

SUB-GS-069-T-3

69KV DISCONNECT SWITCHES - TECHNICAL

Revision	Date	By	Description
0	11-21-03	MEP	Creation
1	7-7-04	MEP	Revised 1.2.2.B, 1.2.3.B, 1.2.5, 1.2.9, & removed 1.4 Motor Oper.
2	8-2-04	MEP	Revised 1.2.3.C, 1.2.8, 1.3.6
3	5-8-06	MEP	Added 1.2.3.D

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1. GENERAL REQUIREMENTS

1.1. STANDARDS

- 1.1.1. All equipment and materials shall be designed, constructed, assembled and tested in accordance with, but not limited to, the applicable standards listed in these Specifications and the following specific standards:
 - A) ANSI/NEMA MG 1, Motors and Generators
 - B) STM A153, Zinc Coating (Hot-Dip) on Iron and Steel Hardware
 - C) ANSI C29.1, Electrical Power Insulators, Test Methods.
 - D) ANSI C29.9, Wet-Process Porcelain Insulators (Apparatus, Post Type).

1.2. TECHNICAL REQUIREMENTS

- 1.2.1. Switches shall conform to NEMA SG-6, ANSI C37 and these Specifications. Submit evidence with proposal that switches comply with ANSI/IEEE C37.34, "Test Code for High Voltage Air Switches".
- 1.2.2. 69kV Aluminum Vertical Break, Group Operated Disconnect Switch
 - A) Type: Three pole, single throw, group-operated, aluminum vertical break.
 - B) Mounting: Horizontal upright or vertical, as specified in the item description.
- 1.2.3. Construction:
 - A) Aluminum, bronze or tinned copper live parts with silver to silver contacts.
 - B) Suitable for motor or manual operator.
 - C) Switches to be equipped with 4-hole NEMA terminal pads suitable for bolted aluminum or copper connectors.
 - D) Switch base to be equipped with removable (bolted) mounting clips for attachment to substation structures.
- 1.2.4. Station Post Insulators - 69kV
 - A) Type: Standard Strength, Wet-Process Porcelain
 - B) Color: ANSI 70 Gray
 - C) Ratings:
 - Voltage Class: 69 kV
 - Impulse Withstand Voltage (BIL): 350 kV
 - Minimum Cantilever Strength: 1500 lb.
 - Technical Reference Number (TR): 216
 - Bolt Circle Diameter: 3 in.
 - Manufacturer type (or equivalent): Lapp Cat. No. 9521A-70

- 1.2.5. Arcing Horns: Required on all switches.
- 1.2.6. The transformer disconnect switches will be suitable for interrupting the magnetizing current of a 72 kV transformer as per IEEE C37.36b-1990 Table 1.
- 1.2.7. Supporting materials: Provide base channels, mounting brackets, etc. as required for upright horizontal mounting or vertical mounting on substation switch structures. The switch base shall be sufficiently rigid to operate properly under all loading conditions without dependence on the supporting structure.
- 1.2.8. Manufacturer Type: MUST BE QUALIFIED BY SUBSTATION STD'S COMMITTEE.
- 1.2.9. Capacity as specified in the item description: 1200 ampere or 2000 ampere continuous and 61 or 70 kA short circuit in accordance with the maximum allowable total temperature specified in Table 3, of ANSI C37.30.
- 1.2.10. Nameplates: Furnished in accordance with ANSI C37.30.
- 1.2.11. Impulse Withstand Voltage (BIL): 350 kV

1.3. MANUAL OPERATOR

- 1.3.1. Type: Manual swing handle
- 1.3.2. An all metal OPEN and CLOSED position indicating device shall be provided at or near the operating device.
- 1.3.3. Grounding: Flexible conductor with clamp type connectors shall be furnished for connecting the lower end of the vertical operating shaft (rod) to the structure ground. The conductor's current carrying capability shall not be less than a 4/0 AWG copper conductor.
- 1.3.4. Operation: Rotation for the manual operating handle shall be counterclockwise to open or clockwise to close as viewed from a position above.
- 1.3.5. Padlocking: Provisions for padlocking the switch in the OPEN and CLOSED positions shall be provided. Holes shall be ½" minimum.
- 1.3.6. Configuration: Mounted with all necessary operating rods, attachment hardware, etc. for a complete installation.

1.4. FACTORY TESTS

- 1.4.1. Each switch and mechanism furnished shall be fully tested in accordance with the production tests defined in the applicable ANSI standards. The VENDOR shall notify the OWNER ten days in advance of the schedule for tests and shall provide the OWNER with a schedule for testing. The OWNER reserves the right for the OWNER and ENGINEER to witness testing at the VENDOR's (or Manufacturer's) facilities and to inspect the equipment before shipment for conformity to these Specifications.
- 1.4.2. Certified Test Reports shall be furnished to the ENGINEER prior to shipment.