SECTION 26 29 13 - MOTOR CONTROL

PART I - GENERAL

1.1

PART 2 - PRODUCTS

2.1 MOTOR STARTERS

A. Magnetic Type: Starters for motors shall be of the Combination Starter/Fused Disconnect, magnetic type as required for the respective motor service, complete with overload protection, in all 3 phases.

B. NEMA Design: Starters and electrical components shall be of the NEMA design. IEC type shall not be allowed. NEMA size 1 starter shall be the minimum size allowed.

C. Combination Starter / Fused Disconnect Switch Units: Shall be installed in either motor control centers or individual enclosures provided for each motor.

D. Motor starter coils and control circuits shall be powered by a 120 volt control transformer located within the motor starter enclosure.

E. Combination Starter/Fused Disconnect Switch Unit: Shall incorporate the following:

1. NEMA Fused Disconnect Switch: A fused disconnect switch of the NEMA design, as opposed to the IEC type. Disconnect switch shall be NEMA type HD and shall be UL listed. Time delay Class RK1 fuses shall be used. Maximum fuse size shall be 130% of motor full-load amperes.

2. Magnetic Starter: A magnetic starter of the NEMA design, as opposed to the IEC type.

3. Overload Relay: Overloads shall be of the Solid State Electronic type. Relay shall include Phase-Loss protection. Relay shall be able to provide Class 10 and Class 20 overload protection. Relay shall be set to match motor full load amperage from nameplate.

4. Control Transformer: Motor starter coils and control circuits shall be powered by a 120 volt control transformer located within the motor starter enclosure. Primary and secondary fusing shall be provided.

5. Hand-Off-Auto Switch: A NEMA design oil tight cover mounted hand-off-auto switch.

6. Auxiliary Contact Kit: An auxiliary contact kit with one NO and one NC sets of contacts.

7. Pilot Light: A NEMA design oil tight cover mounted 120 V pilot light, with “Green” lens for “Run” status indication, and “Red’ lens for “Stop” status indication. Pilot light shall be LED, push-to-test. Incandescent 120V pilot light type is not allowed.

F. Starter Selection: Shall be based on the following table for particular installations:

If the motors are fed from the same transformer that supplies the building lighting and receptacle loads, then the inrush KVA shall not exceed 20 percent of the transformer KVA rating. Inrush KVA shall be computed using the mid-range value of the code letter designation of the motor. A table showing the maximum horsepower permitted for different size transformers based on motors with a code letter "G" has been supplied as a sample.

Code "G" has a mid-range value of 6 KVA per horsepower.

KVA of Transformer	Maximum Across-the-Line HP
100	5
225	7-1/2
300	10
500	5
750	25
1000	30

G. Reduced Voltage Starters: For motors over 50HP, provide Variable Speed Drives. . For variable frequency drive applications see Section 26-29-23.

H. Motors configured in duplex applications require 2 electrical circuits to each duplex control panel. Control circuits for each motor shall be capable of operating independently and shall be fed from their respective power circuits. Control transformers shall be provided as needed to limit control voltage to 120 volts. Single electrical feeds to dual motor systems are expressly prohibited.

I. Power Quality: *[Note to PSC: Project Electrical Engineer shall direct special attention to power quality issues relating to power line disturbances caused by starting or operating large electrical loads. The final electrical design shall address power quality by the use of reduced voltage starters, electronic "soft start" solid state starters, or any other necessary means.]*

J. Manufacturers

1. Eaton
2. GE
3. Square D

PART 3 - EXECUTION

3.1

END OF SECTION 26 29 13

This section of the *U of I Facilities Standards* establishes minimum requirements only.
It should not be used as a complete specification.