

## SK-B Type Compact High-Voltage Bus Duct with 7.2-kV Rating

Conventionally, air-insulation bus ducts comprising bare conductors supported by porcelain or epoxy insulators were generally used for high-voltage power feeders. Furukawa Electric also has been manufacturing and marketing this type of product as a regular lineup under the name of “K-B type nonsegregated-phase bus duct” with rated voltage of 3.6 kV~36 kV and rated current of 600 A~3000 A. Recently, however, use of bus ducts are sometimes avoided due to their large footprints inevitably resulting from their structures. With the recent upgrades in power demands, moreover, power feeder systems tend to shift to high-voltage trunk line systems, creating, year by year, the needs for installation space saving and weight reduction.

Against this background, we have been successful in developing a high-voltage bus duct of reduced footprint. The developed product comprises newly developed supporting insulators of three-phase-integrating type on which the conductors are placed endways.

### 1. STANDARD SPECIFICATIONS

Standard: In conformity with JEM 1425

Installation place: Indoor

Number of phase: Three-phase, three-wire

Rated voltage: 7.2 kV

Rated current:

Aluminum conductor: 400 A~2000 A

Copper conductor: 600 A~2500 A

Insulation class: 6-A

Impulse withstand voltage: 60 kV

Power-frequency withstand voltage: 22 kV

Material:

Enclosure: Steel

Conductor: Aluminum or copper

Surface treatment:

Enclosure: Melamine or epoxy paint

Color: 5Y7/1, 50 % gloss

Contact surface: Tin plated

Insulating material:

Conductor sheath: Heat-resistant PVC

Supporting insulator: Epoxy

Interphase barrier: Polypropylene

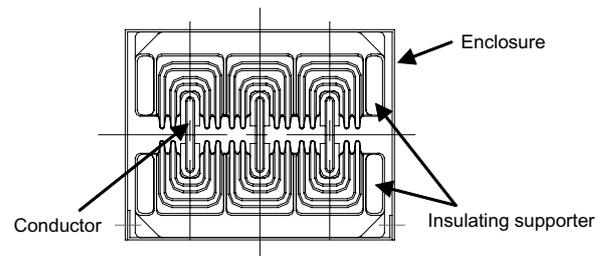


Figure 1 Cross-section.



Photo 1 Appearance of SK-B feeder.

### 2. STRUCTURE

The conductors are sheathed by flame-retardant, heat-resistant PVC using continuous extrusion, and are placed endways on epoxy supporting insulators of three-phase-integrating type, and are accommodated in a steel duct enclosure. See Figure 1 and Photo 1.

### 3. FEATURES

- 1) Compared with the K-B type nonsegregated-phase bus duct, the new product has been reduced to about one-third in cross-sectional area and to about 75 % in weight, realizing the most compact and lightest bus duct in the business quarter. See Figure 2.
- 2) The epoxy supporting insulators of three-phase-integrating type has been developed to enable the conductor arrangement with minimal insulation distance, resulting in downsizing of the bus duct.

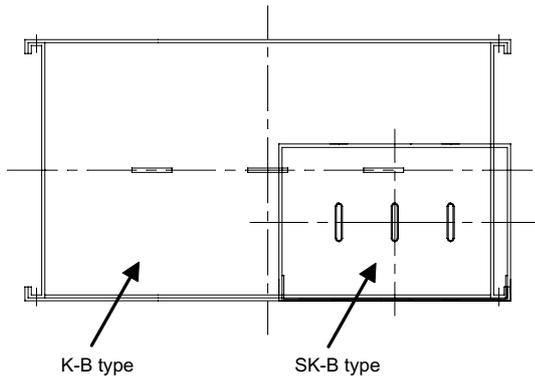


Figure 2 Comparison between K-B type and SK-B type.

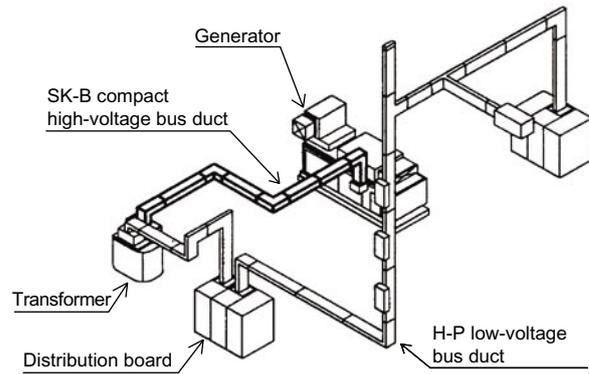


Figure 4 Example of bus duct system.

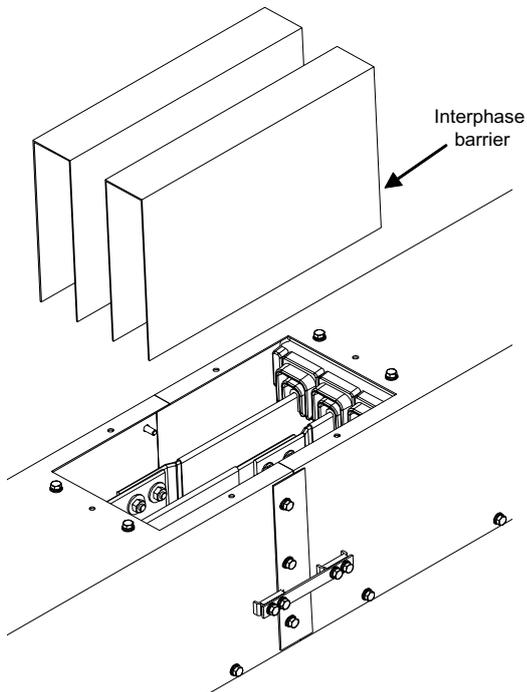


Figure 3 Details of joint.

- 3) The enclosure adopts a plate-assembly structure virtually eliminating welding and welding flexure, so that an attractive appearance has been achieved.
- 4) A cost reduction of about 15 % has been achieved over the K-B type nonsegregated phase bus duct.
- 5) The joint has a large inspection opening, permitting easy maintenance work such as additional fastening of bolts.
- 6) Dimensional adjustment of  $\pm 3$  mm is allowed per one joint, enabling accommodation of architectural dimensional errors.
- 7) The interphase barrier to be installed on the exposed conductors at joints is designed to have such a structure that the barrier is inserted in the grooves on the epoxy supporting insulators, enabling easy installation. See Figure 3.

#### 4. APPLICATION EXAMPLE

Using miscellaneous parts such as elbow, the SK-B bus duct can be configured to adapt to any equipment layout that is given. Moreover, combination with low-voltage bus ducts results in reduced footprint of the entire feeder system, ensuring open space indoors. Thus, a smart feeder system can be proposed using this product.

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