

SUGGESTED SPECIFICATION

For

Series 300 Manual Transfer Switches with Integrated Breakers and Quick Connects (3MUQ, 3MGQ, 3MPQ)

PART 1 GENERAL

1.01 Scope

- A. Furnish and install manual transfer switches with integrated breakers and quick connects 3MUQ, 3MGQ, and 3MPQ with number of poles, amperage, voltage, and withstand current ratings as shown on the plans. Each manual transfer shall consist of a 3 position center off mechanically held power transfer switch unit and a mechanical operating mechanism to provide complete manual operation. All transfer switches and mechanical operating mechanism shall be the product of the same manufacturer.
- B. Where a breaker is provided on utility, the source shall be service entrance rated, (3MUQ, 3MPQ)
- C. Furnish an enclosure for the manual transfer switch that is for service entrance where breaker is provided on utility. It shall provide all the proper disconnecting, protection, grounding and bonding required for service entrance equipment.

1.02 Acceptable Manufacturers

Manual transfer switches shall be ASCO Series 300 MUQ, MGQ, or MPQ. Any alternate products shall be submitted to the consulting engineer in writing at least 10 days prior to bid. Each alternate bid must list any deviations from this specification.

1.03 Codes and Standards

The service entrance manual transfer switches and accessories shall conform to the requirements of:

- A. UL 1008 Listed for Optional Standby Transfer Switches (Manual Transfer Switches)
- B. UL 891 Switch Boards
- C. NFPA 70 - National Electrical Code
- D. NFPA 99 – Essential Electrical Systems for Health Care Facilities
- E. IEEE Standard 446 - IEEE Recommended Practice for Emergency and Standby Power Systems for Commercial and Industrial Applications
- F. UL 50 Enclosures for Electrical Equipment,
- G. International Standards Organization ISO 9001: 2015
- H. RoHs compliant (Restriction of Hazardous Substances)
- I. Seismic qualification – International Building Code & OSHPD to SDS level of 2.5

PART 2 PRODUCTS

2.01 Mechanically Held Transfer Switch

- A. The transfer switch unit shall be manually operated and mechanically held. The switch shall be mechanically interlocked to ensure only one of three possible positions, Source 1, Source 2, or Center Off. Fused disconnect type switches shall not be acceptable.
- B. The switch shall be positively locked and unaffected by momentary outages so that contact pressure is maintained at a constant value and temperature rise at the contacts is minimized for maximum reliability and operating life.
- C. All main contacts shall be silver alloy composition. Switches rated 800 amperes and above shall have segmented blow-on construction for high withstand current capability and be protected by separate arcing contacts.
- D. Inspection of all contacts shall be possible from the front of the switch without disassembly of operating linkages and without disconnection of power conductors.
- E. Designs utilizing components of molded-case circuit breakers, contactors, or parts thereof which are not intended for continuous duty, repetitive switching or transfer between two active power sources are not acceptable.
- F. Where neutral conductors must be switched, the transfer switch shall be provided with fully- rated neutral transfer contacts.
- G. Where neutral conductors are to be solidly connected, a neutral terminal plate with fully-rated AL-CU pressure connectors shall be provided.
- H. The transfer switch shall be tested in accordance with UL 1008 for transfer switches. Switch ratings of 260 amperes and less shall have endurance rating of 6000 cycles, 400 ampere shall have endurance rating of 4000 cycles, and 600 – 2500 amperes shall have endurance rating of 2500 cycles.

PART 3 OPERATION

3.01 Manual Operations Provisions

- A. The transfer switch shall be arranged for manually actuated manual operation.
- B. The manual transfer shall be actuated via a mechanical operating mechanism.
- C. The manual operating handle shall be capable of external operation without opening the enclosure door.
- D. It shall have the same contact to contact speed as automatic operation
- E. There shall be three positions for manual operation:
 - 1. Connected to Source 1 (preferred)
 - 2. Connected to Source 2 (alternate)
 - 3. Connected to center off (disconnected position)
- F. Switch position when connected to Source 1, or Source 2 shall be pad – lockable

4.01 ENCLOSURE

- A.** The Manual Transfer Switch shall be furnished in a NEMA type 3R enclosure unless otherwise shown on the plans.
- B.** Enclosures shall be free standing, floor mounted.
- C.** Enclosures shall be code gauge steel as per UL 50 with ANSI #61 powder coat finish.
- D.** Outdoor enclosures shall be available in 316 stainless steel
- E.** Option for a strip heater with thermostat for Type 3R enclosure requirements.
- F.** The complete assembly shall be degreased, and thoroughly cleaned through a five-stage aqueous process. The finish shall be ANSI-61, light gray, electrostatically charged polyester powder paint over a phosphate coating, at a minimum of 2.0 mils in density. Finish shall be suitable for outdoor environments.
- G.** A pressure disconnect link shall be provided to disconnect the normal source neutral connection from the emergency and load neutral connections for 4-wire applications. A ground bus shall be provided for connection of the grounding conductor to the grounding electrode. A pressure disconnect link for the neutral to ground bonding jumper shall be provided to connect the normal neutral connection to the ground bus.

5.01 ADDITIONAL FEATURES

- A.** Mechanical position indicators (yellow) visible to the operator shall be included for Source 1 (preferred), Source 2, (alternate), and Center Off (disconnected).
- B.** Optional LED indicators shall be available for Source 1 (preferred), and Source 2 (alternate).
- C.** Auxiliary position indicating contacts, rated 10 amps, 250 Vac shall be provided consisting of one closed when the MUQ is connected to Source 1 (preferred), and one contact closed when the MUQ is connected to Source 2 (alternate)
- D.** A form A contact shall be provided to indicate switch is in the Center Off (disconnected) position.
- E.** Manual Transfer Switch with Integrated Quick Connects contains 16 Series quick connects which provides a connecting means for connecting a portable generator.
- F.** Quick connects are generally located on Source 2 (emergency) side of this MUQ.
 - a. For 400A and below models, there shall be one (1) row of up to five (5) series single pole connections.
 - b. For 600A - 800A models, there shall be two (2) rows of up to five (5) single pole connections.
 - c. For 1000A-1200A models, there shall be three (3) rows of up to 5 single pole connections.

G. All electrical connectors shall be 16 Series cam type single pole connectors, available color coded as per industry standard practice:

- a. 240V and below: phase 1 = black, phase 2 = red, phase 3 = blue (if required).
- b. 480V: phase 1 = brown, phase 2 = orange, phase 3 = yellow.
- c. Ground shall always be green.
- d. Neutral shall always be white.

PART 6 ACCESSORIES

6.01 Optional Features *(The following section is optional and should be deleted if not required)*

A. Enclosure Heater(s)

A 120v strip heater with thermostat and terminal block shall be provided for outdoor installations where type 3R, enclosures are specified. External 120v power source required. (This feature shall be equal to ASCO accessory 44A, and shall be capable of being added to existing switches).

A 125 watt enclosure heater with transformer and thermostat (adjustable from 30° to 140 ° F) shall be provided for outdoor installations where type 3R, enclosures are specified. (This feature shall be equal to ASCO accessory 44G, and shall be capable of being added to existing switches).

B. Surge Suppression – A TVSS with a surge current rating of 65kA shall be provided with individually matched fused metal oxide varistors (MOVs). It shall include LED status indication of normal operation, under voltage, power loss, phase loss or component failure. Shall include form C dry contacts for external alarm or monitoring. The unit shall be enclosed in a Noryl housing rated NEMA 4, 12, and 4X. Shall comply with UL 1449 3rd edition. (This feature shall be equal to ASCO accessory 73).

C. Accessory 170 Base Package Bundle – Two form C contacts shall be connected to customer terminal block that operate when Source 1 and Source 2 voltage is present at transfer switch terminals. The following indicators shall be provided:

- 1. Load Connected to Source 1 (Green).
- 2. Load Connected to Source 2 (Red).
- 3. Source 1 Available (Green).
- 4. Source 2 Available (Red).
- 5. Load Disconnect (Yellow)

(This feature shall be equal to ASCO accessory 170B).

Other options shall be made available phase rotation, maintained engine start switch, and keyed maintained engine start

See table below for other accessory 170 configurations (shall include base package bundle)

| | Source Available/Connected to/Disconnected LEDs & Contacts | Phase Rotation Monitor | Maintained Engine Start Switch & Common Alarm LED/Contact | Keyed Maintained Engine Start Switch & Common Alarm LED/Contact | IO Module |
|--------|---|------------------------------|---|---|--------------|
| 170B | X | | | | |
| 170E | X | | X | | |
| 170K | X | | | X | |
| 170B1 | X | | | | X |
| 170E1 | X | | X | | X |
| 170K1 | X | | | X | X |
| 170BP | X | X | | | |
| 170EP | X | X | X | | |
| 170KP | X | X | | X | |
| 170BP1 | X | X | | | X |
| 170EP1 | X | X | X | | X |

PART 7 ADDITIONAL REQUIREMENTS

7.01 Withstand and Closing Ratings

A. The Manual Transfer Switch shall be rated to close on and withstand the available RMS symmetrical short circuit current at the MUQ terminals with the type of overcurrent protection shown on the plans.

- a. Source 1 WCR Manual Transfer Switch ratings @ 480v shall be as follows when used with specific circuit breakers or current limiting fuses:

| MUQ Size | Source 1 Withstand & Closing Rating | | | Source 1 W/CLF |
|--------------|-------------------------------------|---------|---------|-------------------|
| | MUQ | MGQ | MPQ | |
| 150A-400A | 35,000A | 42,000A | 35,000A | 200,000A |
| 450A – 600A | 50,000A | 42,000A | 42,000A | 200,000A |
| 800A – 1200A | 65,000A | 50,000A | 50,000A | 200,000A |

- b. Source 2 WCR ratings @ 600v shall be as follows when used with any molded case circuit breaker:

| Switch Size | *Source 2 Withstand & Closing Wired to Quick Connects |
|--------------|---|
| 150A – 600A | 22,000A |
| 800A – 1200A | 22,000A |

**Some service entrance configurations and configurations which contain a generator breaker may have source 1 wired to quick connects. In these cases the source connected to quick connects will follow these WCR ratings.*

7.02 Tests and Certification

- A.** The complete Manual Transfer Switch shall be factory tested to ensure proper operation of the individual components and correct overall sequence of operation and to ensure compliance with the specification requirements.
- B.** Upon request, the manufacturer shall provide a notarized letter certifying compliance with all of the requirements of this specification including compliance with the above codes and standards, and withstand and closing ratings. The certification shall identify, by serial number(s), the equipment involved. No exceptions to the specifications, other than those stipulated at the time of the submittal, shall be included in the certification.
- C.** The Manual Transfer Switch manufacturer shall be certified to ISO 9001: 2015 International Quality Standard and the manufacturer shall have third party certification verifying quality assurance in design/development, production, installation and servicing in accordance with ISO 9001: 2015.

7.03 Service Representation

- A.** The Manual Transfer Switch manufacturer shall maintain a national service organization of company- employed personnel located throughout the contiguous United States. The service center's personnel must be factory trained and must be on call 24 hours a day, 365 days a year.
- B.** The manufacturer shall maintain records of switch shipments, by serial number, for a minimum of 20 years.
- C.** For ease of maintenance, the transfer switch nameplate shall include drawing numbers and serviceable part numbers.