

**SECTION 26 36 00
TRANSFER SWITCHES**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Automatic transfer switch
- B. Manual transfer switch

1.2 REFERENCES

- A. NEMA ICS 1 - Industrial Control and Systems: General Requirements
- B. NEMA ICS 2 - Controllers, Contactors and Overload Relays Rated 600 Volts
- C. NEMA ICS 6 - Enclosures
- D. NFPA 110 – Standards For Emergency And Stand-By Power Systems

1.3 QUALITY ASSURANCE

- A. Manufacturer shall be a company specializing in manufacturing of automatic-transfer equipment with a minimum 3-years of experience.

1.4 SUBMITTALS

- A. Submit product data under provisions of Section 01 30 00.
- B. Submit product data for transfer witches showing overall dimensions, electrical connections, electrical ratings, and environmental requirements.
- C. Submit manufacturer's installation instructions under provisions of Section 01 30 00.

1.5 OPERATION AND MAINTENANCE DATA

- A. Submit operation and maintenance data under provisions of Section 01 77 00.
- B. Include instructions for operating equipment.
- C. Include instructions for operating equipment under emergency conditions.
- D. Identify operating limits, which may result in hazardous or unsafe conditions.
- E. Document the ratings of equipment and each major component.
- F. Include routine preventive maintenance and lubrication schedule.
- G. List the special tools, maintenance materials, and replacement parts.
- H. Submit manufacturer's diagnostic literature and software package.
- I. See Section 01 91 00 – Commissioning and Section 01 78 23 – Operations and Maintenance Data for additional requirements

1.6 COMMISSIONING

- A. Commissioning of a system or systems specified in this section is part of the construction process.
- B. Documentation and testing of these systems, as well as training of the Owner's operation and maintenance personnel, is required in cooperation with the Owner's Representative and the Commissioning Authority.
- C. Project Closeout is dependent on successful completion of all commissioning procedures, documentation, and issue closure.
- D. Refer to Section 01 77 00 - Contract Closeout, for substantial completion details.
- E. Refer to Section 01 91 00, Commissioning, for detailed commissioning requirements.

1.7 Warranty

- A. Provide manufacturer's 5-year warranty under provisions of Section 01 77 00.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Kohler Generators
- B. Caterpillar Inc.

- C. Cummins Power Generators
- D. ASCO Power Technologies
- 2.2 AUTOMATIC TRANSFER SWITCH
 - A. Description: NEMA ICS 2 automatic transfer switch.
 - B. Configuration: Electrically operated mechanically held transfer switch.
- 2.3 MANUAL TRANSFER SWITCH
 - A. Description: NEMA ICS 2 manual transfer switch.
 - B. Configuration: Electrically operated mechanically held transfer switch.
 - C. Sequence of Operation: Switch position is to be selected by control switch mounted in switch cover.
- 2.4 AUTOMATIC SEQUENCE OF OPERATION
 - A. Initiate time delay to start alternate source engine generator upon initiation by normal source monitor.
 - B. Time delay to start alternate source engine generator shall be 0 to 10 seconds, adjustable.
 - C. Initiate transfer load to alternate source upon initiation by normal source monitor and permission by alternate source monitor.
 - D. Time delay before transfer to alternate power source shall be 0 to 5 minutes, adjustable.
 - E. Initiate retransfer load to normal source upon permission by normal source monitor.
 - F. Time delay before transfer to normal power shall be 0 to 30 minutes, adjustable bypass time delay in event of alternate source failure.
 - G. Time delay before engine shut down shall be 0 to 30 minutes, adjustable of unloaded operation.
 - H. Engine Exerciser
 - 1. Start engine every 7 days; run for 30 minutes before shutting down.
 - 2. Bypass exerciser control if normal source fails during exercising period.
 - I. Alternate System Exerciser: Transfer load to alternate source during engine exercise period.
 - J. All other setting shall be per NFPA 110.
- 2.5 ENCLOSURE
 - A. ICS 6 Type as required to meet conditions of installation unless indicated on the Drawings.
- 2.6 ACCESSORIES
 - A. Indicating Lights: Mount in cover of enclosure to indicate NORMAL SOURCE AVAILABLE, ALTERNATE SOURCE AVAILABLE, and SWITCH POSITION.
 - B. Test switch: Mount in cover of enclosure to simulate failure of normal source.
 - C. Return to normal switch: Mount in cover of enclosure to initiate manual transfer from alternate to normal source.
 - D. Transfer switch auxiliary contacts: One normally open and one normally closed.
 - E. Normal Source Monitor: Monitor each line of normal source voltage and frequency; initiate transfer when voltage drops below 90% or frequency varies more than 3% from rated nominal value.
 - F. Alternate Source Monitor: Monitor alternate source voltage and frequency; inhibit transfer when voltage is below 90% or frequency varies more than 3% from rated nominal voltage.
 - G. In-Phase Monitor
 - H. Switched Neutral: Non-Overlapping contacts

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that surfaces are ready to receive work.
- B. Verify field measurements are as shown on Drawings.
- C. Verify that required utilities are available, in proper location, and ready for use.
- D. Beginning of installation means acceptance of existing conditions.

The School District of Palm Beach County

Project Name:

SDPBC Project No.:

3.2 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install in accordance with NFPA 110.

3.3 FUNCTIONAL PERFORMANCE TESTING

- A. System Functional Performance Testing is part of the Commissioning Process.
 - 1. The Contractor shall perform the Functional Performance Testing and the Commissioning Authority shall witness and document the test.
 - 2. Refer to Section 01 91 00, for functional performance tests and commissioning requirements.
- B. Complete and submit the systems readiness checklist for each piece of equipment in this section.
- C. Perform the functional performance testing of Panelboards as part of the Emergency Generator System Functional Performance testing.

3.4 DEMONSTRATION AND TRAINING

- A. Training of the Owner's operation and maintenance personnel is required in cooperation with the Owner's Representative.
 - 1. Competent, factory authorized personnel to provide instruction to operation and maintenance personnel concerning the location, operation, and troubleshooting of the installed systems.
 - 2. Schedule the instruction in coordination with the Owner's Representative after submission and approval of formal training plans.
 - 3. Refer to Section 01 91 00, Commissioning, for further contractor training requirements
- B. Provide demonstration and training for all types of transfer switches installed in this project.

END OF SECTION