COOPER Bussmann

How To Use Current-Limitation Charts

How to Use the Let-Through Charts

Using the example given, one can determine the pertinent let-through data for the KRP-C-800SP amp Low-Peak fuse. The Let-Through Chart pertaining to the 800A Low-Peak fuse is illustrated.

A. Determine the PEAK let-through CURRENT.

Step 1. Enter the chart on the Prospective Short-Circuit current scale at 86,000 amps and proceed vertically until the 800A fuse curve is intersected.

Step 2. Follow horizontally until the Instantaneous Peak Let-Through Current scale is intersected.

Step 3. Read the PEAK let-through CURRENT as 49,000A. (If a fuse had not been used, the peak current would have been 198,000A.)

B. Determine the APPARENT PROSPECTIVE RMS SYMMETRICAL let-through CURRENT.

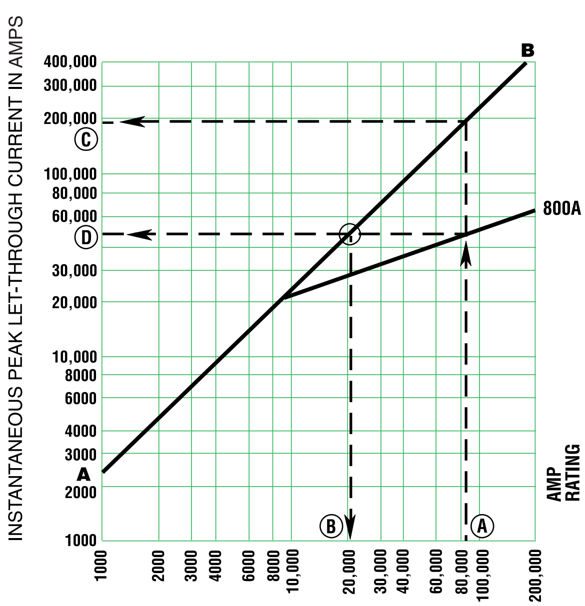
Step 1. Enter the chart on the Prospective Short-Circuit current scale at 86,000A and proceed vertically until the 800A fuse curve is intersected.

Step 2. Follow horizontally until line A-B is intersected.

Step 3. Proceed vertically down to the Prospective Short-Circuit Current.

Step 4. Read the APPARENT PROSPECTIVE RMS SYMMETRICAL let-through CURRENT as 21,000A. (The RMS SYMMETRICAL let-through CURRENT would be 86,000A if there were no fuse in the circuit.)

Current-Limitation Curves — Cooper Bussmann Low-Peak Time-Delay Fuse KRP-C-800SP



PROSPECTIVE SHORT-CIRCUIT CURRENT – SYMMETRICAL RMS AMPS

A I_{RMS} Available = 86,000 Amps
B I_{RMS} Let-Through = 21,000 Amps
C I_p Available = 198,000 Amps
D I_p Let-Through = 49,000 Amps

Most electrical equipment has a withstand rating that is defined in terms of an RMS symmetrical-short-circuit current, and in some cases, peak let-through current. These values have been established through short circuit testing of that equipment according to an accepted industry standard. Or, as is the case with conductors, the withstand rating is based on a mathematical calculation and is also expressed in an RMS short-circuit current.

If both the let-through currents (I_{RMS} and I_p) of the current-limiting fuse and the time it takes to clear the fault are less than the withstand rating of the electrical component, then that component will be protected from short circuit damage.

The following Table shows typical assumed short-circuit current ratings for various unmarked components.

Typical Short-Circuit Current Ratings For Unmarked Components*

Component	Short- Circuit Rating, kA
Industrial Control Equipment:	
a. Auxiliary Devices	5
b. Switches (other than Mercury Tube Type)	5
c. Mercury Tube Switches	
Rated over 60 amperes or over 250 volts	5
Rated 250 volts or less, 60 amperes or less, and over 2kVA	3.5
Rated 250 volts or less and 2kVA or less	1
Meter Socket Base	10
Photoelectric Switches	5
Receptacle (GFCI Type)	10
Receptacle (other than GFCI Type)	2
Snap Switch	5
Terminal Block	10
Thermostat	5

*Based upon information in UL 891 (Dead-Front Switchboards)

The following components will be analyzed by establishing the short-circuit withstand data of each component and then selecting the proper current-limiting fuses for protection:

- Wire and Cable
- Bus (Busway, Switchboards, Motor Control Centers and Panelboards)
- Transfer Switches
- HVAC Equipment
- Ballasts
- Circuit Breakers

A detailed analysis of motor circuit component protection is provided later in the section on motor circuits.

C. Clearing time

If the RMS Symmetrical available is greater than the point where the fuse characteristic curve intersects with the diagonal A-B line, then the fuse clearing time is ½ cycle or less. In this example, the intersection is approximately 9500A; so for short-circuit currents above approximately 9500A, this KRP-C-800SP fuse is current-limiting.

The current-limiting charts and tables for Cooper Bussmann fuses are in the rear of this book under “Current-Limiting Let-Through Charts.” Refer to these tables when analyzing component protection in the following sections.