

SECTION 23 05 13
COMMON MOTOR REQUIREMENTS FOR HVAC EQUIPMENT
Design Standard

PART 1 GENERAL

1.1 PURPOSE:

The motor requirements for heating, ventilating, and air-conditioning equipment are an essential to the proper functioning of the mechanical systems. This design standard has the purpose of creating a consistent application of heating, ventilating, and air-conditioning equipment motor requirements throughout the San Mateo County Community College District therefore achieving a standard of quality for maintenance, reliability, and energy efficiency throughout all renovation and new building projects.

PART 2 PRODUCTS

2.1 HVAC EQUIPMENT

Specify work to include: materials, installation and testing for complete and operable motors and starters for heating, ventilating, and air-conditioning equipment. these design standards are inclusive of motors that are field installed as well as integral to mechanical equipment.

Provide soft-start starters for motors 25 horsepower and larger that are not provided with a variable frequency drive.

All motors to meet the following requirements based on Code requirements and industry standard of care:

- A. Energy efficient, suitable for non-overloading operation, and capable of continuous operation at full nameplate rating. Motors 1 HP and larger must meet Energy Policy act of 1992. Motors to meet or exceed California Energy Commission Title 24 requirements.
- B. Take NEMA standards as minimum requirements for motor design and performance. Motors suitable for load, duty, voltage, frequency, hazard, and for service and location intended.
- C. For consistency and economy, motors, unless specified otherwise, to be general purpose open drip-proof type, ball bearing equipped, 40°C temperature rise, and rated for continuous duty under full load.
- D. To avoid unnecessary maintenance costs and early failure of equipment, all motors located outdoors to be TEFC motors (totally enclosed, fan cooled).
- E. Due to the harsh weather environment at Skyline College, all motors exposed to the outside air stream (whether inside or outside of equipment) to be TEFC motors (totally enclosed, fan cooled).
- F. Motors smaller than 1/2 horsepower, single phase; and motors 1/2 horsepower and larger, 3 phase and voltage as indicated on Drawings. Maximum motor speed of 1750 RPM, unless otherwise noted. Single phase motors to have internal thermal overload protection with automatic reset.
- G. Motors serving fans larger than or equal to 1/12 HP and smaller than 1 HP shall be electronically commutated motors. This includes supply, return and exhaust fans, power exhaust, fan powered VAV boxes and fan coil units (excludes pumps).

- H. Motors for belt drive to have adjustable bases with set screw to maintain belt tension.
- I. Provide inverter rated motors per NEMA MG1-31 where variable frequency drives are applied or where soft start starters are utilized.
- J. For consistency, all starters to be specified by Division 26.
- K. For consistency, all disconnects to be specified by Division 26.
- L. Motors to have name plate giving manufacturer's name, shop number, HP, RPM and current characteristics.

2.2 APPROVED MANUFACTURERS:

- A. General Electric
- B. Westinghouse
- C. Baldor
- D. Reliance

PART 3 EXECUTION

3.1 SUBSTITUTES ALLOWED?

Yes, if performance and quality equivalency can be evidenced.

3.2 ASSOCIATED DESIGN STANDARDS AND CONSTRUCTION SPECIFICATIONS:

23 05 48 - Vibration and Seismic Controls for HVAC Piping and Equipment Design Standard

23 05 53 - Identification for HVAC Piping and Equipment Design Standard

23 09 13 - Variable Frequency Drives Design Standard

END OF SECTION