

SECTION 269200 - MOTOR CONTROLS AND WIRING

PART 1 - GENERAL

1.1 SCOPE

- A. All work specified in this Section shall comply with the provisions of Section 260100.
- B. All motors shall be provided under Division 23.
- C. A motor starter shall be provided under this Section for each motor except for those specified in Division 23 to be furnished with integral starters. Motor starters shall be installed either in a Motor Control Center or separately mounted adjacent to the motor served.
- D. Motor power wiring is defined as those conductors between the energy source and the motor. This power wiring shall be terminated at the motor terminals.
- E. All control wiring required for automatic starting and stopping of motors shall be provided under Division 23 unless specifically shown on the electrical drawings.
- F. Power wiring shall be connected through all line voltage control devices such as fire-stats and thermostats.

PART 2 - PRODUCTS

2.1 MOTOR STARTERS

- A. Starters for motors 1/3 horsepower or smaller shall be manual unless remote or automatic starting is required, in which case the starters shall be magnetic, full voltage, non-reversing, single-speed, unless otherwise indicated. All other starters shall be magnetic.
- B. Each starter for a three-phase motor shall be furnished with three (3) overload relays sized for the full load running current of the motor actually provided. Provide an external "HAND-OFF-AUTO" selector switch with green "RUNNING" light. Provide a red pilot light to indicate motor "STOPPED". Each pilot light shall have a legend plate indicating reason for signal.
- C. Each overload relay shall have a normally open alarm contact which will close only when actuated by an overload (not to be confused with N.O. or N.C. auxiliary contacts). These contacts shall be properly wired to their respective blue pilot light provided on the starter front cover and having a "TRIPPED" legend plate.
- D. Individually mounted motor starters shall be in a NEMA Type 1 general purpose enclosure in unfinished areas and shall be flush mounted in all finished areas. All starters mounted in exterior areas shall have a NEMA 3R enclosure. Each starter shall have a laminated nameplate to indicate Division 23 unit number, function and circuit number.
- E. A control power transformer shall be provided at each motor starter for connection to the controls provided under Division 23. The control power transformer shall be mounted inside the motor starter enclosure. All control transformers at 50 VA or greater shall have primary fusing. Coordinate all control equipments with Division 23 and equipment manufacturers.
- F. All motor starters, push buttons and pilot lights shall be of the same manufacturer as the

switchboard and shall be General Electric, Square D, Siemens, Joslyn Clark Controls, or Eaton.

2.2 COMBINATION STARTERS

- A. Combination starters shall consist of a circuit breaker and a motor starter mounted in a common NEMA Type 1 general purpose enclosure.
- B. The motor starter components shall be as specified in paragraph 2.01 for motor starters.
- C. The circuit breaker component shall be a minimum 22,000 amperes RMS interrupting capacity and shall be as required in Section 262000.

2.3 MOTOR CONTROL CENTER

- A. The Motor Control Center shall consist of a combination starter for each motor, plus other associated equipment. Combination starters shall be plug-in circuit breaker or switch and fuse type, as scheduled, with voidable cover interlock, provision for padlocking the cover closed and provision for padlocking the operating handle in either the open or closed position. Switches shall be quick-make, quick-break type of quantity, size and poles as scheduled. All switches shall be rated at 600 volts, fused as scheduled. Circuit breakers shall have the interrupting capacity scheduled with 22,000 amperes RMS minimum.
- B. Motor starters shall be mounted in individual steel compartment immediately below the breaker or the switch and fuse associated with it. A mechanical interlock shall prevent opening the starter compartment door unless the device is in the off position.
- C. Each section in the Motor Control Center shall include an individual 480/120 volt control circuit transformer, with fused secondary.
- D. Provide a control terminal strip in the Motor Control Center. The control wiring from these terminal strips, external to the Motor Control Center, to the respective control device, shall be included in Division 23.
- E. All circuit breakers, motor starters, push buttons and pilot lights shall be of the same manufacturer as the main switchboard.
- F. Each starter shall have a laminated nameplate engraved to indicate Division 23 unit number, function and Motor Control Center circuit number.
- G. The Motor Control Center shall be General Electric, Square D, Siemens, or Eaton.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Provide power wiring to and install all motor starters, unless integrally factory mounted on a piece of equipment.
- B. Provide power wiring to all motors except packaged units that are prewired between the starter and motor.
- C. Where line voltage control devices are mounted at, on or inside a unit, such as aqua-stats, fire-stat for single phase devices, etc., the power wiring to the unit shall be connected through such a control device.

- D. On final inspection, it shall be demonstrated to the Architect or his representative, that each overload relay control circuit is properly wired and functioning correctly by manually tripping each overload relay individually, one at a time. This inspection procedure shall not involve removing any wiring or disconnecting any current carrying parts.

END OF SECTION 269200