

CITY OF AUSTIN ELECTRIC UTILITY DEPARTMENT

PURCHASE SPECIFICATION

FOR

SWITCH,DISTRIBUTION,URD,3PH,600A,38KV,VACUUM
INTERRUPTER,SF₆ INSULATED

DATE	PREPARED BY	ISSUANCE/REVISION	APPROVAL PROCESS SUPV. / MANAGER
02/07/95	George Martinez	Issuance	_____
04/20/95	George Martinez	Revision	_____
05/02/95	George Martinez	Revision	_____
05/09/95	George Martinez	Revision	_____
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<i>REASON FOR REVISION</i>	<i>AFFECTED PARAGRAPHS</i>
Removed commercial requirements	5.0 through 9.0

This specification, until rescinded, shall apply to each future purchase and contract for the commodity described herein.
Retain for future reference.

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PURCHASE SPECIFICATION
FOR
SWITCH, VACUUM INTERRUPTER,
SF6 INSULATED, 38 KV, 600 A

1.0 SCOPE AND CLASSIFICATION

1.1 Scope

- 1.1.1 The City of Austin (COA) requires a qualified Supplier to provide a 600 Ampere, 38 kV, SF6 insulated, vacuum interrupter switch for use in the Downtown Network system.
- 1.1.2 The Supplier of this switch shall have a minimum of five (5) years of experience in the manufacture of vacuum and SF6 switches at 15 kV to 38 kV.

1.2 Classification

The switch will be used as a load and fault interrupter on a 34.5 kV system.

2.0 APPLICABLE SPECIFICATIONS

Unless otherwise stated in this specification, switches furnished under this specification shall be designed, built, and tested per ANSI/IEEE C37.60 and C37.71 latest revision. Cable entrance apparatus bushings shall be tested per ANSI/IEEE 386.

- 2.1 ANSI/IEEE C37.60 - Standard Requirements for Overhead, Pad Mounted, Dry Vault and Submersible Automatic Circuit Reclosers and Fault Interrupters (R 1992).
- 2.2 ANSI/IEEE C37.71 - Standard for Three-Phase, Manually Operated Subsurface Load-Interrupting Switches for Alternating-Current Systems (R 1990).
- 2.3 ANSI/IEEE 386 - Standard for Separable Insulated Connector Systems for Power Distribution Systems Above 600 V (R 1991).

3.0 DESIGN

3.1 Ratings

Rated voltage class: 38 kV

Rated continuous current: 600 Amps

Impulse level (BIL): 150 kV

Rated frequency: 60 Hz

One minute AC withstand: 60 kV

Symmetrical interrupting rating: 18 kA

Asymmetrical interrupting rating: 28.8 kA

Interrupting time: 3 cycles maximum

3.2 Functional Requirements

- 3.2.1 The switch shall be a non self-reclosing vacuum interrupter incorporating three (3) vacuum bottles and of a two-way configuration, one three-phase line in and one three-phase line out. The switch shall provide three-phase simultaneous tripping.
- 3.2.2 The switch shall incorporate a fuseless, resettable, electronically controlled overcurrent protection system to sense load and fault current on each phase of the load side of the switch and provide tripping which emulates Westinghouse C08 relay curves.
- 3.2.3 The control system shall be powered from current transformers located inside the switch tank and have a capacitor which stores sufficient energy for two tripping operations in the event of loss of incoming power to the switch.
- 3.2.4 The control system shall provide dry contact points for remote close and trip operations. Also, four "a" and four "b" auxiliary contacts for remote open and close supervisory alarms and remote annunciators.
- 3.2.5 The switch shall have a motor operator capable of closing three phases simultaneously by remote electronic operation. The motor operator must charge up the spring mechanism immediately after a trip operation. The motor operator must be easily disconnected to allow for manual operation. The motor operator shall be powered by an external 120 V source provided by the COA.
- 3.2.6 The completed unit must be capable of withstanding internal failure without tank rupture.
- 3.2.7 The switch and electronic controls shall function in a temperature range of -30 C to +50 C and be submersible.

4.0 CONSTRUCTION

- 4.1 The switch tank shall consist of welded, 11 gauge, 304 stainless steel. The switch shall be totally sealed deadfront design. The apparatus bushings shall be gasketed and bolted or welded to the tank.
- 4.2 The switch operators shall be spring-assisted for quick-make quick-break operation. A trip free mechanism shall permit the switch interrupter to be independent of the operating handle if closing into a fault. The operating handle shall be pad-lockable.
- 4.3 All current carrying components shall be 100% copper. Cable entrances shall be 600 Amp apparatus bushings with 100% copper current path. The apparatus bushings shall be sized for 600 Amp 35 kV non-loadbreak elbows with 1/0 stranded, compact, 35 kV cable. All apparatus bushings shall be shipped with protective caps.
- 4.4 The switches shall be shipped, factory filled with SF6 laboratory grade gas at 7 PSI. The switch shall have a brass fill valve, protected and sealed with a removable cap, for the field addition of SF6 and a gas pressure gauge with color coded indication of normal operating range, enclosed in a protective housing to prevent damage.
- 4.5 The switch tank shall be rectangular in shape with the overall maximum dimensions of: 35 inches high, 38 inches wide, and 32 inches deep (including operating handle). Both incoming and outgoing bushings shall be front mounted and offset to provide for ease in routing of elbows and cables.
- 4.6 The vacuum bottles shall be mounted vertically with the moveable contact shaft at the top. The moveable contact shaft shall have a contact position indicator visible through a viewing window for each phase. The viewing window shall be above the apparatus bushings so as to not be blocked by the elbows or cable coming from below the switch.
- 4.7 A 36 inch high, bolted, galvanized, steel frame shall be supplied to support the switch. The switch and frame shall be freestanding with provisions for bolting to a rear wall or the floor. Cables will approach the switch from below and attach to the front of the switch.

- 4.8 The exterior components of the tank shall be brass or stainless steel only. Two (2) welded lifting eyes shall be provided and be capable of supporting the weight of the switch. Three (3) 4/0 AWG clamp type ground lugs shall be provided, one for each set of bushings (2) and one for a tank ground.
- 4.9 A stainless steel nameplate shall be provided showing the ratings, circuit configuration, and date of manufacture. Separate stainless steel nameplates shall show phase identification.
- 4.10 The tank coating shall be light grey (ANSI 70) paint with primer, three (3) mils thick minimum or black coal tar epoxy finish five (5) mils minimum.