

## SECTION 23 01 80 - MOTORS

### PART 1 – GENERAL

#### 1.1 DESCRIPTION

- A. Provide labor, materials, equipment and services as required for the complete installation designed in Contract Documents.

### PART 2 - PRODUCTS

#### 2.1 MOTORS

- A. General Requirements:
1. Motors built for 60 Hz operation, three phase for 1/2 hp and larger; single phase for 1/3 hp and smaller. In compliance with NEMA Standards, wound specifically for nameplate voltage, and selected for appropriate duty and environment. 1.15 minimum service factor at rated voltage and frequency. Bearings rated 20,000 life hours. V-belt connected motors with adjustable slide rail bases and pulleys. Motors shall have Class F insulation system, with Class B temperature rise. Maximum allowable motor temperature rise for open drip-proof or totally enclosed fan cooled (TEFC) type at 1.15 service factor shall be 80 °C above 40°C ambient up to 300 hp. NEMA locked rotor KVA code as required to match unit equipment torque characteristics. Single-phase motors shall be capacitor start, induction run, or split phase type. Polyphase motors shall be constant speed, squirrel cage, unless otherwise called for. Motors for solid state driven variable speed, fans or AHU units shall be designed for definite purpose energy efficient drive control.
  2. Motors rated 1 hp and greater shall be special design, high efficiency, energy-saver type with a guaranteed NEMA nominal full-load efficiency, by IEEE Standard 112 Test Method "B". Efficiency rating shall appear on nameplate, and shall be not less than the New York State Energy Code requirements as follows:

MINIMUM NOMINAL FULL-LOAD MOTOR EFFICIENCY						
HP	OPEN MOTORS (RPM)			CLOSED MOTORS (RPM)		
	1200	1800	3600	1200	1800	3600
1.0	82.5	85.5	77	82.5	85.5	77
1.5	86.5	86.5	84	87.5	86.5	84
2.0	87.5	86.5	85.5	88.5	86.5	85.5
3.0	88.5	89.5	85.5	89.5	89.5	86.5
5.0	89.5	89.5	86.5	89.5	89.5	88.5

MINIMUM NOMINAL FULL-LOAD MOTOR EFFICIENCY						
HP	OPEN MOTORS (RPM)			CLOSED MOTORS (RPM)		
	1200	1800	3600	1200	1800	3600
7.5	90.2	91.0	88.5	91.0	91.7	89.5
10	91.7	91.7	89.5	91.0	91.7	90.2
15	91.7	93.0	90.2	91.7	92.4	91.0
20	92.4	93.0	91.0	91.7	93.0	91.0
25	93.0	93.6	91.7	93.0	93.6	91.7
30	93.6	94.1	91.7	93.0	93.6	91.7
40	94.1	94.1	92.4	94.1	94.1	92.4
50	94.1	94.5	93.0	94.1	94.5	93.0

3. Nominal Motor Voltage Table:

<u>Nominal System Voltage</u>	<u>Motor Nameplate</u>
480V - 3 phase	460 volt
208V - 1 phase and 3 phase	200 volt
120V - 1 phase	115 volt

4. Motor Application:

<u>Environment/Location</u>	<u>Motor Enclosure Type</u>
General Purpose	Open drip-proof, TEFC, or encapsulated
Outdoors, below grade or high humidity	TEFC
Packaged Refrigeration Compressors	Hermetic or semi-hermetic

5. Make: Need not be all of same make, but one of the following: General Electric, Gould, Reliance, Westinghouse.

### PART 3 - EXECUTION

#### 3.1 MOTORS

- A. Furnished by equipment manufacturer and especially manufactured and/or selected, mounted, and installed for intended use. Install motors accessible for maintenance and belt adjustment.

#### END OF SECTION