

## SECTION 15170

### ELECTRICAL REQUIREMENTS FOR MECHANICAL EQUIPMENT

#### 1.0 GENERAL

##### 1.1 REFERENCE TO OTHER SECTIONS

1. Refer to DIVISION 1 - GENERAL REQUIREMENTS for items that affect the work and the administration of the work under DIVISION 15 - MECHANICAL.
2. Drawings and general provisions of the Contract apply to the work specified in all sections of Division 15.

##### 1.2 DEFINITIONS:

1. The following definitions of terms supplement those of the GENERAL AND SUPPLEMENTARY CONDITIONS and are applicable to all MECHANICAL SECTIONS.
  1. Wiring: Wire or cable installed in raceway with all required boxes, fittings, connectors and accessories completely installed.
  2. Power Wiring: Wiring which supplies the electrical current which flows through a connected motor or heater.
  3. Control, interlock and starting circuit wiring: All wiring required by all Mechanical Sections which is not power wiring.
  4. Exposed: Revealed to view or subject to weather.

##### 1.3 SUBMITTALS:

1. Refer to the GENERAL CONDITIONS and SUPPLEMENTS thereto for submittal procedure of items called for in the Contract Documents.
  1. Starters
  2. Contactors
  3. Disconnect Switches
  4. Motor Tabulation on all motors furnished in Division 15 listing horsepower, voltage, phase and full load amps.

##### 1.4 COORDINATION OF RELATED WORK:

1. The following work is generally specified in other Divisions work of the Specifications, except as specifically otherwise stated in Division 15.
  1. Electric power, interlock, and control wiring, Division 16. Installation of starters, contactors, thermal overload switches, and remote push buttons except as specified herein. Furnishing and installation of motor control centers, Division 16.

#### 2.0 PART 2 – PRODUCTS

##### 2.1 MOTORS:

1. 3/4 hp and larger shall be 3-phase, and smaller than 3/4 hp shall be 1-phase. Refer to Electrical Drawings for exact characteristics of all motors. Dripproof and totally enclosed fan-cooled motors shall be rated on a 50°C, and 55°C temperature rise basis, respectively.
2. Dripproof, 1800 rpm, induction type with a 1.15 service factor, unless otherwise specified herein.
3. Designed for use with variable frequency AC controllers for equipment as scheduled on the Drawings.
4. Motors not furnished with equipment shall be by one manufacturer: Baldor, Century, Delco, General Electric, Louis Allis, Marathon, Reliance, or Siemens.

5. Motors shall be manufactured according to NEMA Standards, except where otherwise specified. They shall be NEMA Design B, Insulation Class B or F, 40°C. ambient and 40°C. rise. Hermetic motors shall be manufactured according to ARI Standards.
6. Special application:
  1. High efficiency type for heating, ventilating, and air conditioning equipment from 1 to 50 hp
  2. Manufacturer: Century E-plus, Louis Allis Spartan, Reliance XE, or Siemens PE21 Plus.
  3. Totally enclosed type, or housed in a waterproof housing, for air-cooled condensers.
7. Nameplates: All motors shall have a nameplate showing the specified nominal system voltage as nameplate rated voltage. Each motor shall be guaranteed to operate satisfactorily at the specified nominal system voltage, plus or minus 10%.

## 2.2 STARTERS:

1. Furnish starter, providing overload protection, for each motor specified herein except as otherwise specified. Overload elements shall be sized to protect motors. Auxiliary contacts shall be provided for work specified under Section 15800 Mechanical Control System.
2. All three phase starters shall have control transformer with fused 120 volt secondary. Holding coils shall be 120 volt. Provide overload protection for each of three phases. Enclosures shall be NEMA 1 for indoor locations and NEMA-3R for outdoor locations, unless otherwise noted.
3. Overload protection for each phase.
4. Equipment furnished with factory installed starters shall also be equipped with individual motor branch circuit protective devices interconnected on their line sides to lugs sized to receive a feeder with minimum ampacity of 125% of total connected load.
5. 115V control circuit transformer with fused primary and secondary circuit in the enclosure.
6. Starter located in motor control centers are specified under Division 16.
7. 2 sets of spare auxiliary contacts.
8. All starters and contactors not furnished with equipment shall be provided by one manufacturer: Allen-Bradley, Crouse-Hinds, Cutler-Hammer, General Electric, Square D, Gould, Furnas, Joslyn Clark, or Siemens-ITE.
9. For 3-phase motors, 3/4 hp and larger, unless otherwise specified herein:
  1. Combination magnetic type and fused disconnect with Class R fuse clips and fuses with overload protection for each speed.
  2. Circuit breakers shall have minimum AIC rating per schedule.
  3. Hand-off-automatic switch on the face for each fan and pump, except those manually controlled.
10. For 3-phase, 2-speed, 3/4 hp and larger, unless otherwise specified herein:
  1. Combination magnetic type and circuit breaker with overload protection for each speed.
  2. Circuit breakers shall have minimum AIC rating as shown on Electrical Drawings.
  3. Hand 2-hand 1-off-automatic switch on the face, except those manually controlled.
  4. Low speed compelling and deceleration relays.
  5. Rated for single winding, variable torque motors.
  6. For 1-phase, smaller than 3/4 hp, unless otherwise specified herein:
    7. Manual starting switch with thermal overload protection and pilot light.
    8. Hand-off-automatic switch with pilot light and stainless steel coverplate, except for manually controlled equipment

END OF SECTION