 부심으로 내부 BUS BAR외 부 접속재를 연결 및 가밀 처리에 사용 (150kV BIL)

K760C2 will accept either of PYUNGIL’s polymer bushings or elbow connectors designed for applicable ANSI/IEEE standards. The apparatus bushings are designed to be directly mounted in electrical apparatus on 630Amp, 25/35kV systems.

PYUNGIL K760C2 bushing has the sensor ring device used for voltage detection inside of the bushing for automated remote control system. The bushing meets the full requirements of IEEE Std. 386. Typical applications would be in:
• Transformer  
• Pole-mounted Switch-gear

PYUNGIL’s apparatus bushings are for in-oil or SF6 gas applications. In installation, no special tools are required. The bushing is mounted through the apparatus wall and clamped externally.

• 검수 시험 PRODUCTION TESTS

- 아래의 시험항목은 ANSI/IEEE 386에 따라 수행됨
  □ AC 60Hz 1Minute Withstand : 40kV
  □ Minimum Corona Voltage Level : 19kV

- 아래의 시험항목은 (주)평일 요구사항에 따라 수행됨
  □ Physical Inspection
  □ Periodic Dissection
  □ Periodic Fluoroscopic Analysis (X-ray)
  □ Gas Leakage Test

• 정격 RATINGS

<table>
<thead>
<tr>
<th>VOLTAGE</th>
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<tbody>
<tr>
<td>System Voltage</td>
<td>2505 kV</td>
</tr>
<tr>
<td>Impulse Voltage, 1.2 x 50µs wave</td>
<td>150 kV</td>
</tr>
<tr>
<td>Withstand, 60Hz, 1min</td>
<td>80 kV</td>
</tr>
<tr>
<td>Withstand, DC, 15min</td>
<td>103 kV</td>
</tr>
<tr>
<td>Corona Extinction</td>
<td>26 kV</td>
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<tr>
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<td>Continuous (RMS)</td>
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</tr>
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 경기도 안양시 동안구 관양2동 1475-10번지 평일빌딩
 Tel : 031.420.6600  Fax : 031.424.7300
1. METALIZED AREA

Metalized area allows fully shielded connection and control the electrical stress generated. Metalized area also protects the epoxy insulation from the degradation due to UV.

2. EPOXY

Tightly cross-linked molecular structure with exceptionally high mechanical, electrical, thermal and chemical resistance properties.

3. INTERFACE FIT

Molded epoxy exerts uniform concentric pressure on insulation of mating parts to provide required creep-path length and waterseal.

4. ELECTRICAL CIRCUIT

- Positions cable contact and mates with product accessories having studs.
- A 5/8-11UNC-2A stud permits internal connection to apparatus.

5. INTERNAL SENSOR RING

Detects the voltage which enables distribution automation.

1. METALIZED AREA

Metalized area allows fully shielded connection and control the electrical stress generated. Metalized area also protects the epoxy insulation from the degradation due to UV.

2. EPOXY

Tightly cross-linked molecular structure with exceptionally high mechanical, electrical, thermal and chemical resistance properties.

3. INTERFACE FIT

Molded epoxy exerts uniform concentric pressure on insulation of mating parts to provide required creep-path length and waterseal.

4. ELECTRICAL CIRCUIT

- Positions cable contact and mates with product accessories having studs.
- A 5/8-11UNC-2A stud permits internal connection to apparatus.

5. INTERNAL SENSOR RING

Detects the voltage which enables distribution automation.
Epoxy Bushing for 35kV 630A

APPARATUS BUSHING (170kV BIL)

K770C2 will accept either of PYUNGIL’s polymer bushings or elbow connectors designed for applicable ANSI/IEEE standards. The apparatus bushings are designed to be directly mounted in electrical apparatus on 630Amp, 35kV systems.

PYUNGIL K770C2 bushing has the sensor ring device used for voltage detection inside of the bushing for automated remote control system. The bushing meets the full requirements of IEEE Std. 386.

Typical applications would be in:
- Transformer
- Pole-mounted Switch-gear

PYUNGIL’s apparatus bushings are for in-oil or SF6 gas applications. The bushing is molded of epoxy and installed with bracket to the apparatus. In installation, no special tools are required. Refer to PYUNGIL’s installation instruction.

**SPECIFICATIONS**

- **System Voltage**: 25/35 kV
- **Impulse Voltage, 1.2 x 50μS wave**: 170 kV
- **Withstand, 60Hz, 1min**: 70kV
- **Withstand, DC, 15min**: 103kV
- **Corona Extinction**: 23kV
- **Continuous (RMS)**: 630 A
- **8 Hour Overload (RMS)**: 900 A
- **Short-time sym., 0.17sec (RMS)**: 25 kA
- **Short-time sym., 3sec (RMS)**: 10 kA

**PERIODIC TESTS**

- Physical Inspection
- Periodic Dissection
- Periodic Fluoroscopic Analysis (X-ray)
- Gas Leakage Test

**VOLTAGE**

- **System Voltage**: 25/35 kV
- **Impulse Voltage, 1.2 x 50μS wave**: 170 kV
- **Withstand, 60Hz, 1min**: 70kV
- **Withstand, DC, 15min**: 103kV
- **Corona Extinction**: 23kV

**CURRENT**

- **Continuous (RMS)**: 630 A
- **8 Hour Overload (RMS)**: 900 A
- **Short-time sym., 0.17sec (RMS)**: 25 kA
- **Short-time sym., 3sec (RMS)**: 10 kA

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경기도 안양시 동안구 관양2동 1475-10번지 평일빌딩
Tel: 031.420.6600  Fax: 031.424.7300
1. METALIZED AREA

Metalized area allows fully shielded connection and control the electrical stress generated. Metalized area also protects the epoxy insulation from the degradation due to UV.

2. EPOXY

Tightly cross-linked molecular structure with exceptionally high mechanical, electrical, thermal and chemical resistance properties.

3. INTERFACE FIT

Molded epoxy exerts uniform concentric pressure on insulation of mating parts to provide required creep-path length and waterseal.

4. ELECTRICAL CIRCUIT

- Positions cable contact and mates with product accessories having studs.
- A 5/8-11UNC-2A stud permits internal connection to apparatus.

5. INTERNAL SENSOR RING

Detects the voltage which enables distribution automation.
K650S1 will accept an elbow connector designed for applicable ANSI/IEEE standards. The apparatus bushings are designed to be directly mounted in electrical apparatus on 630Amp, 25kV systems. PYUNGIL's apparatus bushings are for in-oil or SF6 gas applications. The bushing is molded of epoxy and has a stainless steel flange for welding or clamping to the apparatus. The bushing meets the full requirements of IEEE Std. 386.

Typical applications would be in:
- Transformer
- Pole-mounted Switch-gear

The installation of PYUNGIL K650S1 bushing is normally done by the apparatus manufacturer in accordance with the welding guide provided by PYUNGIL. In installation, no special tools are required.

**VOLTAGE**
- System Voltage: 25 kV
- Impulse Voltage, 1.2 x 50µs wave: 125 kV
- Withstand, 60Hz, 1min: 60kV
- Withstand, DC, 15min: 78kV
- Corona Extinction: 23kV

**CURRENT**
- Continuous (RMS): 630 A
- 8 Hour Overload (RMS): 900 A
- Short-time sym., 0.17sec (RMS): 25 kA
- Short-time sym., 3sec (RMS): 10 kA

**Production Tests**
- Physical Inspection
- Periodic Dissection
- Periodic Fluoroscopic Analysis (X-ray)
- Gas Leakage Test

**Application**
- In-oil or SF6 gas applications

**Physical Inspection**
- Periodic Dissection
- Periodic Fluoroscopic Analysis (X-ray)
- Gas Leakage Test

**Performance Specifications**
- AC 60Hz 1Minute Withstand: 40kV
- Minimum Corona Voltage Level: 18kV
- System Voltage: 25 kV
- Impulse Voltage, 1.2 x 50µs wave: 125 kV
1. EPOXY

Tightly cross-linked molecular structure with exceptionally high mechanical, electrical, thermal and chemical resistance properties.

2. INTERFACE FIT

Molded epoxy exerts uniform concentric pressure on insulation of mating parts to provide required creep-path length and waterseal.

3. ELECTRICAL CIRCUIT

- Positions cable contact and mates with product accessories having studs.
- A 5/8-11UNC-2A stud permits internal connection to apparatus.

4. STAINLESS STEEL FLANGE

Material resists corrosion. Can be externally clamped or welded to apparatus.
Rubber Bushing for
25/35kV 630Amp
LEAD WIRE TYPE BUSHING (150kV BIL)

rubber bushing
PSB-760NF

25/35kV 용 몰드콘 형 폴리머 부싱

• 용도 APPLICATION
  - 기존 가공용 개폐기의 630Amp용 에폭시 부싱과 연결을 위한 구축성 Type의 폴리머 부싱 (EPDM 고무)
  - PYUNGIL rubber insulator, PSB-760NF and the apparatus epoxy bushing are replaceable for the existing porcelain bushing used for pole-mounted load-break switch and recloser.
  - The rubber insulator is easily connected with any of apparatus epoxy bushings for 25kV with 150kV BIL in accordance with IEEE 386 by fixing a stud bolt into the holes of the contacts of two different bushings.
  - PSB-760NF is very light-weighted but provides an increased creepage distance. The rubber insulator is designed in accordance with 150kV BIL of IEEE 386 Standards to fit with epoxy apparatus bushing, and on the other side there is lead wire for the easy connection with line.

• 호환성 INTERCHANGEABILITY
  - 기존 가공용 개폐기의 저기제 부싱 대체
  - PSB-770F and the relevant epoxy apparatus bushing are electrically and mechanically interchangeable with the other porcelain bushings for pole-mounted switch.

• 검수 시험 PRODUCTION TESTS
  - 아래의 시험항목은 ANSI/IEEE 386에 따라 수행됨
    □ AC 60Hz 1Minute Withstand : 40kV
    □ Minimum Corona Voltage Level : 19kV

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www.pyungil.com
1. EPDM INSULATION
Tightly cross-linked molecular structure with exceptionally high mechanical, electrical, thermal and chemical resistance properties.

2. INTERFACE FIT
Molded epoxy exerts uniform concentric pressure on insulation of mating parts to provide required creep-path length and waterseal.

3. ELECTRICAL CIRCUIT
- Positions cable contact and mates with product accessories having studs.
- A 5/8-11UNC-2A stud permits internal connection to apparatus.

4. LEAD WIRE
EPR insulated Lead wire has sufficient length and flexibility so that it can easily be connected with overhead line.

1. EPDM 접연부
우수한 기계적, 전기적, 열적 및 화학적 특성을 가지고도 조합하게 가교된 분지구조를 가짐.

2. 인터페이스 연결 부분
연결부의 요구되는 누설거리와 완전 방수를 실현할 수 있도록 일정한 단임원상의 압력을 연결부에 가하도록 IEEE 386 규격에 따라 설계됨.

3. 도체 부분
- 내부 도체 부분은 케이블의 도체를 위치시키며, 스타드 볼트를 정착된 제품과 연결되도록 설계됨.
- A 5/8-11UNC-2A 스타드가 기기와 연결되도록 설계됨

4. 구축선
고압 인가용 EP고무 접연 전선은 외부 가공선과 쉽게 연결될 수 있도록 충분한 길이와 유연성을 가짐.
Rubber Bushing for 25/35kV 630Amp

TERMINAL TYPE BUSHING (150kV BIL)

• **APPLICATION**
  - The rubber insulator, PSB-770F, and the apparatus epoxy bushing are replaceable for the existing porcelain bushing used for pole-mounted load-break switch and recloser. The rubber insulator is easily connected with any of apparatus epoxy bushings for 25kV with 150kV BIL in accordance with IEEE 386 by fixing a brass stud bolt into the holes of the contacts of two different bushings. PSB-770F is very lightweight but provides an increased creepage distance. The rubber insulator is designed in accordance with 150kV BIL of IEEE 386 Standards to fit with epoxy apparatus bushing, and on the other side there is terminal lug for the easy connection with line.

• **INTERCHANGEABILITY**
  - PSB-770F and the relevant epoxy apparatus bushing are electrically and mechanically interchangeable with the other porcelain bushings for pole-mounted switch or recloser.

• **PRODUCTION TESTS**
  - The tests are performed in accordance with ANSI/IEEE 386 or similar standards:
    - AC 60Hz 1Minute Withstand: 40kV
    - DC 15min Withstand: 103kV
    - Corona Extinction: 26kV
    - Continuous (RMS): 630 A
    - 8 Hour Overload (RMS): 900 A
    - Short-time sym., 0.17sec (RMS): 25 kA
    - Short-time sym., 3.00sec (RMS): 10 kA

• **RATINGS**
  - **VOLTAGE**
    - System Voltage: 25/35 kV
    - Impulse Voltage, 1.2×50μs wave: 150 kV
    - Withstand, 60Hz, 1min: 60kV
    - Withstand, DC, 15min: 103kV
    - Corona Extinction: 26kV
  - **CURRENT**
    - Continuous (RMS): 630 A
    - 8 Hour Overload (RMS): 900 A
    - Short-time sym., 0.17sec (RMS): 25 kA
    - Short-time sym., 3.00sec (RMS): 10 kA

www.pyungii.com
1. **EPDM INSULATION**

Tightly cross-linked molecular structure with exceptionally high mechanical, electrical, thermal and chemical resistance properties.

2. **INTERFACE FIT**

Molded epoxy exerts uniform concentric pressure on insulation of mating parts to provide required creep-path length and waterseal.

3. **ELECTRICAL CIRCUIT**

- Positions cable contact and mates with product accessories having studs.
- A 5/8-11UNC-2A stud permits internal connection to apparatus.

4. **CONNECTION TERMINAL**

According to customer’s request, the shape of the terminal can be modified. Terminal is usually used on recloser in Korea.

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1. **EPDM 절연부**

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- A 5/8-11UNC-2A 스타드가 기기와 연결되도록 설계됨.

4. **연결 단자**

고객의 요구에 따라, 단자의 모양은 수정 가능, 국내에서는 주로 리클로저에 사용됨.