



Select Fuses for a Motor Branch Circuit

Program: Electrician Technician

Course: EL150 – Commercial Applications

Objectives: Under the supervision of your instructor, you should be able to do the following:

- Apply the key *National Electrical Code*® (*NEC*®) requirements regarding overcurrent protection.
- Check specific applications for conformance to *NEC*® sections that cover short circuit current, fault currents, interrupting ratings, and other sections relating to overcurrent protection
- Select and size overcurrent protection for specific applications

Lab Equipment: N/A

Required Tools:

- Pencil and Paper
- Calculator

Materials: N/A

Safety (PPE):

- No safety equipment is required for this project unless the environment in which the project is completed requires safety equipment.
- You must select the minimum value fuse rating that corresponds to a standard fuse ampere rating based on the recommended selective coordination ratio. Standard fuse ampere ratings can be found in the *NEC Section 240.6*.
- Answer the three questions associated with Figure 1 and motor overload protection.

Resources: N/A

Required Time: 120 Minutes

Shop Maintenance:

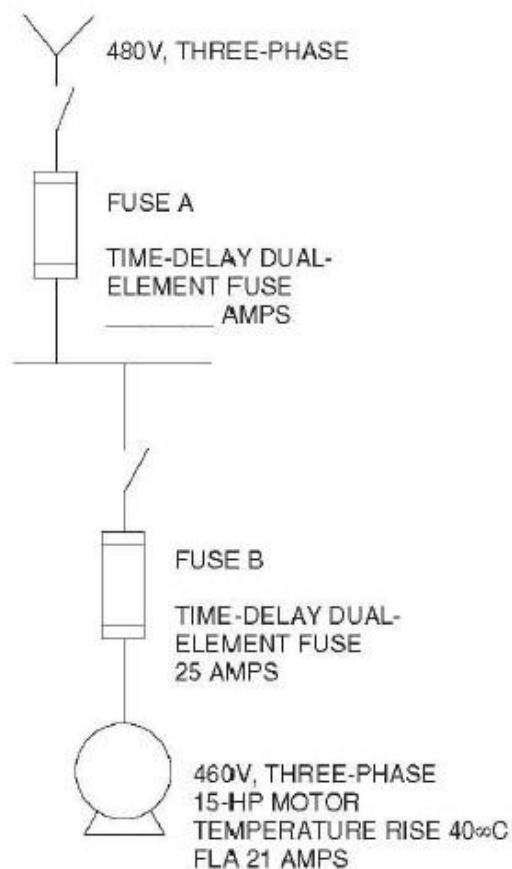
- All work will cease 20 minutes prior to the end of class.
- All work areas must be cleaned.
- Tools and equipment must be cleaned and returned to the designated areas (cage, tool room, cabinets etc.)
- Any broken or missing tools must be reported immediately.
- Tools and equipment are student's responsibility



Procedures:

This performance project requires the trainee to review a one-line feeder and motor branch circuit drawing and determine the minimum value fuse rating for the feeder circuit based on the recommended selective coordination ratio. The trainee must also answer three associated questions by referring to Figure 1 and tables in Module 26305-17.

1. Review Figure 1, noting the size and type of fuses in the feeder and motor branch circuits.
2. Review your text if necessary to determine the recommended selective coordination ratio between upstream and downstream overcurrent protective fuses.
3. Determine the minimum value fuse rating for Fuse A that corresponds to a standard fuse ampere rating, based on the recommended ratio and the type of fuse in the motor branch circuit (Fuse B). Standard fuse ampere ratings may be found in the *NEC Section 240.6*.
4. Answer the three questions associated with Figure 1 and motor overcurrent protection.
5. Have your instructor check your work.



QUESTIONS

1. WHAT IS THE MINIMUM SELECTIVE COORDINATION RATIO ALLOWED BETWEEN FUSE A AND FUSE B IN THIS INSTALLATION?
_____ WHY? _____
2. BASED ON THE VALUE OF FUSE B AND TABLE 3 LOCATED IN MODULE 26303-05, IS THIS MOTOR PROVIDED WITH BACKUP PROTECTION IN THE FORM OF PROPERLY SIZED OVERLOAD RELAYS?
_____ YES _____ NO
3. BASED ON THE VALUE OF FUSE B AND TABLE 3 LOCATED IN MODULE 26303-05, IS THE SERVICE FACTOR OF THIS MOTOR LESS THAN OR GREATER THAN 1.15?
_____ LESS THAN _____ GREATER THAN

Figure 1 ■ One-Line Motor Circuit and Related Questions