

SECTION 262817 - ENCLOSED SWITCHES AND CIRCUIT BREAKERS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. This section is a Division 26 Basic Electrical Materials and Methods section and is part of each Division 26 section making reference to electrical wires and cables specified herein.

1.02 SCOPE OF WORK

- A. Provide a disconnect switch within sight of each motor and motor controller as indicated by the drawings and required by the NEC.
- B. Provide a disconnect switch within sight of each piece of fixed electrical equipment as indicated by the drawings and required by the NEC.

1.03 SUBMITTALS

- A. Submit shop drawings which indicate voltage, ampere and horsepower rating and NEMA type enclosure for each size disconnect switch required.

PART 2 - PRODUCTS

2.01 HEAVY DUTY SWITCHES

- A. Provide surface-mounted, heavy-duty type, sheet-steel enclosed safety switches, of types, sizes and electrical characteristics indicated. Switches shall be quick-make, quick-break type constructed so that switch blades are visible in OFF position with door open. Equip with operating handle which is integral part of enclosure base and whose operating position is easily recognizable, and is padlockable in the ON or OFF position. Construct current carrying parts of high-conductivity copper, with silver-tungsten type switch contacts and positive pressure type reinforced fuse clips. Switch enclosures generally shall be NEMA Type I and 3R for rain-tight construction.
- B. Provide fuses for safety switches, as recommended by switch manufacturer, of classes, types and ratings needed to fulfill electrical requirements for service indicated.
- C. For each safety switch on the load side of a variable frequency drive, provide a single pole, double throw auxiliary contact to stop the variable frequency drive when the safety switch is in the OFF position.

2.02 SEPARATELY MOUNTED MOLDED-CASE CIRCUIT BREAKERS

- A. Furnish and install separately mounted circuit breakers for overcurrent protection of feeders and branch circuits where shown on drawings.

- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
 2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
 3. Siemens Energy & Automation, Inc.
 4. Square D; a brand of Schneider Electric.
- C. General Requirements: Comply with UL 489, NEMA AB 1, and NEMA AB 3, with interrupting capacity to comply with available fault currents.
- D. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250A and larger.
- E. Adjustable, Instantaneous-Trip Circuit Breakers: Magnetic trip element with front-mounted, field-adjustable trip setting.
- F. Electronic Trip Circuit Breakers: Field-replaceable rating plug, rms sensing, with the following field-adjustable settings:
1. Instantaneous trip.
 2. Long- and short-time pickup levels.
 3. Long- and short-time time adjustments.
 4. Ground-fault pickup level, time delay, and I^2t response.
- G. Circuit breakers shall be thermal-magnetic, molded case type, rated 600V, with interrupting rating of 14,000 RMS amperes symmetrical minimum at 240V.
- H. Provide mechanical lugs and power-distribution connectors for number, size, and material of conductors as indicated on drawings.
- I. All circuit breakers (including GFCI and GFEP types (if any): Provide one spare of each type, ampacity, and pole configuration.
1. All spare breakers shall match exactly the characteristics of installed breakers.

2.03 ENCLOSURES

- A. Enclosed Switches and Circuit Breakers: NEMA AB 1, NEMA KS 1, NEMA 250, and UL 50, to comply with environmental conditions at installed location.
 - 1. Indoor Locations: NEMA 250, Type 1.
 - 2. Outdoor Locations: NEMA 250, Type 3R.
 - 3. Other Wet or Damp, Indoor Locations: NEMA 250, Type 3R.

PART 3 - EXECUTION

3.01 INSTALLATION OF CIRCUIT AND MOTOR DISCONNECT SWITCHES

- A. Install circuit and motor disconnect switches as indicated, complying with manufacturer's written instructions, applicable requirements of NEC, NEMA and NECA's "Standard of Installation" and in accordance with recognized industry practices.
- B. Install disconnect switches for use with motor-driven equipment and controllers within sight of controller and motor positions unless otherwise indicated.
- C. Switches which are located outdoors in non-secure areas shall be provided with weathertight brass padlocks. Padlocks shall have interchangeable cores for use with the Owner's master key system.
- D. Interlock wiring between disconnect switch and variable frequency drive shall be in separate raceway from the motor feeder wiring from the drive.

END OF SECTION 262817