SWITCHGEAR, SF6 PUFFER, SUBMERSIBLE THREE-PHASE, 27 kV, 600 AMPERE

Reference Only - Material Standard Rescinded

1. General

1.1 This specification covers submersible, SF6 puffer three-phase, 27 kV, 600 ampere switchgear.

1.2 Each unit of switchgear shall be free standing and self-supporting and shall contain a three-phase or single phase interrupter switch, all completely factory assembled and tested. The complete assembly shall be integrally designed and produced by the manufacturer of the basic switching components and the manufacturer shall be solely responsible for the performance of the basic switch components as well as the complete integrated assembly as rated.

1.3 The metal-enclosed interrupter switchgear shall meet or exceed the material and testing requirements of the latest revision of all applicable standards by ANSI, IEEE, NEMA, except as modified herein.

1.4 The switch shall be factory filled with an appropriate quantity of electrical grade of SF6 gas which conforms to ANSI D-2472.

1.5 The completed unit shall be capable of withstanding internal failure without explosion or fire.

1.6 The switch shall operate properly when mounted in any position that allows access to bushing and controls.

2. Service

This switchgear is intended for use on a 26,400-volt, three-phase, 60 Hertz distribution system.

3. Ratings

3.1 The ratings for the integrated switchgear assembly shall be as follows:

Normal Voltage	27 kV
Maximum Design Voltage	27 kV
Basic Impulse Insulation Level (BIL)	125 kV
Flashover	200 kV
Continuous Current Rating	600 amperes
Load-Interrupting Current	600 amperes
Short-Circuit Rating – one second	25,000 amperes, sym.
Duty Cycle, Fault Closing	40,000 amperes, asym.
Momentary Capability - 3 phase switched ways	40,000 amperes, asym.
Momentary Capability - single phase switched ways	22,500 amperes, asym.
Eight Hour Overload	900 amperes
Overload Interrupting Capability	2,500 amperes
Normal Operating Pressure	2 to 15 PSIG
Mechanical Life Operations	2000
Maximum Gas Leakage	10^{-7} cc per second

3.2 The interrupter switches-shall have two-time, duty-cycle, fault-closing ratings equal to or exceeding the specified short-circuit rating of the integrated switchgear assembly.

4. Construction

4.1 Switch mounting rails to run lengthwise on bottom of switch.

4.2 A color coded pressure gauge which also is marked in PSIG shall be included.

4.3 All operating shafts shall be sealed by a flexible stainless steel bellows.

4.4 All cable connections and operating controls, gauges and accessories shall be located so that only single side access is required for installation and operation. Contact viewing windows may be located on the sides or ends, as necessary to allow determination of switch position.

5. Switch Tank

5.1 The tank and lid shall be 304L stainless steel and all welded construction.

5.2 All steel surfaces shall be unpainted.

5.3 The switchgear cabinet shall be constructed to withstand all pressure buildup during interruption without permanent distortion or damage to any portion of the structure.

5.4 Inspection windows shall be provided in front of the interrupter switches. The switch contacts shall be visible through the windows. Position indicating tags shall be attached adjacent to viewing windows.

5.5 A lifting eye shall be provided on each corner of the top of the switch.

5.6 All switches shall have all provisions necessary for the future mounting of a motor operator for each three phase switched way.

6. Grounding

Grounding lugs that will accept 2/0 minimum cable shall be provided in the minimum quantities shown below:

Stock No.	Quantity of Lugs per Switch
250060	2
250061	8
250062	4

7. Bushings

7.1 Primary bushings shall be 900 ampere copper dead break bushings WITHOUT STUDS. The bushings shall be rated 900 amperes and 125 kV BIL and otherwise meet the requirements of ANSI/IEEE 386-95 for 600 A Dead-break interface No. 1.

7.2 Each bushing shall have a cap to prevent the entrance of moisture or contamination during shipping and storage. The bushings shall be protected against damage during shipping.

8. SF6 Fill Valves

Two valves a SF6 fill valves shall be installed, one on each end of the top of the switch. Valves shall be stainless steel Dilo VK/BG-03/8-1.4305.

9. Operation

The interrupting action of the interrupter switches shall not liberate appreciable quantities of ionized gas. Each interrupter switch shall be actuated through a built-in, nondefeatable, quick-make, quick-break mechanism to assure high-speed closing and opening independent of the speed of operation of manual-operating handle. Operating handles shall be externally mounted, removable, and shall provide for latching and padlocking in open and closed position.

10. Signs and Nameplates

10.1 Each unit of switchgear shall be provided with nameplate indicating the following:

(a) Manufacturer's name and drawing or catalog number for the completed assembly.
(b) Voltage ratings.
(c) Continuous current rating.
(d) Short-circuit ratings.
(e) Momentary and fault-closing ratings
(f) Interrupter switch rating.
(g) Three line diagram.

10.2 Phase identification tags.

10.3 Position indicating tags adjacent to viewing windows.

11. Guarantee

Any switchgear unit failing due to defective design, material, and/or workmanship within 12 months after being energized or 18 months after delivery shall be repaired or replaced without cost to the City of Seattle Light Department. Any defect in design, material, and/or construction discovered within this period shall be corrected on all units furnished on this order at the manufacturer's expense either by repair or replacement.

12. Approved Manufacturers

Stock Unit: EA.

Stock No.	Description	Canada Power Products Cat. No.
250060	Switch, 600 Ampere, 3 phase, 27 kV, 2-Way Submersible, SF6. Two viewing windows, 10” spacing between ways, 20” tank and safety locking bar.	SG6-21-27/SV/40 Model 66/137
250061	Switch, 600 Ampere, 3 phase, 27 kV, 8-Way Submersible, SF6. 2-600 Ampere 3 phase switched ways with 40 kA Assym. Momentary and fault-close capability 6-600 A 1 phase switched ways with 22.5 kA Assym. momentary and fault-close capability. Includes viewing windows.	SG61/3-66/22-27/40 Model 66666666/590
250062	Switch, 600 Ampere, 3 phase, 27 kV, 4-Way Submersible, SF6. 4-600 Ampere 3 phase switched ways with 40 kA Assym. momentary and fault-close capability Includes viewing windows.	SG44-27/SV/40 Model 6666/590A

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