

## **1 General**

### **1.1 RELATED SECTIONS**

- .1 Section 26 05 00 – Common Work Results - Electrical.

### **1.2 REFERENCES**

- .1 International Electrotechnical Commission (IEC)
  - .1 IEC 947-4-1-1990, Part 4: Contactors and motor-starters.

### **1.3 SUBMITTALS**

- .1 Submit shop drawings and product data in accordance with Division 01 - General Requirements.
- .2 Product data to indicate:
  - .1 Mounting method and dimensions.
  - .2 Starter size and type.
  - .3 Layout of identified internal and front panel components.
  - .4 Enclosure types.
  - .5 Wiring diagram for each type of starter.
  - .6 Interconnection diagrams.

## **2 Products**

### **2.1 MATERIALS**

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

### **2.2 MANUAL MOTOR SWITCHES**

- .1 Manual switch, 1, 2 or 3 poles as required. Mounted in CSA 1 Enclosure with quick-make, quick-break toggle switch.
- .2 Rated for 30 A at 250 V AC.
- .3 Shielded toggle with provision to be padlocked in ON or OFF positions.

### **2.3 MANUAL MOTOR STARTERS**

- .1 Single, 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/three overload heaters, manual reset, trip indicating handle.
- .2 Accessories:
  - .1 Toggle heavy duty labelled as indicated.
  - .2 Indicating light: standard heavy duty type and colour as indicated.
  - .3 Locking tab to permit padlocking in "ON" or "OFF" position.

### **2.4 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, IEC AC4 rated, contactor size as follows: 23 A for 0-10 hp.
  - .2 Bimetal motor overload protective device providing phase protection.
  - .3 Power and control terminals.
  - .4 Wiring and schematic diagram inside starter enclosure in visible location.
  - .5 Identify each wire and terminal for external connections, within starter, with permanent number marking identical to diagram.

- .2 Combination type starters to include fusible disconnect with operating lever on outside of enclosure 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 Pushbuttons/Hand-off-Auto Selector switches: heavy duty, oil tight, labelled as indicated.
  - .2 Indicating lights: heavy duty LED type and color as indicated.
  - .3 1-N/O and 1-N/C spare auxiliary contacts unless otherwise indicated.

## **2.5 CONTROL TRANSFORMER**

- .1 Single phase, dry type, control transformer with primary voltage as indicated and 24 V secondary, complete with secondary fuse, installed in with starter as indicated.
- .2 Size control transformer for control circuit load plus 20% spare capacity.

## **2.6 ENCLOSURE**

- .1 Enclosure: CSA type 1 unless indicated otherwise.

## **2.7 FINISHES**

- .1 Apply finishes to enclosure in accordance with Section 26 05 00 - Common Work Results - Electrical.

## **2.8 EQUIPMENT IDENTIFICATION**

- .1 Provide equipment identification as per Section 26 05 00 - Common Work Results - Electrical.
- .2 Manual starter and switch designation label, white plate, black letters, size 1, engraved as indicated.
- .3 Magnetic starter designation label, white plate, black letters, size 1 engraved as indicated.

## **2.9 EXTRA MATERIALS**

- .1 Provide listed spare parts for each different size and type of starter if applicable for the particular starter - Two (2) fuses.

# **3 Execution**

## **3.1 INSTALLATION**

- .1 Prior to installation verify motor sizes with division supplying motor to ensure starter and overload relay match equipment being supplied.
- .2 Install starters, connect power and control as indicated.
- .3 Ensure correct fuses and overload devices elements installed. Adjust overload relay settings to match motor nameplate.

## **3.2 FIELD QUALITY CONTROL**

- .1 Perform tests in accordance with Section 26 05 00 - Common Work Results - Electrical and manufacturer's instructions.
- .2 Operate switches, contactors to verify correct functioning.
- .3 Perform starting and stopping sequences of contactors and relays.
- .4 Check that sequence controls, interlocking with other separate related starters, equipment, control devices, operate as indicated.

**END OF SECTION**

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