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## SECTION 16415 - TRANSFER SWITCHES

### 1.1 SUMMARY

- A. Transfer switches rated 600 V and less.

### 1.2 QUALITY ASSURANCE

- A. Quality Standards: NEMA ICS 1, NFPA 70, [**NFPA 99,**] [**NFPA 110,**] and UL 1008.

### 1.3 PRODUCTS

- A. General:

1. Solid-state controls.
2. Resistant to damage by voltage transients.
3. Solenoid or electric-motor operated.
4. Designed for continuous-duty, repetitive transfer of full-rated current.
5. [**Neutral switched**] [**Overlapping neutral**] for four-pole switches.
6. Neutral terminals for single-phase, three-wire or three-phase, four-wire systems without neutral switching.
7. Oversize neutrals.
8. Heaters for switches exposed to outdoor temperatures and humidity.
9. Battery charger for generator starting batteries.
10. Annunciation, control, and programming interface components.
11. Enclosures: NEMA 250, Type [**1**] [**3R**] [**12**].

- B. Automatic Transfer Switches: NFPA 110, Level 1.

1. Type: Double throw[, **with molded-case switch or molded-case circuit breaker**].
2. Manual Switch Operation: [**Under load**] [**Unloaded**].
3. Signal-before-transfer contacts.
4. Digital communication interface.

Retain first subparagraph below for switching large-motor loads.

5. Control Features: [**Automatic closed transition**] [**In-phase monitor**] [**Motor disconnect and timing relay**] [**Programmed neutral switch position**].
6. Features:
  - a. Undervoltage sensing for each phase of normal source.
  - b. Time delay for override of normal-source sensing.
  - c. Voltage/frequency lockout relay.

- d. Time delay for retransfer to normal source.
  - e. Test switch.
  - f. Switch-position pilot lights.
  - g. Source-available indicating lights.
  - h. Unassigned auxiliary contacts.
  - i. Transfer override switch.
  - j. Engine starting contacts.
  - k. Engine Shutdown Contacts: [**Instantaneous**] [**Time delay adjustable**].
  - l. Engine-generator exerciser with programmable-time switch.
- C. Bypass/Isolation Switches: NFPA 110, Level 1; manual type, arranged to connect either source of power directly to load, isolating transfer switch from load and from both power sources; factory-installed copper bus bars interconnected with automatic transfer switches.
- D. Nonautomatic Transfer Switches: Electrically actuated by push-button switch with double-throw switching arrangement[ **and removable manual handle**].
- 1. Pilot lights.
  - 2. Source-available indicating lights.
  - 3. Unassigned auxiliary contacts.
- E. Remote [**annunciator**] [**annunciator and control**] system.

#### 1.4 FIELD QUALITY CONTROL

- A. Testing: By [**Owner-engaged agency**] [**Contractor-engaged agency**] [**Manufacturer's service representative**] [**Contractor with assistance of manufacturer's service representative**] [**Contractor**].

END OF SECTION 16415