



.1 General

- .1 This section includes the requirements for starters MCC mounted or loose mounted..

.2 Shop Drawings And Product Data

- .1 Submit shop drawings that indicate, mounting method and dimensions, starter size and type, layout of identified internal and front panel components, enclosure types, wiring diagram for each type of starter, and interconnection diagrams.

.3 Extra Materials

- .1 Provide listed spare parts for each different size and type of starter:
 - .1 3 contacts, stationary.
 - .2 3 contacts, movable.
 - .3 1 contacts, auxiliary.
 - .4 1 control transformer[s].
 - .5 1 operating coil.
 - .6 2 fuses.
 - .7 10% indicating lamp bulbs used.

.4 Starters

- .1 Starters: to IEC 947-4 with AC4 utilization category.

.5 Manual Motor Starters

- .1 Single or three phase manual motor starters of size, type, rating, and enclosure type as indicated, with components as follows:
 - .1 Switching mechanism, quick make and break.
 - .2 One or three overload heater(s), manual reset, trip indicating handle.
- .2 Accessories:
 - .1 Toggle switch, heavy duty labelled as indicated.
 - .2 Indicating light: heavy duty type and colour as indicated.
 - .3 Locking tab to permit padlocking in "ON" or "OFF" position.

.6 Full Voltage Magnetic Starters

- .1 Magnetic and combination magnetic starters of size, type, rating and enclosure type as indicated with components as follows:
 - .1 Contactor solenoid operated, rapid action type.
 - .2 Motor overload protective device in each phase, manually reset from outside enclosure.
 - .3 Wiring and schematic diagram inside starter enclosure in visible location.
 - .4 Identify each wire and terminal for external connections, within starter, with permanent number marking identical to diagram.
- .2 Combination type starters to include fused disconnect switch with operating lever on outside of enclosure to control disconnect, and provision for:
 - .1 Locking in "OFF" position with up to 3 padlocks.
 - .2 Independent locking of enclosure door.
 - .3 Provision for preventing switching to "ON" position while enclosure door open.
- .3 Accessories:



- .1 Selector switches: heavy duty labelled as indicated.
- .2 Indicating lights: heavy duty type and color as indicated.
- .3 1-N/O and 1-N/C spare auxiliary contacts unless otherwise indicated.

.7 Magnetic Starter, Reduced Voltage, Auto-Transformer

- .1 Auto-transformer starter closed circuit transition type, of size, type, rating and enclosure type as indicated and with following components:
 - .1 Three-3 pole contactors.
 - .2 Auto-transformer with [50%, 65% and 80%] [65% and 85%] taps.
 - .3 One adjustable pneumatic timing relay.
 - .4 One-3 pole manual reset overload device.
 - .5 Thermal overload protection of auto-transformers.
- .2 Accessories:
 - .1 Selector switches heavy duty labelled as indicated.
 - .2 Indicating lights: heavy duty type and color as indicated.
 - .3 Auxiliary control devices as indicated.

.8 Variable Frequency Drives

- .1 Variable frequency drives are specified by Mechanical Consultant but require consultation with FMEL.
- .2 Obtain a copy of shop drawings from the Mechanical Contractor and insert a copy into each Operating and Maintenance Manual.

.9 Control Transformer

- .1 Single phase, dry type, control transformer with primary voltage as indicated and 120 V secondary, complete with secondary fuse, installed in with starter as indicated.
- .2 Size control transformer for control circuit load plus 20% spare capacity.

.10 Equipment Identification

- .1 Provide equipment identification in accordance with Section 26 05 01 - Common Work Results - Electrical.
- .2 Manual starter designation label, white plate, black letters, size 1, engraved.
- .3 Magnetic starter designation label, white plate, black letters, size 1 engraved.