

# **DIVISION 26 – ELECTRICAL**

## **26 36 00 TRANSFER SWITCHES**

### **PART 1 - GENERAL**

#### 1.01 AUTOMATIC TRANSFER SWITCHES (ATS)

- A. Switches for building services shall be bypass isolation drawout style.
- B. In most cases, switches shall be Programmed Neutral Position ("PNP") style, such that the switch operator has a programmed neutral position arranged to provide a midpoint between the two working switch positions, with an intentional, adjustable time-controlled pause at midpoint during transfer.
- C. Exceptions recommending Non-Programmed Neutral Position ("NPNP") style switches require approval from WSU Engineering Services through the Project Manager.
- D. Bypass/isolation switches (both normal to load and emergency to load) shall provide safe and convenient means for manually bypassing and isolating the ATS, regardless of the position or condition of the ATS, with the ability to be used as an emergency backup system in the event the transfer switch should fail. In addition, the bypass/isolation switch shall be utilized to facilitate removal of the automatic transfer switch for maintenance and repair.
- E. The automatic transfer switch shall be completely isolated from the bypass/isolation switch by means of insulating barriers and separate access doors to positively prevent hazard to operating personnel while servicing or removing the automatic transfer switch.
- F. Each transfer switch used for load shed shall have a Load Shed Enable/Disable switch.
- G. The automatic transfer switch and bypass/isolation switch shall have fault duty withstand and closing ratings as required.
- H. Time Delays:
  - 1. Time delay to override momentary normal source power outages to delay transfer switch operation. Adjustable 0.5 second – 60 seconds; factory set at 3 seconds.
  - 2. Time delay on transfer to emergency. Adjustable 1 – 300 seconds; factory set at 5 seconds.
  - 3. Time delay on re-transfer to normal while in emergency position. Motor driven type, adjustable 0-30 minutes, factory set at 5 minutes. This time delay shall be overridden upon failure of the emergency source.

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- I. Watt/Var transducers and related hardware shall be provided to monitor KW and KVAR on the load side of the transfer switch.
- J. Contacts and terminals are required to provide remote control and monitoring on the WSU Building Automation System (BAS). Provide contacts for remote monitoring when this switch is placed in the disable position.
- K. Provide four-position selector switch with "Manual", "Off", "Auto", and "Test" positions.
  - 1. Manual: Permits transfer to normal or emergency.
  - 2. Off: Override to bypass the automatic transfer switch controls so that the transferred switch will remain indefinitely connected to the power source (emergency, normal, or neutral) regardless of the condition of the power sources.
  - 3. Automatic: All control features ready for automatic sensing and transfer (Exception: BAS remote control has priority over this switch position).
  - 4. Test: Simulates normal power failure with the load test relay.
- L. Four auxiliary contacts closed in normal position, wired to terminal strip.
- M. Adjustable relay to prevent transfer to emergency until voltage and frequency of generating plant have reached acceptable limits. Factory set at 90% of rated value.
- N. Sync Check functions shall have the capability to be disabled.
- O. Provide indication of the current switch position visible on the front of the enclosure.

#### **1.02 BYPASS/ISOLATION SWITCH (BIS)**

- A. Operation of the BIS to either normal or emergency shall be possible without changing and regardless of the position of the automatic transfer switch. Overlapping contact bypass/isolation switches that are dependent upon the position of the ATS for proper operation are not acceptable.
- B. Indicating lights shall be provided to show the bypass/isolation switch in the bypass position, in fully isolated position, and to indicate source availability. Derangement signal shall only indicate the fully isolated position (drawn out of the cubicle).
- C. Inherent double throw (break-before-make) operation shall provide positive assurance against accidental interconnection of the normal and emergency

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- power sources. Arrangements utilizing interlocking of single-throw devices are not acceptable.
- D. The BIS switch shall be fully manually operable and shall not be dependent upon electrical interlock, operators, or relays for operation.
  - E. All main contacts and operating linkages of the BIS shall be identical to the ATS except that the operation shall be manual, and the switch shall have the same electrical ratings of ampacity, voltage, short circuit withstand, and temperature rise capability as the associated ATS. The bypass and emergency switch shall be mechanically locked in both the normal bypass and emergency bypass positions without the use of the hooks, latches, magnets, or springs.

#### **1.03 MANUAL TRANSFER SWITCHES**

- A. Externally operable mechanism for transferring load
- B. Break before Make
- C. Fully switchable neutral

### **PART 2 - PRODUCTS**

#### **2.01 PRE-APPROVED MANUFACTURERS (ATS AND MANUAL TRANSFER SWITCHES):**

- A. ASCO
- B. General Electric
- C. Siemens
- D. Square D
- E. Eaton

**END OF SECTION**