

Fuse Sizing Guide

This guide is a general recommendation and does not include the many variables that can exist for specific situations such as special local codes, unusual temperature or other operating conditions, NEC® demand factors, conductor derating, etc.

Recommended UL Current Limiting Fuse Classes & EDISON Fusegear Symbols:*

Time-Delay Type

Class L	-LCL	-600VAC or less: 601-6000A
Class RK1	-LENRK	-250VAC or less: 6/10-600A
	-LESRK	-600VAC or less: 1/2-600A
Class RK5	-ECNR	-250VAC or less: 1/10-600A
	-ECSR	-600VAC or less: 1/10-600A
Class J	-JDL	-600VAC or less: 1-600A
Class CC	-HCTR	-600VAC or less: 1/4-10A

Fast-Acting Type (Non/time-delay)

Class T	-TJN	-300VAC or less: 1-800A
	-TJS	-600VAC or less: 1-800A
Class L	-LCU	-600VAC or less: 601-6000A
Class RK1	-NCLR	-250VAC or less: 1-600A
	-SCLR	-600VAC or less: 1-600A
Class J	-JFL	-600VAC or less: 1-600A
Class CC	-HCLR	-600VAC or less: 1/10-30A

*The fuse classes shown are UL Listed as "current limiting" with 200,000 RMS symmetrical amperes interrupting rating. Classes J and L are not interchangeable with fuses having lower I.R.. Class R fuses require Class R rejection fuse clips to prevent interchangeability with Classes H and K fuses with lower interrupting rating. (NEC 110-9 and 240-60b.)

① Main Service Conductor Cable Limiters (NEC 240, 230.82):

- a) Select by cable size and mounting terminal configurations required.

② Main Service Circuit Fuses—Mixed Loads:

- a) Size fuses same as item 6.

③ Transformer Circuit Fuses (NEC 450.3b, 240.3, 240.21, 430.72 (c) as required):*

- a) PRIMARY FUSES: Size fuses not over 125%. As exceptions exist, refer to the appropriate NEC® paragraphs. Recommended fuses: LESRK, ECSR, JDL, LCL+.*
- b) SECONDARY FUSES (Sum of following): 125% of the continuous load plus 100% of non-continuous load. Fuse size not to exceed 125% of transformer secondary rated amps. RECOMMENDED FUSES: LENRK, ECNR, NCLR, JDL or LCU.

*Fuse size must not exceed ampacity of conductors. Where selectivity is desired, refer to EDISON selectivity methods.

④ Branch Circuit Fuse Size, No Motor Load (NEC 240.3, 210.20):*

- a) 100% of non-continuous load, +125% of continuous load.

*Do not exceed conductor ampacity. Recommended fuses: LENRK, ECNR, NCLR, JDL, LCU, or LCL.

⑤ Branch Circuit Fuse Size, No Motor Load (NEC 240.3, 210.20):*

- a) 100% of non-continuous load, + 125% of continuous load. Fuse may be sized 100% when used with a continuous rated switch. Recommended fuses same as 4.

*Do not exceed conductor ampacity.

*600VAC or less: 1-800A

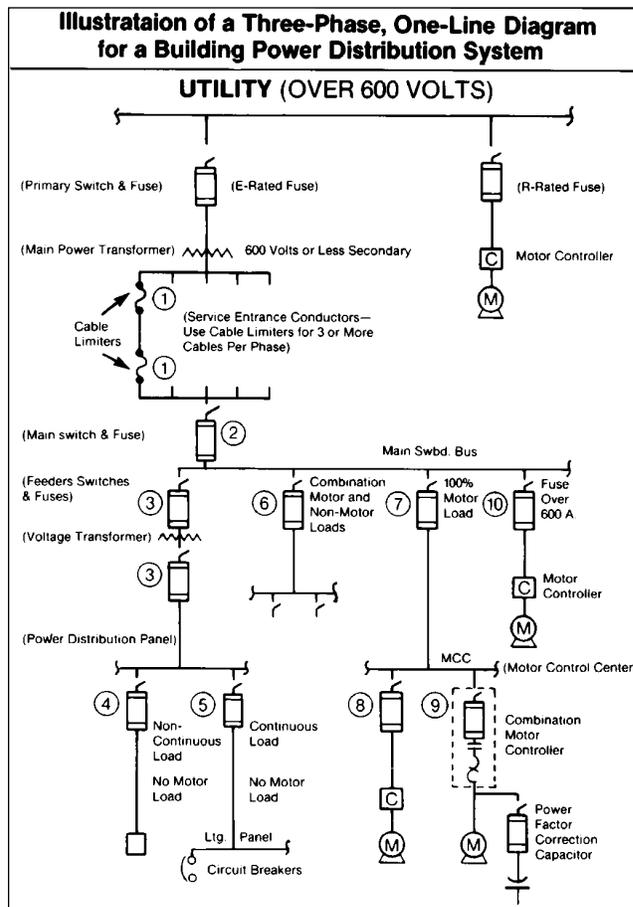


Figure 1

⑥ Feeder Circuit Fuse Size, Mixed Load (NEC 240.3, 430.63, 430.24):*

- a) 100% of non-continuous, non-motor load plus 125% of continuous, non-motor load.
- b) Determine non-continuous motor load (NEC 430.22(e)).
1.) Add to "a" above.
- c) Determine A/C or refrigeration load. (NEC 440.6). Add to "a" above.
- d) Feeder protective device shall have a rating or setting not greater than the rating of the largest branch device and sum of the FLCs of the other motors. (NEC 430.62)
- e) Recommended fuses: LENRK/LESRK, JDL, ECNR/ECSR, LCU, LCL.

*Do not exceed conductor ampacity.

⑦ Feeder Circuit Fuse Size, 100% Motor Load (NEC 240.3, 430.62 (a)).

- a) Determine non-continuous motorload (NEC 430.22 (e)).
- b) Determine load of A/C or refrigeration equipment (NEC 440.6) . Add to "a" above.
- c) Feeder protective device shall have a rating or setting not greater than the rating of the largest branch device and sum of the FLCs of the other motors. (NEC 430.62)
- d) Recommended fuses: LENRK/LESRK, JDL, ECNR/ECSR or LCL.

*Do not exceed conductor ampacity.

- ⑧ **Branch Circuit Fuse Size, Individual Motor Load, With Fuse Overload Protection** (No Starter Overload Relays): (NEC 430.32, 430.36):
- Motors with 1.15 Service Factor or temperature rise not over 40 Degrees C., size fuses at not more than 125% of the motor nameplate current rating.
 - For all other A-C motors, size fuses at not more than 115 %.
 - Best protection is obtained by measuring motor running current and sizing fuses at 125% of measured current for normal motor operation. Reference to "Average Time/Current Curves" is recommended.
 - Recommended Fuses: LENRK/LESRK, JDL, or ECNR/ECSR .
- ⑨ **Branch Circuit Fuse Size, Individual Motor Load, With Starter Overload Relays:** (NEC 430.32, 430.52):
- For "back-up" NEC® overload, ground fault and short-circuit protection size the fuses the same as (8 a, b) above, or the next standard size larger.
 - The fuse sizes in a) above may be increased as allowed by NEC® references. Generally, dual element fuses should not exceed 175% of motor nameplate F.L.A. and non-UL defined time-delay fuses not more than 300 %.
 - Recommended fuses: LENRK/LESRK, JDL, ECNR/ECSR or LCL.
- ⑩ **Fuse Sizing for Individual Large Motors With F.L.A. Above 480 Amps or Otherwise Require Class L Fuses** - (NEC 430.52):

Application Tips:

- Size fuses as closely as practical to the ampacity of the protected circuit components without the probability of unnecessary fuse opening from harmless, transient current surges. This usually requires a choice between time-delay and non-time-delay fuses.
- Use Class R fuse clips with Class R fuses to prevent installation of fuses with less interrupting rating or current limitation. Class H fuse reducers cannot be used with Class R fuse clips.
- When a conductor is oversized to prevent excess voltage drop, size the fuses for the ampacity of protected circuit components instead of oversizing fuses for the larger conductor.