

## How To Use Current-Limitation Charts

### Analysis of Current-Limiting Fuse Let-Through Charts

The degree of current-limitation of a given size and type of fuse depends, in general, upon the available short-circuit current that can be delivered by the electrical system. Current-limitation of fuses is best described in the form of a let-through chart that, when applied from a practical point of view, is useful to determine the let-through currents when a fuse opens.

Fuse let-through charts are plotted from actual test data. The test circuit that establishes line A-B corresponds to a short circuit power factor of 15%, that is associated with an X/R ratio of 6.6. The fuse curves represent the cutoff value of the prospective available short-circuit current under the given circuit conditions. Each type or class of fuse has its own family of let-through curves.

The let-through data has been generated by actual short-circuit tests of current-limiting fuses. It is important to understand how the curves are generated, and what circuit parameters affect the let-through curve data.

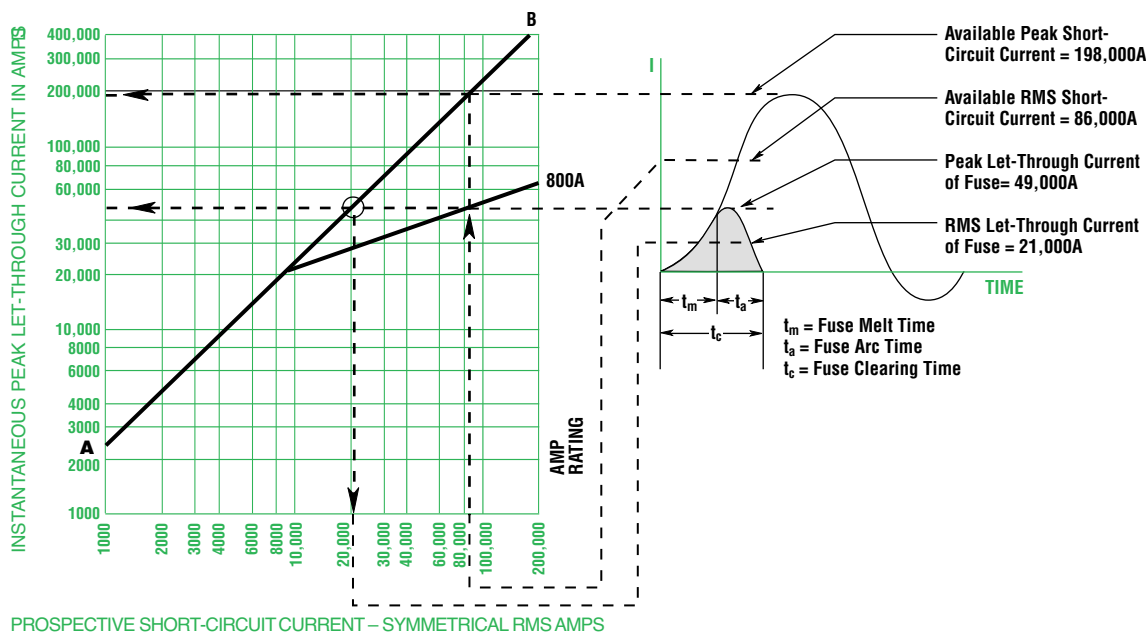
Typically, there are three circuit parameters that can affect fuse let-through performance for a given available short-circuit current. These are:

1. Short-circuit power factor
2. Short-circuit closing angle
3. Applied voltage

Current-limiting fuse let-through curves are generated under worst case conditions, based on these three variable parameters. The benefit to the user is a conservative resultant let-through current (both  $I_p$  and  $I_{RMS}$ ). Under actual field conditions, changing any one or a combination of these will result in lower let-through currents. This provides for an additional degree of reliability when applying fuses for equipment protection.

Current-Limiting Let-Through Charts for Cooper Bussmann fuses are near the back of this book.

### Analysis of a Current-Limiting Fuse



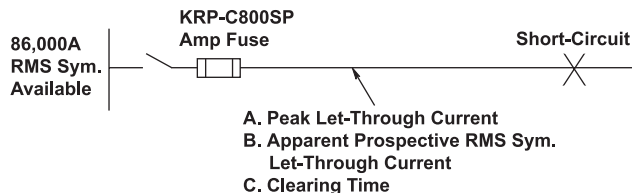
Prior to using the Fuse Let-Through Charts, it must be determined what let-through data is pertinent to equipment withstand ratings.

Equipment withstand ratings can be described as: How Much Fault Current can the equipment handle, and for How Long? Based on standards presently available, the most important data that can be obtained from the Fuse Let-Through Charts and their physical effects are the following:

- A. Peak let-through current: mechanical forces
- B. Apparent prospective RMS symmetrical let-through current: heating effect
- C. Clearing time: less than  $\frac{1}{2}$  cycle when fuse is in its current-limiting range (beyond where fuse curve intersects A-B line).

This is a typical example showing the short-circuit current available to an 800A circuit, an 800A Low-Peak current-limiting time-delay fuse, and the let-through data of interest.

### 800 Amp Low-Peak® Current-Limiting Time-Delay Fuse and Associated Let-Through Data



# Component Protection

## 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.

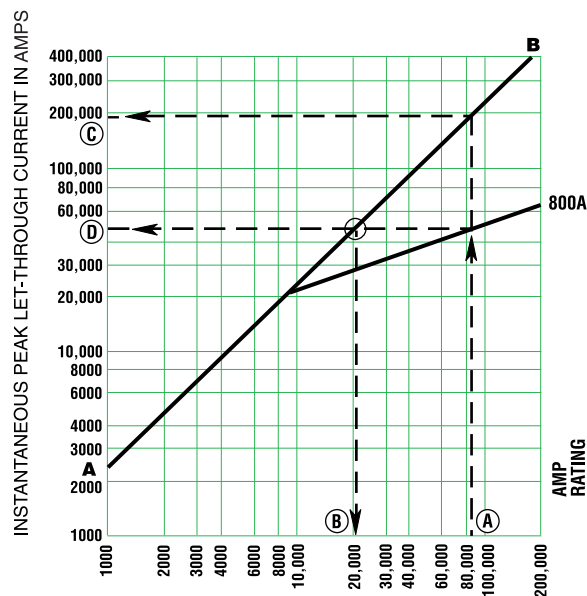
#### A. Determine the PEAK let-through CURRENT.

- 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 Amperes
- (B)  $I_{RMS}$  Let-Through = 21,000 Amperes
- (C)  $I_p$  Available = 198,000 Amperes
- (D)  $I_p$  Let-Through = 49,000 Amperes

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.

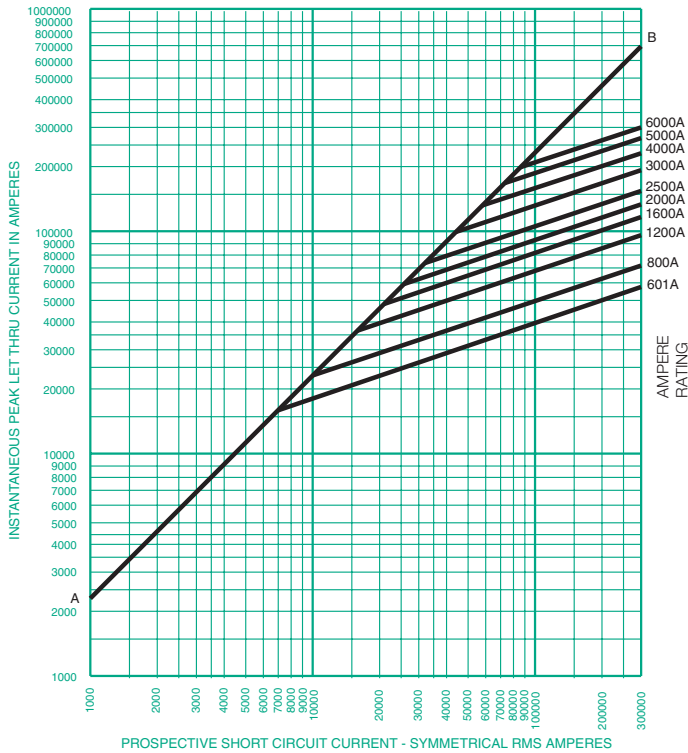
#### C. Clearing time

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.

See pages 67 to 69 for current-limiting definition and how to analyze these charts.

## Low-Peak Class L Time-Delay Fuses KRP-C\_SP

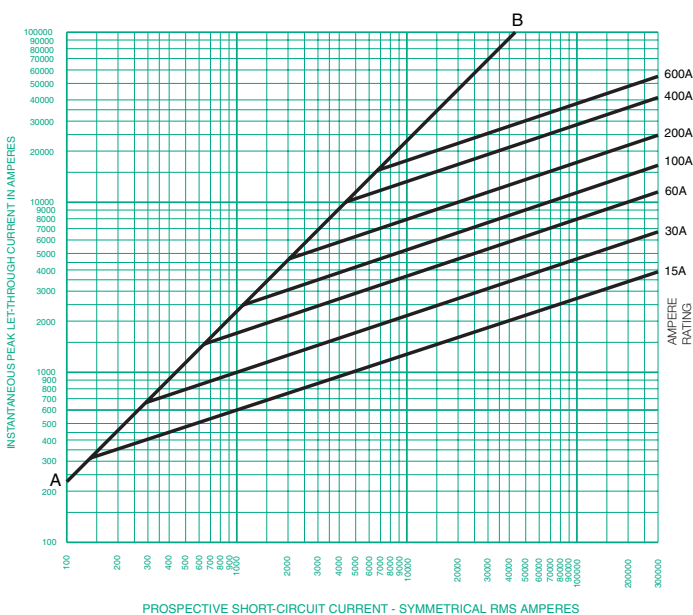


## KRP-C\_SP Fuse – RMS Let-Through Currents (kA)

| Prosp. Short C.C. | Fuse Size        |                  |                  |                  |                  |                  |                  |                  |                  |                  |
|-------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
|                   | 601              | 800              | 1200             | 1600             | 2000             | 2500             | 3000             | 4000             | 5000             | 6000             |
|                   | I <sub>RMS</sub> | I <sub>RMS</sub> | I <sub>RMS</sub> | I <sub>RMS</sub> | I <sub>RMS</sub> | I <sub>RMS</sub> | I <sub>RMS</sub> | I <sub>RMS</sub> | I <sub>RMS</sub> | I <sub>RMS</sub> |
| 5,000             | 5                | 5                | 5                | 5                | 5                | 5                | 5                | 5                | 5                | 5                |
| 10,000            | 8                | 10               | 10               | 10               | 10               | 10               | 10               | 10               | 10               | 10               |
| 15,000            | 9                | 12               | 15               | 15               | 15               | 15               | 15               | 15               | 15               | 15               |
| 20,000            | 10               | 13               | 17               | 20               | 20               | 20               | 20               | 20               | 20               | 20               |
| 25,000            | 11               | 14               | 19               | 22               | 25               | 25               | 25               | 25               | 25               | 25               |
| 30,000            | 11               | 14               | 20               | 24               | 27               | 30               | 30               | 30               | 30               | 30               |
| 35,000            | 12               | 15               | 21               | 25               | 29               | 35               | 35               | 35               | 35               | 35               |
| 40,000            | 13               | 16               | 22               | 26               | 30               | 35               | 40               | 40               | 40               | 40               |
| 50,000            | 14               | 17               | 23               | 28               | 32               | 37               | 50               | 50               | 50               | 50               |
| 60,000            | 15               | 18               | 25               | 30               | 34               | 40               | 49               | 60               | 60               | 60               |
| 70,000            | 15               | 19               | 26               | 32               | 36               | 42               | 52               | 62               | 70               | 70               |
| 80,000            | 16               | 20               | 27               | 33               | 38               | 44               | 54               | 65               | 76               | 80               |
| 90,000            | 17               | 21               | 29               | 34               | 39               | 45               | 56               | 67               | 79               | 90               |
| 100,000           | 17               | 22               | 30               | 36               | 41               | 47               | 58               | 70               | 81               | 100              |
| 150,000           | 20               | 25               | 34               | 41               | 47               | 54               | 67               | 80               | 93               | 104              |
| 200,000           | 22               | 27               | 37               | 45               | 51               | 59               | 73               | 87               | 102              | 114              |
| 250,000           | 24               | 29               | 40               | 49               | 55               | 64               | 79               | 94               | 110              | 123              |
| 300,000           | 25               | 31               | 43               | 52               | 59               | 68               | 84               | 100              | 117              | 130              |

Note: For I<sub>RMS</sub> value at 300,000 amperes, consult Factory.

## Low-Peak Class J, Dual-Element Time-Delay Fuses LPJ\_SP



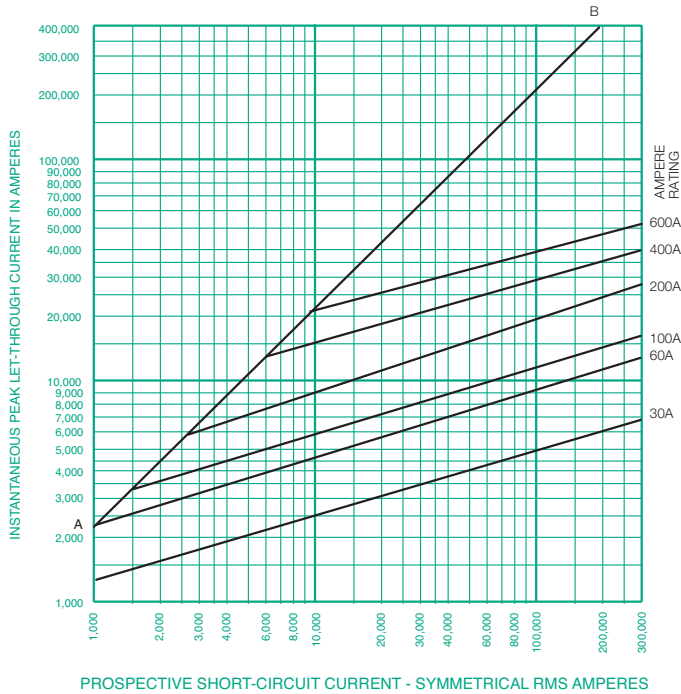
## LPJ\_SP Fuse – RMS Let-Through Currents (kA)

| Prosp. Short C.C. | Fuse Size        |                  |                  |                  |                  |                  |                  |
|-------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
|                   | 15               | 30               | 60               | 100              | 200              | 400              | 600              |
|                   | I <sub>RMS</sub> | I <sub>RMS</sub> | I <sub>RMS</sub> | I <sub>RMS</sub> | I <sub>RMS</sub> | I <sub>RMS</sub> | I <sub>RMS</sub> |
| 1,000             | 1                | 1                | 1                | 1                | 1                | 1                | 1                |
| 3,000             | 1                | 1                | 1                | 2                | 2                | 3                | 3                |
| 5,000             | 1                | 1                | 1                | 2                | 3                | 5                | 5                |
| 10,000            | 1                | 1                | 2                | 2                | 4                | 6                | 8                |
| 15,000            | 1                | 1                | 2                | 3                | 4                | 7                | 9                |
| 20,000            | 1                | 1                | 2                | 3                | 4                | 7                | 10               |
| 25,000            | 1                | 1                | 2                | 3                | 5                | 8                | 10               |
| 30,000            | 1                | 1                | 2                | 3                | 5                | 8                | 11               |
| 35,000            | 1                | 1                | 2                | 4                | 5                | 9                | 12               |
| 40,000            | 1                | 2                | 3                | 4                | 6                | 9                | 12               |
| 50,000            | 1                | 2                | 3                | 4                | 6                | 10               | 13               |
| 60,000            | 1                | 2                | 3                | 4                | 6                | 11               | 14               |
| 80,000            | 1                | 2                | 3                | 5                | 7                | 12               | 15               |
| 100,000           | 1                | 2                | 4                | 5                | 8                | 12               | 17               |
| 150,000           | 1                | 2                | 4                | 6                | 9                | 14               | 19               |
| 200,000           | 2                | 3                | 4                | 6                | 9                | 16               | 21               |
| 250,000           | 2                | 3                | 5                | 7                | 10               | 17               | 23               |
| 300,000           | 2                | 3                | 5                | 7                | 11               | 18               | 24               |

Note: For I<sub>RMS</sub> value at 300,000 amperes, consult Factory.

See pages 67 to 69 for current-limiting definition and how to analyze these charts.

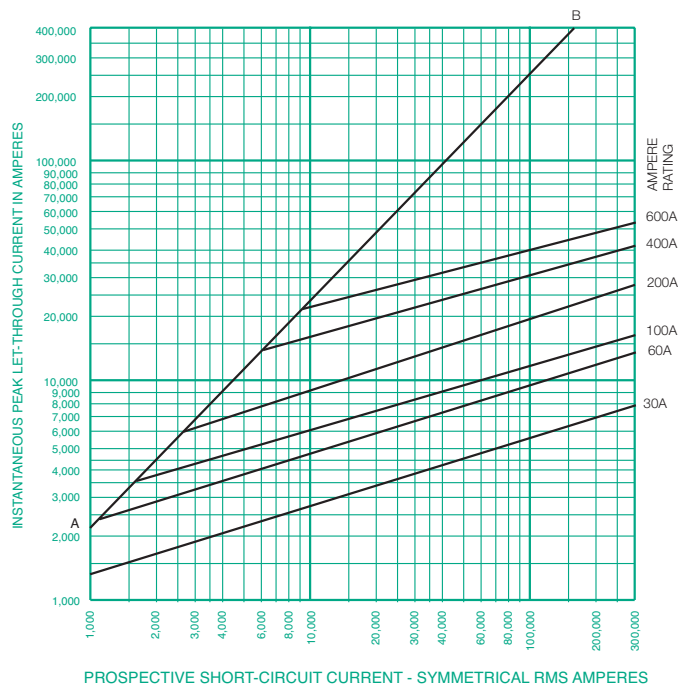
## Low-Peak Class RK1 Dual-Element Time-Delay Fuses LPN-RK\_SP



LPN-RK\_SP – RMS Let-Through Currents (kA)

| Prosp. Short C.C. | Fuse Size              |                        |                         |                         |                         |                         |
|-------------------|------------------------|------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
|                   | 30<br>I <sub>RMS</sub> | 60<br>I <sub>RMS</sub> | 100<br>I <sub>RMS</sub> | 200<br>I <sub>RMS</sub> | 400<br>I <sub>RMS</sub> | 600<br>I <sub>RMS</sub> |
| 1,000             | 1                      | 1                      | 1                       | 1                       | 1                       | 1                       |
| 2,000             | 1                      | 1                      | 2                       | 2                       | 2                       | 2                       |
| 3,000             | 1                      | 1                      | 2                       | 3                       | 3                       | 3                       |
| 5,000             | 1                      | 2                      | 2                       | 3                       | 5                       | 5                       |
| 10,000            | 1                      | 2                      | 3                       | 4                       | 7                       | 9                       |
| 15,000            | 1                      | 2                      | 3                       | 5                       | 8                       | 11                      |
| 20,000            | 1                      | 3                      | 3                       | 5                       | 8                       | 11                      |
| 25,000            | 1                      | 3                      | 3                       | 5                       | 9                       | 12                      |
| 30,000            | 2                      | 3                      | 4                       | 6                       | 9                       | 12                      |
| 35,000            | 2                      | 3                      | 4                       | 6                       | 10                      | 13                      |
| 40,000            | 2                      | 3                      | 4                       | 6                       | 10                      | 13                      |
| 50,000            | 2                      | 3                      | 4                       | 7                       | 11                      | 14                      |
| 60,000            | 2                      | 3                      | 4                       | 7                       | 11                      | 16                      |
| 70,000            | 2                      | 3                      | 4                       | 7                       | 12                      | 16                      |
| 80,000            | 2                      | 4                      | 5                       | 8                       | 12                      | 16                      |
| 90,000            | 2                      | 4                      | 5                       | 7                       | 13                      | 17                      |
| 100,000           | 2                      | 4                      | 5                       | 8                       | 13                      | 17                      |
| 150,000           | 2                      | 4                      | 6                       | 9                       | 15                      | 19                      |
| 200,000           | 3                      | 5                      | 6                       | 11                      | 16                      | 20                      |
| 250,000           | 3                      | 5                      | 7                       | 11                      | 17                      | 21                      |
| 300,000           | 3                      | 6                      | 7                       | 12                      | 18                      | 22                      |

## Low-Peak Class RK1 Dual-Element Time-Delay Fuses LPS-RK\_SP

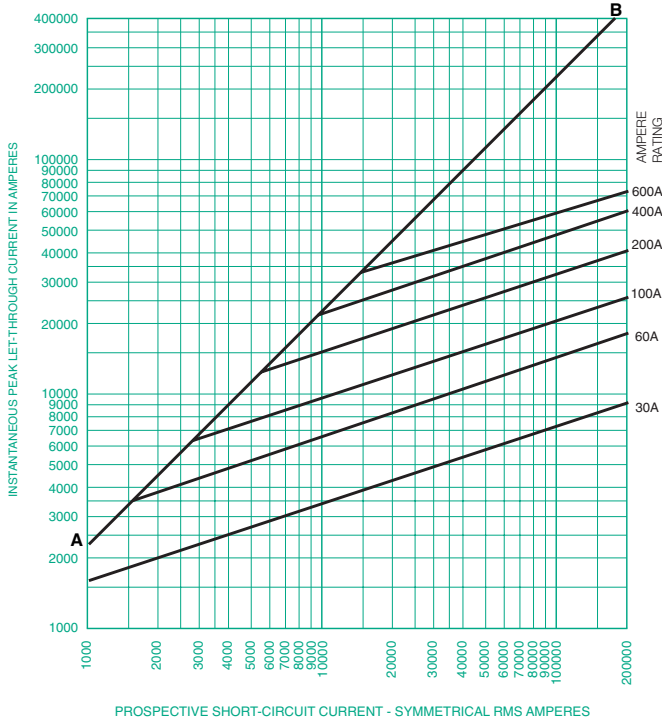


LPS-RK\_SP – RMS Let-Through Currents (kA)

| Prosp. Short C.C. | Fuse Size              |                        |                         |                         |                         |                         |
|-------------------|------------------------|------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
|                   | 30<br>I <sub>RMS</sub> | 60<br>I <sub>RMS</sub> | 100<br>I <sub>RMS</sub> | 200<br>I <sub>RMS</sub> | 400<br>I <sub>RMS</sub> | 600<br>I <sub>RMS</sub> |
| 1,000             | 1                      | 1                      | 1                       | 1                       | 1                       | 1                       |
| 2,000             | 1                      | 1                      | 2                       | 2                       | 2                       | 2                       |
| 3,000             | 1                      | 1                      | 2                       | 3                       | 3                       | 3                       |
| 5,000             | 1                      | 2                      | 2                       | 3                       | 5                       | 5                       |
| 10,000            | 1                      | 2                      | 3                       | 4                       | 7                       | 10                      |
| 15,000            | 1                      | 2                      | 3                       | 5                       | 8                       | 11                      |
| 20,000            | 2                      | 3                      | 3                       | 5                       | 9                       | 12                      |
| 25,000            | 2                      | 3                      | 4                       | 6                       | 9                       | 12                      |
| 30,000            | 2                      | 3                      | 4                       | 6                       | 10                      | 13                      |
| 35,000            | 2                      | 3                      | 4                       | 6                       | 10                      | 13                      |
| 40,000            | 2                      | 3                      | 4                       | 6                       | 10                      | 14                      |
| 50,000            | 2                      | 3                      | 5                       | 7                       | 11                      | 15                      |
| 60,000            | 2                      | 4                      | 5                       | 7                       | 12                      | 15                      |
| 70,000            | 2                      | 4                      | 5                       | 8                       | 13                      | 16                      |
| 80,000            | 2                      | 4                      | 5                       | 8                       | 13                      | 16                      |
| 90,000            | 2                      | 4                      | 5                       | 8                       | 13                      | 17                      |
| 100,000           | 2                      | 4                      | 6                       | 9                       | 14                      | 17                      |
| 150,000           | 3                      | 5                      | 6                       | 10                      | 15                      | 19                      |
| 200,000           | 3                      | 5                      | 7                       | 11                      | 16                      | 21                      |
| 250,000           | 3                      | 6                      | 7                       | 12                      | 17                      | 22                      |
| 300,000           | 3                      | 6                      | 7                       | 12                      | 18                      | 23                      |

See pages 67 to 69 for current-limiting definition and how to analyze these charts.

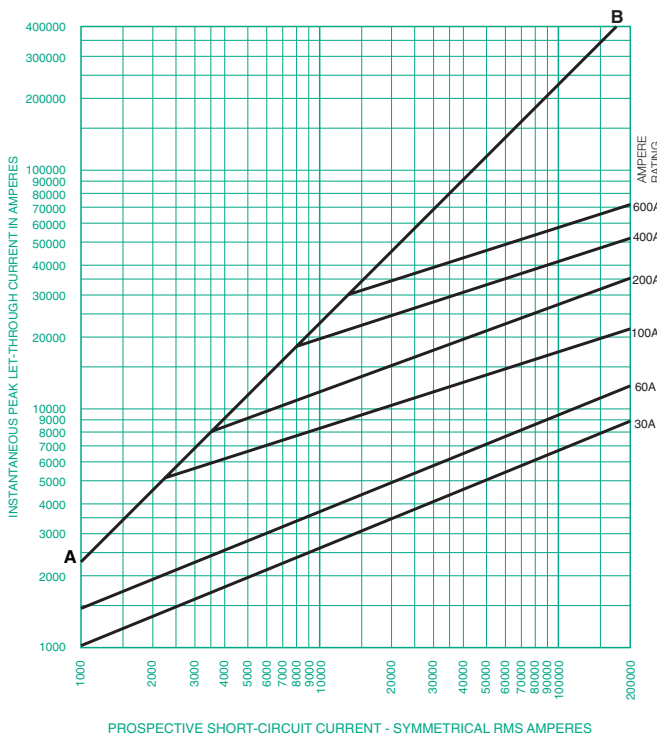
## Fusetron Class RK5 Dual-Element Time-Delay Fuses FRN-R



### FRN-R – RMS Let-Through Currents (kA)

| Prosp. Short C.C. | Fuse Size       |                 |                  |                  |                  |                  |
|-------------------|-----------------|-----------------|------------------|------------------|------------------|------------------|
|                   | 30<br>$I_{RMS}$ | 60<br>$I_{RMS}$ | 100<br>$I_{RMS}$ | 200<br>$I_{RMS}$ | 400<br>$I_{RMS}$ | 600<br>$I_{RMS}$ |
| 5,000             | 1               | 2               | 3                | 5                | 5                | 5                |
| 10,000            | 2               | 3               | 4                | 7                | 10               | 10               |
| 15,000            | 2               | 3               | 5                | 8                | 11               | 15               |
| 20,000            | 2               | 4               | 5                | 8                | 12               | 16               |
| 25,000            | 2               | 4               | 6                | 9                | 13               | 17               |
| 30,000            | 2               | 4               | 6                | 10               | 14               | 18               |
| 35,000            | 2               | 4               | 6                | 10               | 15               | 19               |
| 40,000            | 2               | 5               | 7                | 11               | 15               | 20               |
| 50,000            | 3               | 5               | 7                | 11               | 17               | 21               |
| 60,000            | 3               | 5               | 8                | 12               | 18               | 22               |
| 70,000            | 3               | 6               | 8                | 13               | 19               | 23               |
| 80,000            | 3               | 6               | 8                | 13               | 19               | 24               |
| 90,000            | 3               | 6               | 9                | 14               | 20               | 25               |
| 100,000           | 3               | 6               | 9                | 14               | 21               | 26               |
| 150,000           | 4               | 7               | 10               | 16               | 24               | 29               |
| 200,000           | 4               | 8               | 11               | 18               | 26               | 32               |

## Fusetron Class RK5 Dual-Element Time-Delay Fuses FRS-R

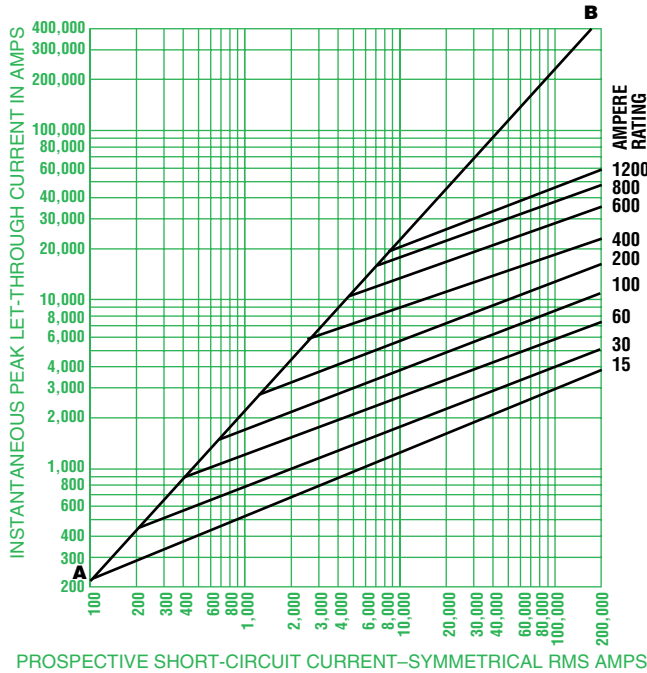


### FRS-R – RMS Let-Through Currents (kA)

| Prosp. Short C.C. | Fuse Size       |                 |                  |                  |                  |                  |
|-------------------|-----------------|-----------------|------------------|------------------|------------------|------------------|
|                   | 30<br>$I_{RMS}$ | 60<br>$I_{RMS}$ | 100<br>$I_{RMS}$ | 200<br>$I_{RMS}$ | 400<br>$I_{RMS}$ | 600<br>$I_{RMS}$ |
| 5,000             | 1               | 1               | 3                | 4                | 5                | 5                |
| 10,000            | 1               | 2               | 4                | 5                | 9                | 10               |
| 15,000            | 1               | 2               | 4                | 6                | 10               | 14               |
| 20,000            | 2               | 2               | 5                | 7                | 11               | 15               |
| 25,000            | 2               | 2               | 5                | 7                | 12               | 17               |
| 30,000            | 2               | 3               | 5                | 8                | 13               | 18               |
| 35,000            | 2               | 3               | 5                | 8                | 13               | 18               |
| 40,000            | 2               | 3               | 6                | 9                | 14               | 19               |
| 50,000            | 2               | 3               | 6                | 9                | 14               | 20               |
| 60,000            | 2               | 3               | 6                | 10               | 15               | 22               |
| 70,000            | 3               | 4               | 7                | 11               | 17               | 23               |
| 80,000            | 3               | 4               | 7                | 12               | 17               | 23               |
| 90,000            | 3               | 4               | 7                | 12               | 17               | 24               |
| 100,000           | 3               | 4               | 8                | 13               | 18               | 25               |
| 150,000           | 3               | 5               | 9                | 14               | 21               | 27               |
| 200,000           | 4               | 6               | 9                | 16               | 23               | 32               |

See pages 67 to 69 for current-limiting definition and how to analyze these charts.

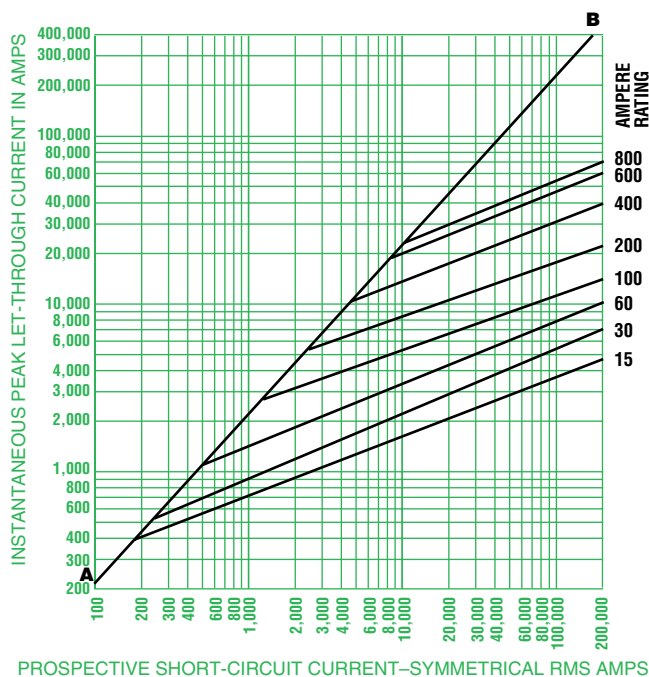
## Tron Class T Fast-Acting Fuses JJN



### JJN – RMS Let-Through Current (kA)

| Prosp. Short C.C. | Fuse Size              |                        |                        |                         |                         |                         |                         |                         |                          |
|-------------------|------------------------|------------------------|------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|--------------------------|
|                   | 15<br>I <sub>RMS</sub> | 30<br>I <sub>RMS</sub> | 60<br>I <sub>RMS</sub> | 100<br>I <sub>RMS</sub> | 200<br>I <sub>RMS</sub> | 400<br>I <sub>RMS</sub> | 600<br>I <sub>RMS</sub> | 800<br>I <sub>RMS</sub> | 1200<br>I <sub>RMS</sub> |
| 500               | 1                      | 1                      | 1                      | 1                       | 1                       | 1                       | 1                       | 1                       | 1                        |
| 1,000             | 1                      | 1                      | 1                      | 1                       | 1                       | 1                       | 1                       | 1                       | 1                        |
| 5,000             | 1                      | 1                      | 1                      | 1                       | 2                       | 3                       | 5                       | 5                       | 5                        |
| 10,000            | 1                      | 1                      | 1                      | 2                       | 2                       | 4                       | 6                       | 7                       | 9                        |
| 15,000            | 1                      | 1                      | 1                      | 2                       | 3                       | 4                       | 6                       | 9                       | 10                       |
| 20,000            | 1                      | 1                      | 1                      | 2                       | 3                       | 5                       | 7                       | 10                      | 11                       |
| 25,000            | 1                      | 1                      | 2                      | 2                       | 3                       | 5                       | 7                       | 10                      | 12                       |
| 30,000            | 1                      | 1                      | 2                      | 2                       | 3                       | 5                       | 8                       | 11                      | 13                       |
| 35,000            | 1                      | 1                      | 2                      | 3                       | 4                       | 6                       | 8                       | 11                      | 13                       |
| 40,000            | 1                      | 1                      | 2                      | 3                       | 4                       | 6                       | 9                       | 11                      | 13                       |
| 50,000            | 1                      | 1                      | 2                      | 3                       | 4                       | 7                       | 9                       | 12                      | 15                       |
| 60,000            | 1                      | 1                      | 2                      | 3                       | 4                       | 7                       | 10                      | 13                      | 16                       |
| 70,000            | 1                      | 1                      | 2                      | 3                       | 5                       | 7                       | 10                      | 14                      | 17                       |
| 80,000            | 1                      | 2                      | 2                      | 3                       | 5                       | 8                       | 11                      | 15                      | 17                       |
| 90,000            | 1                      | 2                      | 2                      | 3                       | 6                       | 8                       | 11                      | 15                      | 18                       |
| 100,000           | 1                      | 2                      | 2                      | 4                       | 6                       | 8                       | 12                      | 16                      | 19                       |
| 150,000           | 1                      | 2                      | 3                      | 4                       | 6                       | 9                       | 13                      | 17                      | 22                       |
| 200,000           | 2                      | 2                      | 3                      | 4                       | 7                       | 9                       | 15                      | 19                      | 23                       |

## Tron Class T Fast-Acting Fuses JJS

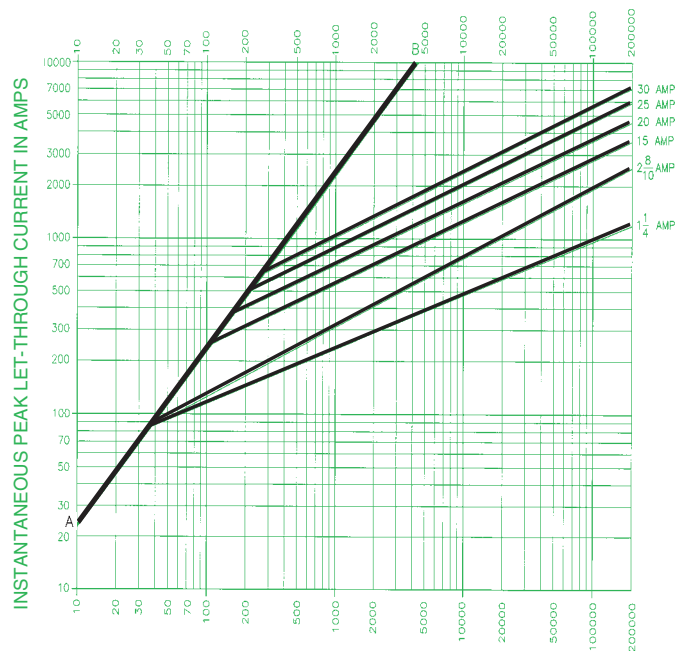


### JJS – RMS Let-Through Current (kA)

| Prosp. Short C.C. | Fuse Size              |                        |                        |                         |                         |                         |                         |                         |
|-------------------|------------------------|------------------------|------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
|                   | 15<br>I <sub>RMS</sub> | 30<br>I <sub>RMS</sub> | 60<br>I <sub>RMS</sub> | 100<br>I <sub>RMS</sub> | 200<br>I <sub>RMS</sub> | 400<br>I <sub>RMS</sub> | 600<br>I <sub>RMS</sub> | 800<br>I <sub>RMS</sub> |
| 500               | 1                      | 1                      | 1                      | 1                       | 1                       | 1                       | 1                       | 1                       |
| 1,000             | 1                      | 1                      | 1                      | 1                       | 1                       | 1                       | 1                       | 1                       |
| 5,000             | 1                      | 1                      | 1                      | 2                       | 3                       | 4                       | 5                       | 5                       |
| 10,000            | 1                      | 1                      | 1                      | 2                       | 3                       | 6                       | 8                       | 9                       |
| 15,000            | 1                      | 1                      | 2                      | 3                       | 4                       | 7                       | 10                      | 11                      |
| 20,000            | 1                      | 1                      | 2                      | 3                       | 4                       | 7                       | 10                      | 12                      |
| 25,000            | 1                      | 1                      | 2                      | 3                       | 5                       | 7                       | 11                      | 13                      |
| 30,000            | 1                      | 1                      | 2                      | 3                       | 5                       | 8                       | 12                      | 14                      |
| 35,000            | 1                      | 1                      | 2                      | 3                       | 5                       | 9                       | 13                      | 15                      |
| 40,000            | 1                      | 2                      | 2                      | 4                       | 5                       | 9                       | 13                      | 15                      |
| 50,000            | 1                      | 2                      | 2                      | 4                       | 6                       | 10                      | 14                      | 17                      |
| 60,000            | 1                      | 2                      | 3                      | 4                       | 6                       | 10                      | 16                      | 18                      |
| 70,000            | 1                      | 2                      | 3                      | 4                       | 7                       | 11                      | 17                      | 19                      |
| 80,000            | 1                      | 2                      | 3                      | 4                       | 7                       | 11                      | 17                      | 20                      |
| 90,000            | 1                      | 2                      | 3                      | 4                       | 7                       | 12                      | 18                      | 21                      |
| 100,000           | 2                      | 2                      | 3                      | 5                       | 7                       | 12                      | 19                      | 22                      |
| 150,000           | 2                      | 3                      | 4                      | 6                       | 8                       | 14                      | 22                      | 25                      |
| 200,000           | 2                      | 3                      | 4                      | 6                       | 9                       | 16                      | 24                      | 28                      |

See pages 67 to 69 for current-limiting definition and how to analyze these charts.

## Low-Peak Class CC Time-Delay Fuses LP-CC

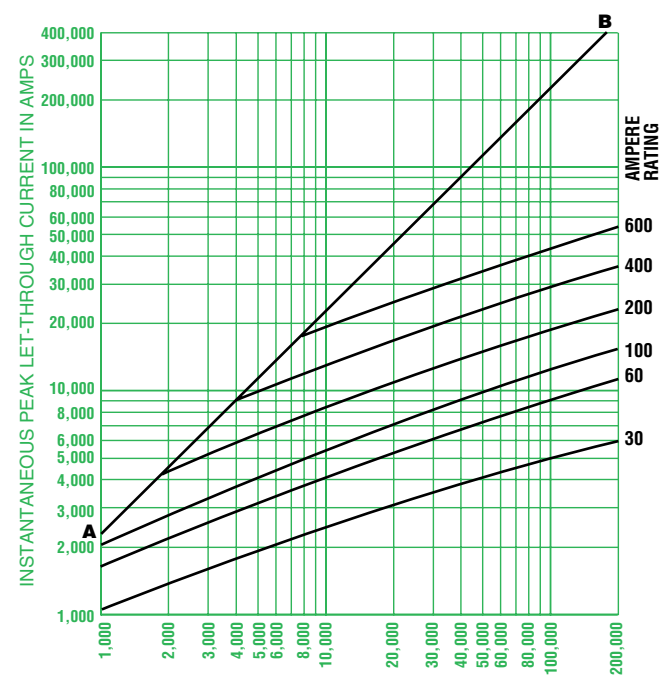


PROSPECTIVE SHORT-CIRCUIT CURRENT—SYMMETRICAL RMS AMPS

## LP-CC – RMS Let-Through Currents (A)

| Prosp. Short C.C. | Fuse Size        |                                |                  |                  |                  |                  |
|-------------------|------------------|--------------------------------|------------------|------------------|------------------|------------------|
|                   | 1/4              | 2 <sup>9</sup> / <sub>10</sub> | 15               | 20               | 25               | 30               |
|                   | I <sub>RMS</sub> | I <sub>RMS</sub>               | I <sub>RMS</sub> | I <sub>RMS</sub> | I <sub>RMS</sub> | I <sub>RMS</sub> |
| 1,000             | 100              | 135                            | 240              | 305              | 380              | 435              |
| 3,000             | 140              | 210                            | 350              | 440              | 575              | 580              |
| 5,000             | 165              | 255                            | 420              | 570              | 690              | 710              |
| 10,000            | 210              | 340                            | 540              | 700              | 870              | 1000             |
| 20,000            | 260              | 435                            | 680              | 870              | 1090             | 1305             |
| 30,000            | 290              | 525                            | 800              | 1030             | 1300             | 1520             |
| 40,000            | 315              | 610                            | 870              | 1150             | 1390             | 1700             |
| 50,000            | 340              | 650                            | 915              | 1215             | 1520             | 1820             |
| 60,000            | 350              | 735                            | 1050             | 1300             | 1650             | 1980             |
| 80,000            | 390              | 785                            | 1130             | 1500             | 1780             | 2180             |
| 100,000           | 420              | 830                            | 1210             | 1600             | 2000             | 2400             |
| 200,000           | 525              | 1100                           | 1600             | 2000             | 2520             | 3050             |

## Limitron Class J Fast-Acting Fuses JKS



PROSPECTIVE SHORT-CIRCUIT CURRENT—SYMMETRICAL RMS AMPS

## JKS – RMS Let-Through Currents (kA)

| Prosp. Short C.C. | Fuse Size        |                  |                  |                  |                  |                  |
|-------------------|------------------|------------------|------------------|------------------|------------------|------------------|
|                   | 30               | 60               | 100              | 200              | 400              | 600              |
|                   | I <sub>RMS</sub> | I <sub>RMS</sub> | I <sub>RMS</sub> | I <sub>RMS</sub> | I <sub>RMS</sub> | I <sub>RMS</sub> |
| 5,000             | 1                | 1                | 2                | 3                | 4                | 5                |
| 10,000            | 1                | 2                | 3                | 4                | 6                | 9                |
| 15,000            | 1                | 2                | 3                | 4                | 7                | 10               |
| 20,000            | 1                | 2                | 3                | 5                | 8                | 11               |
| 25,000            | 2                | 3                | 3                | 6                | 9                | 12               |
| 30,000            | 2                | 3                | 3                | 6                | 9                | 13               |
| 35,000            | 2                | 3                | 4                | 6                | 9                | 13               |
| 40,000            | 2                | 3                | 4                | 7                | 10               | 14               |
| 50,000            | 2                | 3                | 4                | 7                | 10               | 15               |
| 60,000            | 2                | 3                | 5                | 7                | 11               | 16               |
| 70,000            | 2                | 3                | 5                | 8                | 11               | 17               |
| 80,000            | 2                | 3                | 5                | 8                | 12               | 17               |
| 90,000            | 2                | 4                | 6                | 9                | 13               | 18               |
| 100,000           | 2                | 4                | 6                | 9                | 13               | 18               |
| 150,000           | 2                | 5                | 6                | 9                | 14               | 22               |
| 200,000           | 3                | 5                | 7                | 10               | 16               | 24               |