SECTION 15058 - COMMON MOTOR REQUIREMENTS FOR HVAC EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. SECTION INCLUDES GENERAL REQUIREMENTS FOR SINGLE-PHASE AND POLYPHASE, GENERAL-PURPOSE, HORIZONTAL, SMALL AND MEDIUM, SQUIRREL-CAGE INDUCTION MOTORS FOR USE ON AC POWER SYSTEMS UP TO 600 V AND INSTALLED AT EQUIPMENT MANUFACTURER'S FACTORY OR SHIPPED SEPARATELY BY EQUIPMENT MANUFACTURER FOR FIELD INSTALLATION.

1.2 COORDINATION

A. COORDINATE FEATURES OF MOTORS, INSTALLED UNITS, AND ACCESSORY DEVICES TO BE COMPATIBLE WITH THE FOLLOWING:

1. MOTOR CONTROLLERS.
2. TORQUE, SPEED, AND HORSEPOWER REQUIREMENTS OF THE LOAD.
3. RATINGS AND CHARACTERISTICS OF SUPPLY CIRCUIT AND REQUIRED CONTROL SEQUENCE.
4. AMBIENT AND ENVIRONMENTAL CONDITIONS OF INSTALLATION LOCATION.

PART 2 - PRODUCTS

2.1 GENERAL MOTOR REQUIREMENTS

A. COMPLY WITH NEMA MG 1 UNLESS OTHERWISE INDICATED.

2.2 MOTOR CHARACTERISTICS

A. DUTY: CONTINUOUS DUTY AT AMBIENT TEMPERATURE OF 40 DEG C AND AT ALTITUDE OF 3300 FEET ABOVE SEA LEVEL.

B. CAPACITY AND TORQUE CHARACTERISTICS: SUFFICIENT TO START, ACCELERATE, AND OPERATE CONNECTED LOADS AT DESIGNATED SPEEDS, AT INSTALLED ALTITUDE AND ENVIRONMENT, WITH INDICATED OPERATING SEQUENCE, AND WITHOUT EXCEEDING NAMEPLATE RATINGS OR CONSIDERING SERVICE FACTOR.

2.3 POLYPHASE MOTORS

A. DESCRIPTION: NEMA MG 1, DESIGN B, MEDIUM INDUCTION MOTOR.

B. EFFICIENCY: ENERGY EFFICIENT, AS DEFINED IN NEMA MG 1.

C. SERVICE FACTOR: 1.15.

D. MULTISPEED MOTORS: VARIABLE TORQUE.

1. FOR MOTORS WITH 2:1 SPEED RATIO, CONSEQUENT POLE, SINGLE WINDING.
2. FOR MOTORS WITH OTHER THAN 2:1 SPEED RATIO, SEPARATE WINDING FOR EACH SPEED.

E. ROTOR: RANDOM-WOUND, SQUIRREL CAGE.

F. BEARINGS: REGREASABLE, SHIELDED, ANTIFRICTION BALL BEARINGS SUITABLE FOR RADIAL AND THRUST LOADING.

G. TEMPERATURE RISE: MATCH INSULATION RATING.

H. INSULATION: CLASS F.

I. CODE LETTER DESIGNATION:

1. MOTORS 15 HP AND LARGER: NEMA STARTING CODE F OR CODE G.
2. MOTORS SMALLER THAN 15 HP: MANUFACTURER'S STANDARD STARTING CHARACTERISTIC.

J. ENCLOSURE MATERIAL: CAST IRON FOR MOTOR FRAME SIZES 324T AND LARGER; ROLLED STEEL FOR MOTOR FRAME SIZES SMALLER THAN 324T.

2.4 POLYPHASE MOTORS WITH ADDITIONAL REQUIREMENTS

A. MOTORS USED WITH REDUCED-VOLTAGE AND MULTISPEED CONTROLLERS: MATCH WIRING CONNECTION REQUIREMENTS FOR CONTROLLER WITH REQUIRED MOTOR LEADS. PROVIDE TERMINALS IN MOTOR TERMINAL BOX, SUITED TO CONTROL METHOD.

2.5 SINGLE-PHASE MOTORS

A. MOTORS LARGER THAN 1/20 HP SHALL BE ONE OF THE FOLLOWING, TO SUIT STARTING TORQUE AND REQUIREMENTS OF SPECIFIC MOTOR APPLICATION:

1. PERMANENT-SPLIT CAPACITOR.
2. SPLIT PHASE.
3. CAPACITOR START, INDUCTOR RUN.
4. CAPACITOR START, CAPACITOR RUN.

B. MULTISPEED MOTORS: VARIABLE-TORQUE, PERMANENT-SPLIT-CAPACITOR TYPE.

C. BEARINGS: PRELUBRICATED, ANTIFRICTION BALL BEARINGS OR SLEEVE BEARINGS SUITABLE FOR RADIAL AND THRUST LOADING.

D. MOTORS 1/20 HP AND SMALLER: SHADED-POLE TYPE.

E. THERMAL PROTECTION: INTERNAL PROTECTION TO AUTOMATICALLY OPEN POWER SUPPLY CIRCUIT TO MOTOR WHEN WINDING TEMPERATURE EXCEEDS A SAFE VALUE CALIBRATED TO TEMPERATURE RATING OF MOTOR INSULATION. THERMAL-PROTECTION DEVICE SHALL AUTOMATICALLY RESET WHEN MOTOR TEMPERATURE RETURNS TO NORMAL RANGE.

PART 3 - EXECUTION (NOT APPLICABLE)

END OF SECTION 15058