

## High Speed Fuses

Square body DIN 43 653 — 690V/700V (IEC/UL):  
40-2000A

## 690V/700V (IEC/UL) 40-2000A

## Specifications

Description: Square body DIN 43 653 stud-mount high speed fuses.

**Dimensions:** See dimensions illustration.

## Ratings:

Volts: — 690Vac (IEC)

— 700Vac (UL)

Amps: — 40-2000A

IR: — 200kA RMS Sym.

## Agency Information: CE,

Designed and tested to IEC

60269: Part 4, UL Recognized.

Consult Cooper Bussmann for UL

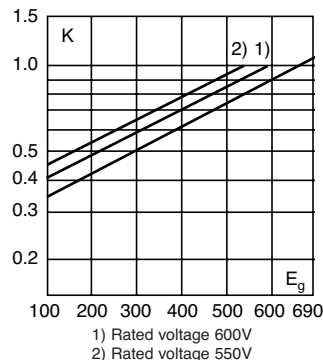
Recognition/CSA Component

Acceptance status.

## Electrical Characteristics

Total Clearing  $I^2t$ 

The total clearing  $I^2t$  at rated voltage and at power factor of 15% are given in the electrical characteristics. For other voltages, the clearing  $I^2t$  is found by multiplying by correction factor, K, given as a function of applied working voltage,  $E_g$ , (rms).



## Dimensions (mm)

Type -/80, -TN/80, -/110, -TN/110.

| Size | A  | B   | B** | C  | C** | D*** | E  | H  |
|------|----|-----|-----|----|-----|------|----|----|
| 1*   | 50 | 104 | 134 | 78 | 108 | 58   | 45 | 22 |
| 1    | 50 | 108 | 138 | 78 | 108 | 66   | 53 | 25 |
| 2    | 50 | 108 | 138 | 78 | 108 | 75   | 61 | 25 |
| 3    | 51 | 109 | 139 | 78 | 108 | 90   | 76 | 30 |

\*\*Valid for fuses type -/110, -TN/110.

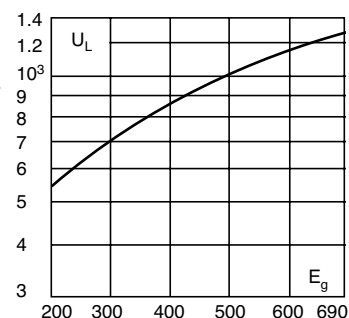
\*\*\*Microswitch.

1mm = 0.0394" / 1" = 25.4mm



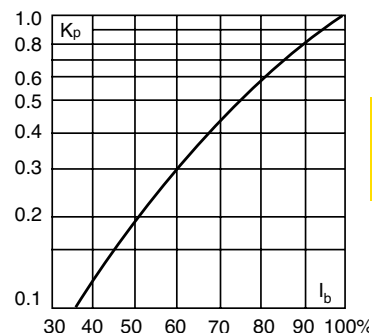
## Arc Voltage

This curve gives the peak arc voltage,  $U_L$ , which may appear across the fuse during its operation as a function of the applied working voltage,  $E_g$ , (rms) at a power factor of 15%.



## Power Losses

Watts loss at rated current is given in the electrical characteristics. The curve allows the calculation of the power losses at load currents lower than the rated current. The correction factor,  $K_p$ , is given as a function of the RMS load current,  $I_b$ , in % of the rated current.

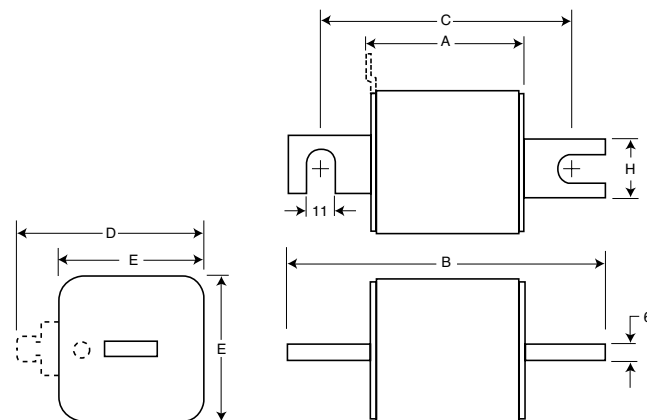


## Features and Benefits

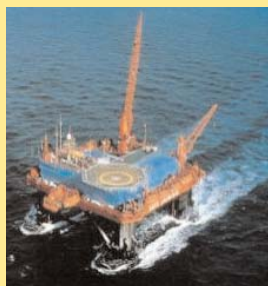
- Excellent dc performance
- Low arc voltage and low energy let-through ( $I^2t$ )
- Low watts loss
- Superior cycling capability

## Typical Applications

- DC common bus
- DC drives
- Power converters/rectifiers
- Reduced voltage starters



## Did You Know?



Cooper Bussmann® fuses are used in all kinds of oil-well drilling equipment around the world.

## High Speed Fuses

# Square body DIN 43 653 — 690V/700V (IEC/UL): 40-2000A

### Catalog Numbers

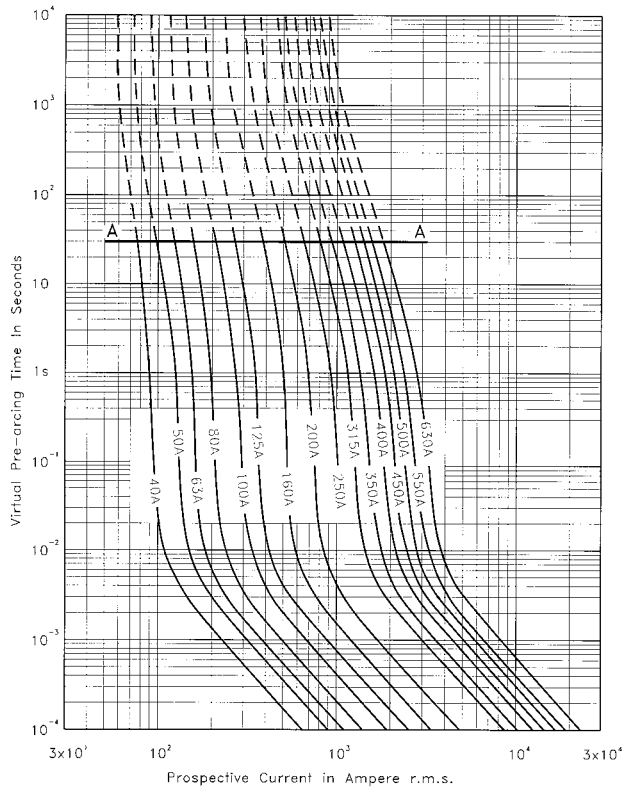
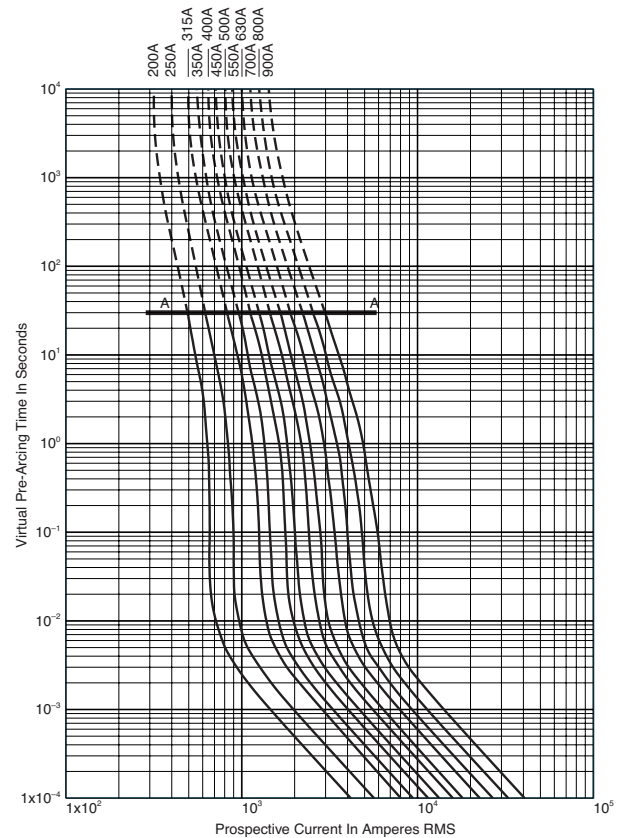
| Catalog Numbers                      |                                            |                              |                                             | Size | Electrical Characteristics |                    |          |                  |
|--------------------------------------|--------------------------------------------|------------------------------|---------------------------------------------|------|----------------------------|--------------------|----------|------------------|
| -/80<br>Visual<br>Watts<br>Indicator | -TN/80<br>Type T<br>Indicator<br>for Micro | -/110<br>Visual<br>Indicator | -TN/110<br>Type T<br>Indicator<br>for Micro |      | Rated<br>RMS-Amps          | I²t (A² Sec)       |          | Clearing<br>Loss |
|                                      |                                            |                              |                                             |      |                            | Current<br>Pre-arc | at 660V  |                  |
| 170M3008                             | 170M3058                                   | 170M3158                     | 170M3208                                    | 1*   | 40                         | 40                 | 270      | 9                |
| 170M3009                             | 170M3059                                   | 170M3159                     | 170M3209                                    |      | 50                         | 77                 | 515      | 11               |
| 170M3010                             | 170M3060                                   | 170M3160                     | 170M3210                                    |      | 63                         | 115                | 770      | 14               |
| 170M3011                             | 170M3061                                   | 170M3161                     | 170M3211                                    |      | 80                         | 185                | 1250     | 18               |
| 170M3012                             | 170M3062                                   | 170M3162                     | 170M3212                                    |      | 100                        | 360                | 2450     | 21               |
| 170M3013                             | 170M3063                                   | 170M3163                     | 170M3213                                    |      | 125                        | 550                | 3700     | 26               |
| 170M3014                             | 170M3064                                   | 170M3164                     | 170M3214                                    |      | 160                        | 1100               | 7500     | 30               |
| 170M3015                             | 170M3065                                   | 170M3165                     | 170M3215                                    |      | 200                        | 2200               | 15000    | 35               |
| 170M3016                             | 170M3066                                   | 170M3166                     | 170M3216                                    |      | 250                        | 4200               | 28500    | 40               |
| 170M3017                             | 170M3067                                   | 170M3167                     | 170M3217                                    |      | 315                        | 7000               | 46500    | 50               |
| 170M3018                             | 170M3068                                   | 170M3168                     | 170M3218                                    |      | 350                        | 10000              | 68500    | 55               |
| 170M3019                             | 170M3069                                   | 170M3169                     | 170M3219                                    |      | 400                        | 15000              | 105000   | 60               |
| 170M3020                             | 170M3070                                   | 170M3170                     | 170M3220                                    |      | 450                        | 21000              | 140000   | 65               |
| 170M3021                             | 170M3071                                   | 170M3171                     | 170M3221                                    |      | 500                        | 27000              | 180000   | 70               |
| 170M3022                             | 170M3072                                   | 170M3172                     | 170M3222                                    |      | 550                        | 34000              | 230000   | 75               |
| 170M3023                             | 170M3073                                   | 170M3173                     | 170M3223                                    |      | 630                        | 48500              | 325000   | 80               |
| 170M4008                             | 170M4058                                   | 170M4158                     | 170M4208                                    | 1    | 200                        | 1650               | 11500    | 45               |
| 170M4009                             | 170M4059                                   | 170M4159                     | 170M4209                                    |      | 250                        | 3100               | 21000    | 55               |
| 170M4010                             | 170M4060                                   | 170M4160                     | 170M4210                                    |      | 315                        | 6200               | 42000    | 58               |
| 170M4011                             | 170M4061                                   | 170M4161                     | 170M4211                                    |      | 350                        | 8500               | 59000    | 60               |
| 170M4012                             | 170M4062                                   | 170M4162                     | 170M4212                                    |      | 400                        | 13500              | 91500    | 65               |
| 170M4013                             | 170M4063                                   | 170M4163                     | 170M4213                                    |      | 450                        | 17000              | 120000   | 70               |
| 170M4014                             | 170M4064                                   | 170M4164                     | 170M4214                                    |      | 500                        | 25000              | 170000   | 72               |
| 170M4015                             | 170M4065                                   | 170M4165                     | 170M4215                                    |      | 550                        | 34000              | 230000   | 75               |
| 170M4016                             | 170M4066                                   | 170M4166                     | 170M4216                                    |      | 630                        | 52000              | 350000   | 80               |
| 170M4017                             | 170M4067                                   | 170M4167                     | 170M4217                                    |      | 700                        | 69500              | 465000   | 85               |
| 170M4018                             | 170M4068                                   | 170M4168                     | 170M4218                                    |      | 800                        | 105000             | 725000   | 95               |
| 170M4019                             | 170M4069                                   | 170M4169                     | 170M4219                                    |      | ±900                       | 155000             | ±850000  | 100              |
| 170M5008                             | 170M5058                                   | 170M5158                     | 170M5208                                    | 2    | 400                        | 11000              | 74000    | 65               |
| 170M5009                             | 170M5059                                   | 170M5159                     | 170M5209                                    |      | 450                        | 15500              | 105000   | 70               |
| 170M5010                             | 170M5060                                   | 170M5160                     | 170M5210                                    |      | 500                        | 21500              | 145000   | 75               |
| 170M5011                             | 170M5061                                   | 170M5161                     | 170M5211                                    |      | 550                        | 28000              | 190000   | 80               |
| 170M5012                             | 170M5062                                   | 170M5162                     | 170M5212                                    |      | 630                        | 41000              | 275000   | 90               |
| 170M5013                             | 170M5063                                   | 170M5163                     | 170M5213                                    |      | 700                        | 60500              | 405000   | 95               |
| 170M5014                             | 170M5064                                   | 170M5164                     | 170M5214                                    |      | 800                        | 86000              | 575000   | 105              |
| 170M5015                             | 170M5065                                   | 170M5165                     | 170M5215                                    |      | 900                        | 125000             | 840000   | 110              |
| 170M5016                             | 170M5066                                   | 170M5166                     | 170M5216                                    |      | 1000                       | 180000             | 1250000  | 115              |
| 170M5017                             | 170M5067                                   | 170M5167                     | 170M5217                                    |      | 1100                       | 245000             | 1600000  | 120              |
| 170M5018                             | 170M5068                                   | 170M5168                     | 170M5218                                    |      | 1250                       | 365000             | 2400000  | 130              |
| 170M6008                             | 170M6058                                   | 170M6158                     | 170M6208                                    | 3    | 500                        | 14000              | 95000    | 95               |
| 170M6009                             | 170M6059                                   | 170M6159                     | 170M6209                                    |      | 550                        | 19500              | 135000   | 100              |
| 170M6010                             | 170M6060                                   | 170M6160                     | 170M6210                                    |      | 630                        | 31000              | 210000   | 105              |
| 170M6011                             | 170M6061                                   | 170M6161                     | 170M6211                                    |      | 700                        | 44500              | 300000   | 110              |
| 170M6012                             | 170M6062                                   | 170M6162                     | 170M6212                                    |      | 800                        | 69500              | 465000   | 115              |
| 170M6013                             | 170M6063                                   | 170M6163                     | 170M6213                                    |      | 900                        | 100000             | 670000   | 120              |
| 170M6014                             | 170M6064                                   | 170M6164                     | 170M6214                                    |      | 1000                       | 140000             | 945000   | 125              |
| 170M6015                             | 170M6065                                   | 170M6165                     | 170M6215                                    |      | 1100                       | 190000             | 1300000  | 130              |
| 170M6016                             | 170M6066                                   | 170M6166                     | 170M6216                                    |      | 1250                       | 290000             | 1950000  | 140              |
| 170M6017                             | 170M6067                                   | 170M6167                     | 170M6217                                    |      | 1400                       | 370000             | 2450000  | 155              |
| 170M6018                             | 170M6068                                   | 170M6168                     | 170M6218                                    |      | 1500                       | 460000             | 3100000  | 160              |
| 170M6019                             | 170M6069                                   | 170M6169                     | 170M6219                                    |      | 1600                       | 580000             | 3900000  | 160              |
| 170M6020                             | 170M6070                                   | 170M6170                     | 170M6220                                    |      | ±1800                      | 880000             | ±5250000 | 165              |
| 170M6021                             | 170M6071                                   | 170M6171                     | 170M6221                                    |      | ±2000                      | 1150000            | ±6350000 | 175              |

†Rated voltage (IEC) 600V.

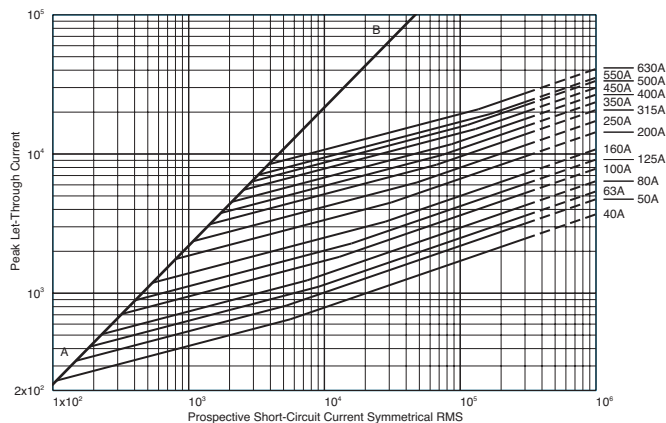
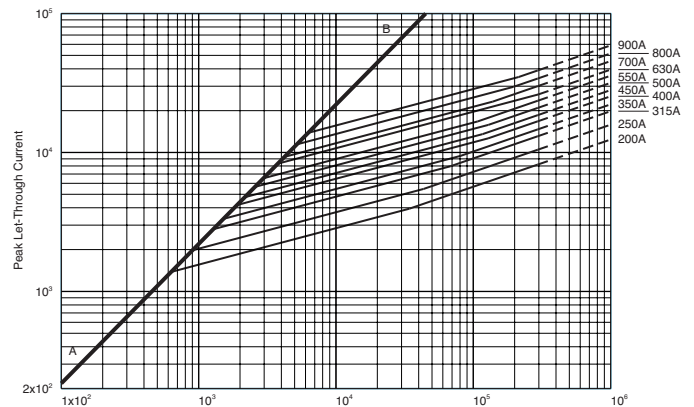
‡Rated voltage (IEC) 550V.

• Watts loss provided at rated current.

• Microswitch indicator ordered separately. See accessories on pages 179-180.

**High Speed Fuses****Square body DIN 43 653 — 690V/700V (IEC/UL):  
40-2000A****Size 1\* — 40-630A: 690V****Time-Current Curve****Size 1 — 200-900A: 690V****Time-Current Curve**

High Speed Fuses

**Peak Let-Through Curve****Peak Let-Through Curve**

900 amp fuse is derated to 550V (IEC).

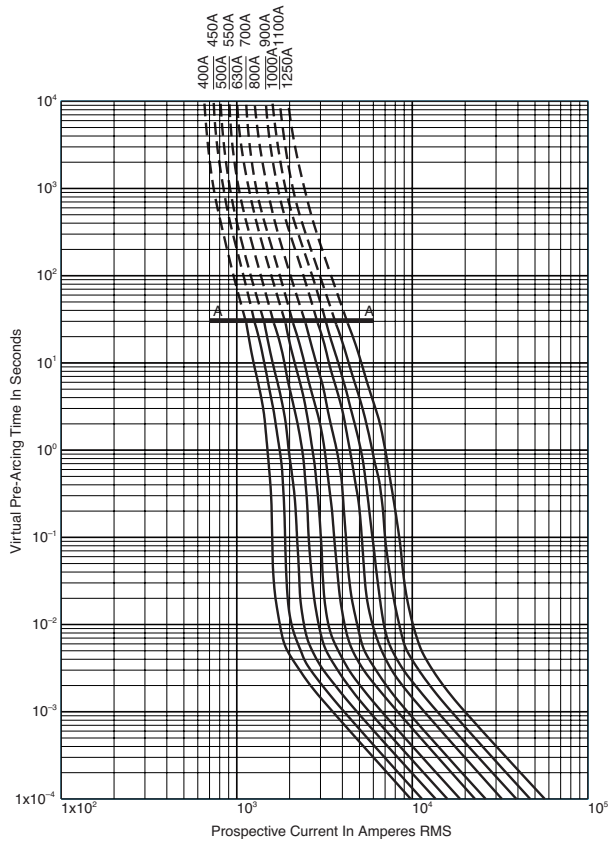
**Data Sheet: 17056314****Data Sheet: 17056316**

## High Speed Fuses

# Square body DIN 43 653 — 690V/700V (IEC/UL): 40-2000A

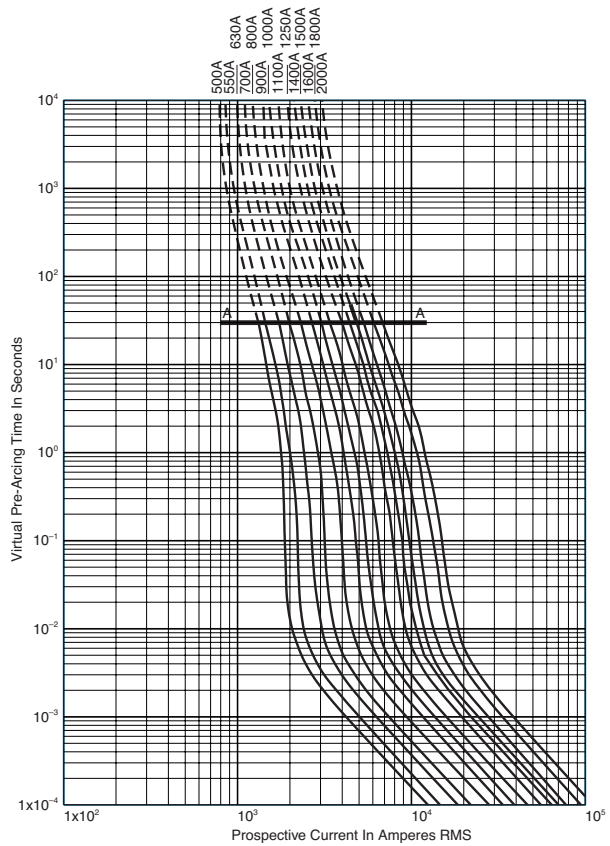
### Size 2 — 400-1250A: 690V

#### Time-Current Curve

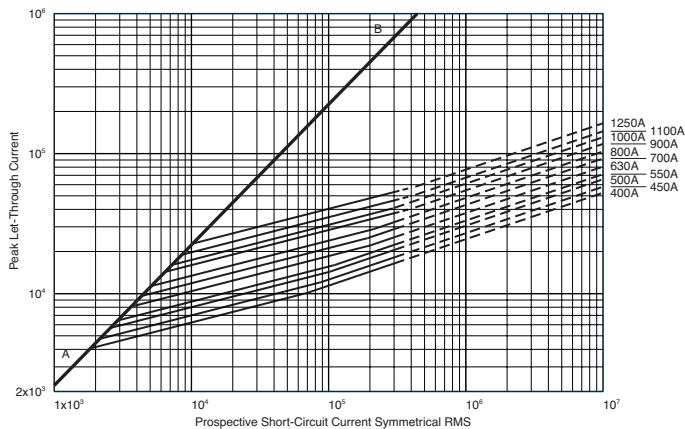


### Size 3 — 500-2000A: 690V

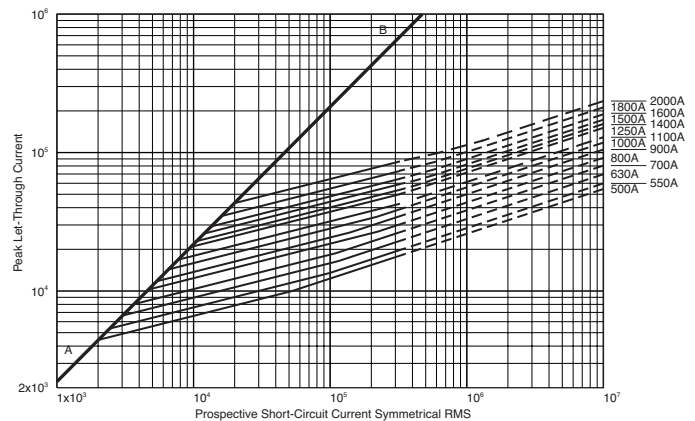
#### Time-Current Curve



#### Peak Let-Through Curve



#### Peak Let-Through Curve



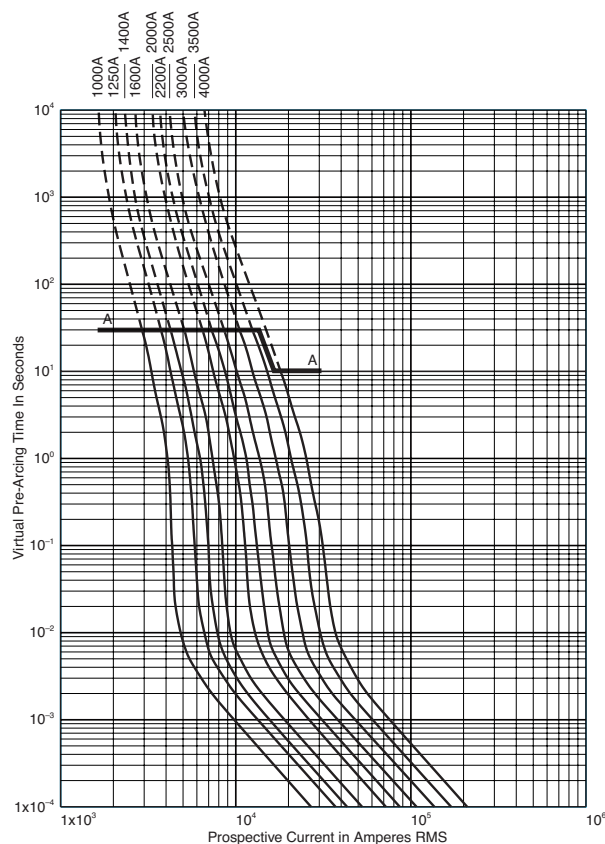
1800A fuse is derated to 600V (IEC).  
2000A fuse is derated to 550V (IEC).

## High Speed Fuses

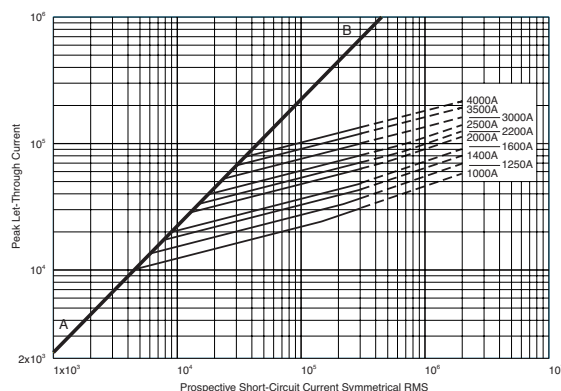
# Square body DIN 43 653 — 690V/700V (IEC/UL): 40-2000A

**Size 4 — 1000-4000A: 690V**

**Time-Current Curve**



## Peak Let-Through Curve



4000A fuse is derated to 500V (IEC).

**Data Sheet: 17056328**



## Did You Know?

### Cooper Bussmann® Customer Satisfaction Minimizes Downtime Caused by the 2003 North American Northeast Coast Blackout

An enormous power failure blacked out population centers from New York City to Toronto on Thursday, August 14, 2003. As power slowly came back on, surges and spikes began to “blow” existing fuses. Airports reopened Friday.

The Cooper Bussmann Customer Satisfaction team handled 11 emergency phone calls that weekend, including:

A Michigan-based utility required a large fuse order to protect its control switches before it could reactivate electrical power to thousands of customers. Ordered Friday, 8:27 p.m. Order delivered Saturday, 12:30 p.m.

An Indiana steel mill required specialized fuses. A Cooper Bussmann engineer was called to assist. Ordered Sunday, 1:46 p.m. Order delivered same day, 11:00 p.m.

A pharmaceutical plant in New Jersey needed to get its line back up. Ordered Saturday 10:36 a.m. Order delivered Sunday, 4:00 a.m.

An Ontario utility required more than 100 Cooper Bussmann® Fusetron® FRN-R-200 fuses. Ordered Saturday, 11:01 a.m.. Order delivered Sunday, 9:00 a.m. including customs processing.