



TYPICAL SPECIFICATIONS – 3 POSITION SUBSURFACE/PADMOUNT SF6 SWITCH

General:

This specification outlines the requirements for a manually operated SF6 filled loadbreak switches for subsurface and padmounted applications.

The switch shall be a three- (3) phase, three- (3) position (close/open/ground-test position) with a 2, 3 or 4 way configuration.

The unit will include 600 Amp or 200 Amp deepwell bushings per ANSI/IEEE 386. A one-line diagram indicating the circuit configuration, number of ways and type of bushings required will accompany this specification.

Switches must be furnished factory filled with an electrical grade of non-toxic, non-flammable SF6 gaz, conforming to ASTM D-2472. A pressure gage that provides visual status of both the insulating and interrupting dielectric must be included. 100% production testing shall include a mass spectrometer leak test, contact resistance, AC one minute withstand and corona extinction tests.

The complete unit must be capable of withstanding internal failure without explosion or fire and shall be capable of being mounted in any position for best cable training and operation.

Switch Construction:

The switch shall use deadfront, compact, sealed construction. A corrosion-resistant stainless steel tank shall enclose the contact system, interconnecting bus, operating mechanisms and bushings. The switch must be maintenance free, all welded construction, eliminating the use of gasketed seals. TIG inert gas welding with stainless steel filler rod shall be used to eliminate pinhole leaks and corrosion.

Bushings shall be welded to the tank with back up seals. The operating shafts must be sealed by a rotary seal (o-ring and bellow type seals are not acceptable).

Unless otherwise specified, cable connections and operating accessories shall be located so, only single side access is required for operation and installation. Operating handles shall be capable of being removed and stored or permanently attached.

Movement of the operating handles will actuate an internal spring mechanism causing the switch contacts to open, close, ground and latch into position.

The spring operator will use a compression spring for long life and will provide positive position indication. The switch contacts and interconnecting bus shall be plated copper with *Belleville* washers and locking fasteners to provide consistent pressure of bolted connections. The contacts shall be self-aligning, wiping type with silver plating.

A puffer type contact system for fast arc extinction along with a special internal absorbent shall be used for improved performance and to prevent arc by-product formation.

Switches shall include:

- Operating handles with padlocking provisions in the open, closed and ground/test position and capable of operation by hook stick.
- Operating latches between each position to prevent accidental misoperation and capable of operation by hook stick.
- A stainless steel tank designed for fault containment at 5kA and 12kA symmetrical levels.
- A stainless steel nameplate providing information including ratings, contact position indication, circuit configuration and phase identification.
- A colour coded pressure gauge for visual indication of normal operating range, enclosed in a protective housing to prevent damage.
- A brass fill valve for field-testing and addition of SF6 sealed with a removable cap and protected within a housing to prevent damage.
- Clamp type ground lugs, one for each set of bushings.
- Series 300 stainless steel switch tank, coated with 8 MIL thick coal tar epoxy for maximum corrosion resistance.
- 200 Amp deepwell or 600 Amp bushings with protective shipping caps (elbows and inserts to be supplied by end user).
- 600 Amp ground test bushings to facilitate cable hi-potting with protective shipping caps (elbows to be supplied by the end user).
- One viewing port per switched way to confirm switch position (closed/open/ground-test).
- Lifting and mounting provisions.

Padmount Enclosure Construction:

For padmount installations, a tamper-resistant housing shall be provided. The padmount enclosure will be designed with a pressure relief and fault withstand capability of 8kA – 22 cycles in the event of elbow failure. Pressure will be safely vented towards the back of the enclosure through a set of directional vents. The enclosure will be constructed of 14 gauge thick Series 300 stainless steel, stiffened and cross-kinked for watershed and rigidity. All flanges shall overlap and interlock to discourage unauthorized entry. The design shall incorporate single front access for monitoring of the switch and allow for ease of cable installation. The design will also include a single side access to minimize the necessary space required for operation of the switch. Access to the switch and cable compartments shall be through lightweight hinged doors and hood. The padmount enclosure will incorporate a single lift design allowing the lifting of the switch and enclosure as one unit during installation.

Padmount enclosure shall include:

- Recessed, 5/8" – 11 threaded lifting provisions.
- Recesses padlock provision with penta-head security bolt.
- Mounting provisions using internal flange for anchoring.
- 300 series stainless steel hardware with the enclosure painted 3 MIL thick per customer's colour requirements. The bottom edges of the unit in contact with the concrete pad coated to prevent corrosion.
- Door stops and stays to prevent accidental closing.