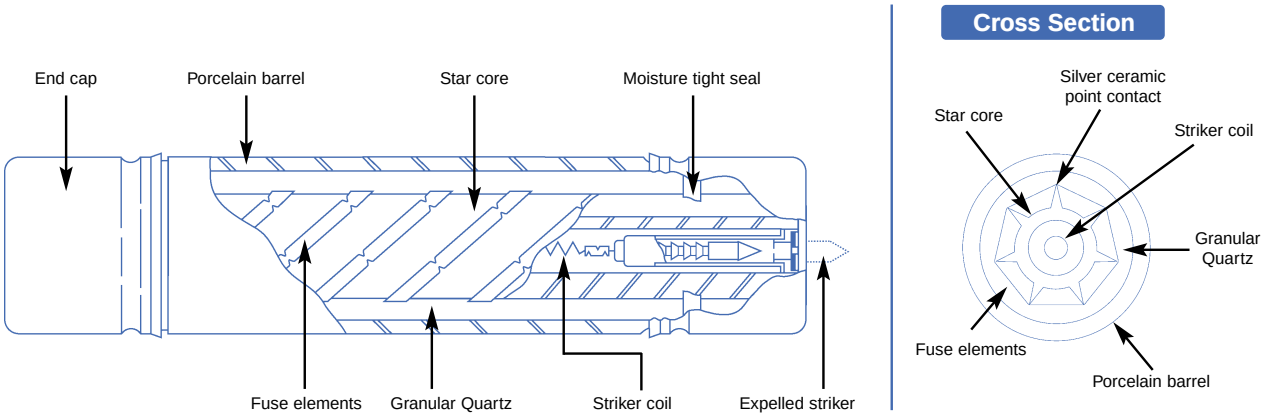
## Current Limiting

Current limiting HV fuse links split into three internationally recognised types: **back-up** (or **partial range**) fuse links, which will interrupt any current from their rated breaking capacity down to a minimum breaking current specified by the manufacturer; and **general purpose** fuse links, which will interrupt all currents from rated breaking capacity down to a current that will melt the elements within one hour. A third type is the full range fuse. This term applies to fuse links that can interrupt any current below the rated breaking capacity that melts the fuse elements satisfactorily.

Current limiting **back-up fuse links** are the closest in construction to LV cartridge types. However, a longer strip element with many more restrictions is necessary to produce the large number of series arcs needed to interrupt a high voltage. Fuse manufacturers achieve this by coiling the element around a ceramic core with a star shaped cross section. In this way, a 1m long element can be fitted into a 250mm long fuse body. If the adjacent coils are too close, there will be a flashover between them and this sets a practical limit on how long an element can be crammed into a particular cartridge, and how many elements can be used in parallel.




Like an LV cartridge fuse link, an HV fuse link of this type has a ceramic body.

Many HV current limiting fuse links are also fitted with a **striker mechanism**. This not only provides the user with a visual indication that the fuse link has operated, but can also be used to operate other switchgear. In this way, a fuse on a single phase system can cut off all three phases if a fault occurs.

Striker mechanisms are driven by explosive charges or compressed springs. Both are triggered by a thin fuse wire running the length of the fuse, usually through the centre of the star shaped core. The wire is connected in parallel with the elements, so a current flows through it when the elements melt. The current heats up the wire and detonates the explosive charge, or melts the wire andreleases the spring, pushing the striker pin out of the fuse link's end cap. A lock washer mechanism makes it impossible to push the pin back into the fuse body.

There are several variations on this design for specific applications. For example, the elements in three-phase motor protection fuse links are corrugated to withstand the cyclical mechanical stresses induced by the high starting and stopping currents drawn by the motor.

## Non- Current Limiting

Essentially, non-current limiting fuse links have short elements and incorporate some means of lengthening the arc after the element melts, extinguishing the arc and preventing re-ignition. There are two distinct types: **expulsion fuse links** and **liquid fuse links**.
Expulsion fuses are an effective way of protecting overhead distribution lines and transformers. They are designed for outdoor use only and comprise a tin or copper fuse element in series with a flexible braid in a tube. The tube forms one side of a triangle, with a latched connection at the top and a hinge at the bottom. The braid emerges from one end of the fuse link and is held in tension by a spring.
When the element melts, the braid is no longer under tension, the latch is released and the fuse swings downwards under gravity, breaking the circuit. As the fuse swings downwards, the arc is lengthened, extinguished and prevented from restriking.
**Liquid fuse links** are based on early non-current limiting fuse links which use liquids to quench the arc. The fuse element is anchored to the top ferrule of a glass tube filled with a quenching liquid - usually a hydrocarbon. The rest of the tube is filled with a spring that holds the element - or a strain wire in very high voltage fuse links - in tension.
When the element melts, the spring pulls the two parts of the element apart, extending the arc and quenching it in the liquid.

## M- effect

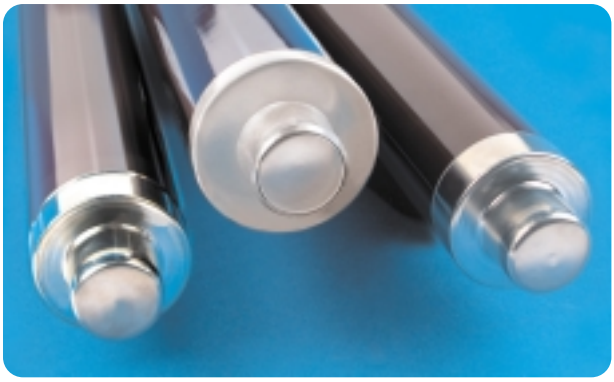
Bussmann high voltage fuse links include M-effect as a design feature to enhance performance. M-effect (named after its discoverer, Prof. Metcalf, in the late 1930s) consists of applying overlay spots of special low melting alloy onto the fuse element strips. Its effect is to ensure that the fuse link runs cooler in service and that the maximum temperature reached during fuse operation is kept down to a modest 160 deg. C (compared with 300 - 400 deg C for fuse links which do not employ this feature).

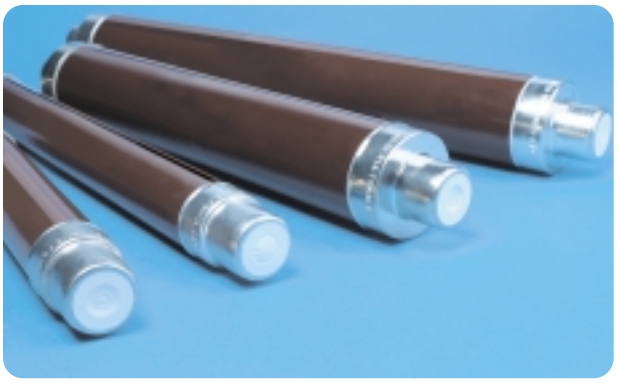
M-effect has been in widespread use in both low voltage and high voltage fuse links of British design for many years and is now coming into use in many other countries. Cooler running M-effect fuse links have longer service life since lower surface temperature on the elements ensures against long term embrittlement of the material. The M-effect spots are stable and have been proved by many tests to remain inert for periods of 30 years or more.

The low maximum operating temperature of M-effect fuse links ensures safe operation of Back-up types in striker tripped switchgear under low fault conditions. Whereas non M-effect types are known to have a risk of body fracture because of their much higher body temperature under such conditions. The low maximum operating temperature also ensures against damage to heat sensitive fuse enclosures such as cast resin fuse pods.

In short, M-effect fuse links are safer, give better protection and are longer lasting than alternative designs which do not employ this valuable feature.

- **Fuse Links comply with DIN dimensional standard DIN43625.**
- **‘F’ range, high performance full range fuse link.**
- **‘S’ range, high performance back-up fuse link, with striker tripping.**
- **‘A’ range, including high current rating back-up fuse link.**
- **Comply with IEC 60282-1 and VDE 0670 part 4.**
- **Wide variety of ratings, 3.6 kV to 36 kV.**
- **Versions suitable for indoor and outdoor use.**
- **Motor circuit fuse link option.**





## Bussmann DIN ‘S’ Fuse Links

The time current characteristics of the ‘S’ range is optimised to ensure improved discrimination with upstream devices and to give fast clearance of earth faults in the secondary terminal zones. The breaking performance with low over currents is adequate to cater for all normal distribution applications, where low voltage fuse links on the secondary side take care of low overload faults, leaving the high voltage fuse links to clear major faults ahead of LV protection. The fuse links are suitable for use even where there is no secondary LV protection, provided that they are used in fuse switches fitted with instantaneous striker tripping.

## Bussmann DIN ‘F’ Fuse Links

The ‘F’ range fuse links have ‘full range’ clearing capability. Bussmann ‘F’ types are designed to clear all overloads right down to fuse’s rated current in accordance with latest IEC 282-1 requirements. They are thus suitable for use as a sole form of protection. ‘F’ range time current characteristics are especially advantageous for transformer protection applications.

## Bussmann DIN ‘A’ Fuse Links

This earlier, well proven design, has values of minimum breaking current between the ‘S’ and ‘F’ range including higher current ratings.

# Table of ratings for 'S' range 7.2 - 36kV to DIN dimensions

| Part Number | Voltage Rating | Current Rating | Breaking Capacity | Minimum Breaking Current | Cold resistance and watts loss in free air at rated current | | Joule Intergral ($I^2t$) | | Length | Diameter Ø | Weight |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $U_n$ | $I_n$ | $I_1$ | $I_3$ | | | $A^2s$ | | | | |
| | kV | A | kA | A | m Ω | W | Minimum Pre-Arcing | Maximum Total Clearing | mm | mm | kg |
| 7.2SDLSJ6.3 | 7.2 | 6.3 | 40 | 20 | 205 | 11 | $4.8X10^1$ | $6.5X10^2$ | 292 | 50.8 | 1.63 |
| 7.2SDLSJ10 | 7.2 | 10 | 40 | 31 | 99.7 | 19 | $2.5X10^2$ | $2.7X10^3$ | 292 | 50.8 | 1.63 |
| 7.2SDLSJ16 | 7.2 | 16 | 40 | 49 | 65.1 | 23 | $5.5X10^2$ | $8.2X10^3$ | 292 | 50.8 | 1.63 |
| 7.2SDLSJ20 | 7.2 | 20 | 40 | 49 | 48.9 | 27 | $9.7X10^2$ | $1.1X10^4$ | 292 | 50.8 | 1.63 |
| 7.2SDLSJ25 | 7.2 | 25 | 40 | 80 | 32.6 | 28 | $5.7X10^2$ | $8.0X10^3$ | 292 | 50.8 | 1.63 |
| 7.2SDLSJ31.5 | 7.2 | 31.5 | 40 | 100 | 26.0 | 36 | $8.9X10^2$ | $1.0X10^4$ | 292 | 50.8 | 1.63 |
| 7.2SDLSJ40 | 7.2 | 40 | 40 | 114 | 16.0 | 36 | $2.0X10^2$ | $2.2X10^4$ | 292 | 50.8 | 1.63 |
| 7.2SDLSJ50 | 7.2 | 50 | 40 | 143 | 12.9 | 46 | $3.2X10^2$ | $3.2X10^4$ | 292 | 50.8 | 1.63 |
| 7.2SDLSJ63 | 7.2 | 63 | 40 | 180 | 8.14 | 45 | $8.0X10^2$ | $7.5X10^4$ | 292 | 50.8 | 1.63 |
| 7.2SFLSJ80 | 7.2 | 80 | 40 | 264 | 6.01 | 54 | $5.0X10^3$ | $6.5X10^4$ | 292 | 76.2 | 3.1 |
| 7.2SFLSJ100 | 7.2 | 100 | 40 | 338 | 4.65 | 64 | $9.1X10^3$ | $1.1X10^5$ | 292 | 76.2 | 3.1 |
| 7.2SFLSJ125 | 7.2 | 125 | 40 | 375 | 3.60 | 79 | $1.5X10^4$ | $1.7X10^5$ | 292 | 76.2 | 3.1 |
| 7.2SFLSJ160 | 7.2 | 160 | 40 | 525 | 2.73 | 97 | $3.0X10^4$ | $3.1X10^5$ | 292 | 76.2 | 3.1 |
| 12SDLSJ6.3 | 12 | 6.3 | 50 | 20 | 285 | 14 | $7.0X10^1$ | $6.5X10^2$ | 292 | 50.8 | 1.63 |
| 12SDLSJ10 | 12 | 10 | 50 | 28 | 143 | 18 | $3.1X10^2$ | $2.7X10^3$ | 292 | 50.8 | 1.63 |
| 12SDLSJ16 | 12 | 16 | 50 | 35 | 81.4 | 26 | $9.8X10^2$ | $8.6X10^3$ | 292 | 50.8 | 1.63 |
| 12SDLSJ20 | 12 | 20 | 50 | 72 | 54.6 | 28 | $5.7X10^2$ | $5.1X10^3$ | 292 | 50.8 | 1.63 |
| 12SDLSJ25 | 12 | 25 | 50 | 90 | 43.7 | 35 | $8.9X10^2$ | $8.1X10^4$ | 292 | 50.8 | 1.63 |
| 12SDLSJ31.5 | 12 | 31.5 | 50 | 90 | 32.8 | 43 | $1.6X10^3$ | $1.5X10^4$ | 292 | 50.8 | 1.63 |
| 12SDLSJ40 | 12 | 40 | 50 | 128 | 21.6 | 49 | $3.2X10^3$ | $2.7X10^4$ | 292 | 50.8 | 1.63 |
| 12SDLSJ50 | 12 | 50 | 50 | 196 | 15.1 | 59 | $1.3X10^3$ | $3.2X10^4$ | 292 | 50.8 | 1.63 |
| 12SDLSJ63 | 12 | 63 | 50 | 275 | 12.1 | 75 | $2.3X10^3$ | $5.7X10^4$ | 292 | 50.8 | 1.63 |
| 12SFLSJ50 | 12 | 50 | 50 | 160 | 17.1 | 61 | $5.2X10^3$ | $4.1X10^4$ | 292 | 76.2 | 3.1 |
| 12SFLSJ63 | 12 | 63 | 50 | 227 | 12.1 | 69 | $1.0X10^4$ | $8.8X10^4$ | 292 | 76.2 | 3.1 |
| 12SFLSJ80 | 12 | 80 | 50 | 256 | 8.97 | 88 | $1.9X10^4$ | $1.5X10^5$ | 292 | 76.2 | 3.1 |
| 12SFLSJ100 | 12 | 100 | 50 | 446 | 5.61 | 83 | $1.4X10^4$ | $2.2X10^5$ | 292 | 76.2 | 3.1 |
| 12SKLSJ125 | 12 | 125 | 50 | 870 | 4.60 | 115 | $2.8X10^4$ | $2.3X10^5$ | 292 | 76.2 | 3.1 |
| 12SXLEJ160 | 12 | 160 | 63 | 500 | 4.30 | 200 | $1.1X10^5$ | $5.0X10^5$ | 292 | 88 | 3.7 |
| 12SXLEJ200 | 12 | 200 | 63 | 610 | 3.80 | 330 | $1.5X10^5$ | $6.5X10^5$ | 292 | 88 | 3.7 |
| 15.5SFMSJ100 | 15.5 | 100 | 25 | 707 | 8.23 | 119 | $1.2X10^4$ | $1.4X10^5$ | 442 | 76.2 | 4.5 |
| 15.5SKMSJ125 | 15.5 | 125 | 25 | 990 | 5.61 | 126 | $2.4X10^4$ | $2.2X10^5$ | 442 | 76.2 | 4.5 |
| 17.5SDLSJ6.3 | 17.5 | 6.3 | 35.5 | 23 | 313 | 15 | $4.8X10^1$ | $6.1X10^2$ | 292 | 50.8 | 1.63 |
| 17.5SDLSJ10 | 17.5 | 10 | 35.5 | 19 | 185 | 23 | $2.8X10^2$ | $4.0X10^3$ | 292 | 50.8 | 1.63 |
| 17.5SDLSJ16 | 17.5 | 16 | 35.5 | 59 | 104 | 34 | $2.9X10^2$ | $2.0X10^3$ | 292 | 50.8 | 1.63 |
| 17.5SDLSJ20 | 17.5 | 20 | 35.5 | 80 | 69.2 | 38 | $5.7X10^2$ | $4.4X10^3$ | 292 | 50.8 | 1.63 |
| 17.5SDLSJ25 | 17.5 | 25 | 35.5 | 100 | 55.4 | 48 | $8.9X10^2$ | $6.6X10^3$ | 292 | 50.8 | 1.63 |
| 17.5SDLSJ31.5 | 17.5 | 31.5 | 35.5 | 118 | 41.4 | 58 | $5.1X10^2$ | $1.1X10^4$ | 292 | 50.8 | 1.63 |
| 17.5SDLSJ40 | 17.5 | 40 | 35.5 | 148 | 31.1 | 76 | $8.0X10^2$ | $1.8X10^4$ | 292 | 50.8 | 1.63 |
| 17.5SFLSJ31.5 | 17.5 | 31.5 | 35.5 | 118 | 30.3 | 37 | $2.6X10^3$ | $1.9X10^4$ | 292 | 76.2 | 3.1 |
| 17.5SFLSJ40 | 17.5 | 40 | 35.5 | 132 | 21.9 | 51 | $5.1X10^3$ | $3.8X10^4$ | 292 | 76.2 | 3.1 |
| 17.5SFLSJ50 | 17.5 | 50 | 35.5 | 225 | 17.3 | 62 | $8.1X10^3$ | $6.0X10^4$ | 292 | 76.2 | 3.1 |
| 17.5SDMSJ6.3 | 17.5 | 6.3 | 35.5 | 16 | 509 | 26 | $4.8X10^1$ | $6.0X10^2$ | 442 | 50.8 | 2.2 |
| 17.5SDMSJ10 | 17.5 | 10 | 35.5 | 27 | 215 | 28 | $3.1X10^2$ | $3.8X10^3$ | 442 | 50.8 | 2.2 |
| 17.5SDMSJ16 | 17.5 | 16 | 35.5 | 57 | 112 | 37 | $2.9X10^2$ | $1.2X10^4$ | 442 | 50.8 | 2.2 |
| 17.5SDMSJ20 | 17.5 | 20 | 35.5 | 80 | 79.8 | 38 | $5.7X10^2$ | $6.7X10^3$ | 442 | 50.8 | 2.2 |
| 17.5SDMSJ25 | 17.5 | 25 | 35.5 | 100 | 63.8 | 52 | $8.9X10^2$ | $1.1X10^4$ | 442 | 50.8 | 2.2 |
| 17.5SDMSJ31.5 | 17.5 | 31.5 | 35.5 | 100 | 47.9 | 61 | $1.6X10^3$ | $2.0X10^4$ | 442 | 50.8 | 2.2 |
| 17.5SDMSJ40 | 17.5 | 40 | 35.5 | 143 | 31.6 | 66 | $3.2X10^3$ | $3.6X10^4$ | 442 | 50.8 | 2.2 |
| 17.5SFMSJ50 | 17.5 | 50 | 35 | 180 | 25.0 | 88 | $5.2X10^3$ | $5.5X10^4$ | 442 | 76.2 | 4.5 |
| 17.5SFMSJ63 | 17.5 | 63 | 35 | 240 | 17.8 | 102 | $1.0X10^4$ | $1.2X10^5$ | 442 | 76.2 | 4.5 |
| 17.5SFMSJ80 | 17.5 | 80 | 35 | 270 | 13.1 | 128 | $1.9X10^4$ | $1.9X10^5$ | 442 | 76.2 | 4.5 |
| 24SDMSJ6.3 | 24 | 6.3 | 50 | 19 | 489 | 24 | $8.1X10^1$ | $1.3X10^3$ | 442 | 50.8 | 2.2 |
| 24SDMSJ10 | 24 | 10 | 50 | 28 | 287 | 35 | $3.1X10^2$ | $5.5X10^3$ | 442 | 50.8 | 2.2 |
| 24SDMSJ16 | 24 | 16 | 50 | 47 | 165 | 60 | $9.8X10^2$ | $1.5X10^4$ | 442 | 50.8 | 2.2 |
| 24SDMSJ20 | 24 | 20 | 50 | 80 | 79.3 | 38 | $8.1X10^2$ | $1.1X10^4$ | 442 | 50.8 | 2.2 |
| 24SDMSJ25 | 24 | 25 | 50 | 84 | 62.0 | 49 | $1.3X10^3$ | $2.0X10^4$ | 442 | 50.8 | 2.2 |
| 24SDMSJ31.5 | 24 | 31.5 | 50 | 105 | 46.5 | 56 | $2.1X10^3$ | $2.9X10^4$ | 442 | 50.8 | 2.2 |
| 24SDMSJ40 | 24 | 40 | 50 | 140 | 34.0 | 79 | $3.2X10^3$ | $4.4X10^4$ | 442 | 50.8 | 2.2 |
| 24SFMSJ40 | 24 | 40 | 50 | 119 | 38.0 | 85 | $5.1X10^3$ | $6.9X10^4$ | 442 | 76.2 | 4.5 |
| 24SFMSJ50 | 24 | 50 | 50 | 225 | 27.1 | 96 | $8.1X10^3$ | $9.0X10^4$ | 442 | 76.2 | 4.5 |
| 24SFMSJ63 | 24 | 63 | 50 | 306 | 21.6 | 128 | $3.8X10^3$ | $5.0X10^4$ | 442 | 76.2 | 4.5 |
| 24SFMSJ71 | 24 | 71 | 50 | 350 | 17.7 | 134 | $5.0X10^3$ | $6.6X10^4$ | 442 | 76.2 | 4.5 |
| 24SHMEJ80 | 24 | 80 | 63 | 300 | 20.5 | 250 | $1.7X10^4$ | $8.4X10^4$ | 442 | 64 | 3.1 |
| 24SHMEJ100 | 24 | 100 | 63 | 350 | 18.0 | 350 | $2.8X10^4$ | $9.3X10^4$ | 442 | 64 | 3.1 |
| 24SKMEJ125 | 24 | 125 | 63 | 420 | 16.7 | *171* | $2.4X10^4$ | $8.7X10^4$ | 442 | 78 | 3.7 |
| 24SXMEJ160 | 24 | 160 | 63 | 320 | 14.0 | *279* | $4.4X10^4$ | $1.7X10^5$ | 442 | 88 | 4.2 |
| 36SDQSJ3.15 | 36 | 3.15 | 20 | - | - | - | - | - | 537 | 50.8 | 2.9 |
| 36SDQSJ6.3 | 36 | 6.3 | 35.5 | 23 | 684 | 34 | $1.0X10^2$ | $1.2X10^3$ | 537 | 50.8 | 2.9 |
| 36SDQSJ10 | 36 | 10 | 35.5 | 35 | 402 | 44 | $3.1X10^2$ | $3.6X10^3$ | 537 | 50.8 | 2.9 |
| 36SDQSJ16 | 36 | 16 | 35.5 | 70 | 165 | 52 | $4.6X10^2$ | $5.1X10^3$ | 537 | 50.8 | 2.9 |
| 36SDQSJ20 | 36 | 20 | 35.5 | 98 | 117 | 62 | $8.9X10^2$ | $8.2X10^4$ | 537 | 50.8 | 2.9 |
| 36SDQSJ25 | 36 | 25 | 35.5 | 112 | 98.0 | 85 | $1.2X10^3$ | $1.5X10^4$ | 537 | 50.8 | 2.9 |
| 36SFQSJ31.5 | 36 | 31.5 | 35.5 | 116 | 73.4 | 96 | $2.1X10^3$ | $2.3X10^4$ | 537 | 76.2 | 6.0 |
| 36SFQSJ40 | 36 | 40 | 35.5 | 178 | 52.4 | 116 | $4.1X10^3$ | $3.9X10^4$ | 537 | 76.2 | 6.0 |
| 36SFQSJ50 | 36 | 50 | 35.5 | 255 | 36.8 | 133 | $8.3X10^3$ | $8.1X10^4$ | 537 | 76.2 | 6.0 |
| 36SXQEJ63 | 36 | 63 | 20 | 280 | 35.0 | 271 | $1.1X10^4$ | $6.2X10^4$ | 537 | 88 | 6.5 |

Rating at 64%

## Table of ratings for 'F' range 12 - 24kV to DIN dimensions

| Part Number | Voltage Rating | Current Rating | Breaking Capacity | Minimum Breaking Current | Cold resistance and watts loss in free air at rated current | | Joule Intergral ($I^2t$) | | Length | Diameter Ø | Weight |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $U_n$ | $I_n$ | $I_1$ | $I_3$ | | | $A^2s$ | | | | |
| | kV | A | kA | A | m Ω | W | Minimum Pre-Arcing | Maximum Total Clearing | mm | mm | kg |
| 12FDLSJ6.3 | 12 | 6.3 | 50 | 6.3 | 208 | 10 | $6.9X10^1$ | $6.3X10^2$ | 292 | 50.8 | 1.63 |
| 12FDLSJ10 | 12 | 10 | 50 | 10 | 116 | 15 | $2.2X10^2$ | $2.1X10^3$ | 292 | 50.8 | 1.63 |
| 12FDLSJ16 | 12 | 16 | 50 | 16 | 55.4 | 17 | $8.8X10^2$ | $3.9X10^3$ | 292 | 50.8 | 1.63 |
| 12FDLSJ20 | 12 | 20 | 50 | 20 | 39.6 | 20 | $1.7X10^3$ | $7.6X10^3$ | 292 | 50.8 | 1.63 |
| 12FDLSJ25 | 12 | 25 | 50 | 25 | 31.2 | 26 | $2.8X10^3$ | $1.3X10^4$ | 292 | 25.8 | 1.63 |
| 12FDLSJ31.5 | 12 | 31.5 | 50 | 31.5 | 26.4 | 36 | $2.6X10^3$ | $1.3X10^4$ | 292 | 50.8 | 1.63 |
| 12FFLSJ40 | 12 | 40 | 50 | 40 | 19.7 | 42 | $3.8X10^3$ | $3.8X10^4$ | 292 | 76.2 | 3.16 |
| 12FFLSJ50 | 12 | 50 | 50 | 50 | 14.8 | 51 | $6.8X10^3$ | $5.6X10^4$ | 292 | 76.2 | 3.16 |
| 12FFLSJ63 | 12 | 63 | 50 | 63 | 12.4 | 72 | $5.1X10^3$ | $5.4X10^4$ | 292 | 76.2 | 3.16 |
| 12FXLSJ80 | 12 | 80 | 50 | 80 | 7.94 | 72 | $2.2X10^4$ | $1.1X10^5$ | 292 | 88 | 4 |
| 12FXLSJ100 | 12 | 100 | 50 | 100 | 5.64 | 82 | $4.2X10^4$ | $2.0X10^5$ | 292 | 88 | 4 |
| 24FDMSJ6.3 | 24 | 6.3 | 35.5 | 6.3 | 437 | 21 | $6.8X10^1$ | $5.4X10^2$ | 442 | 50.8 | 2.2 |
| 24FDMSJ10 | 24 | 10 | 35.5 | 10 | 218 | 29 | $2.7X10^2$ | $2.1X10^3$ | 442 | 50.8 | 2.2 |
| 24FDMSJ16 | 24 | 16 | 35.5 | 16 | 118 | 39 | $8.2X10^2$ | $2.7X10^3$ | 442 | 50.8 | 2.2 |
| 24FDMSJ20 | 24 | 20 | 35.5 | 20 | 82.2 | 43 | $1.6X10^3$ | $5.1X10^3$ | 442 | 50.8 | 2.2 |
| 24FDMSJ25 | 24 | 25 | 35.5 | 25 | 54.7 | 48 | $3.4X10^3$ | $1.2X10^4$ | 442 | 50.8 | 2.2 |
| 24FDMSJ31.5 | 24 | 31.5 | 35.5 | 31.5 | 48.6 | 71 | $3.2X10^3$ | $1.2X10^4$ | 442 | 50.8 | 2.2 |
| 24FFMSJ25 | 24 | 25 | 35.5 | 25 | 58.6 | 47 | $3.4X10^3$ | $1.1X10^4$ | 442 | 76.2 | 4.5 |
| 24FFMSJ31.5 | 24 | 31.5 | 35.5 | 31.5 | 48.8 | 70 | $4.7X10^3$ | $1.5X10^4$ | 442 | 76.2 | 4.5 |
| 24FFMSJ40 | 24 | 40 | 35.5 | 40 | 38.4 | 85 | $7.6X10^3$ | $2.5X10^4$ | 442 | 76.2 | 4.5 |
| 24FFMSJ45 | 24 | 45 | 35.5 | 45 | 31.4 | 92 | $7.2X10^3$ | $3.0X10^4$ | 442 | 76.2 | 4.5 |

## Table of ratings for 'A' range 3.6 - 24kV to DIN dimensions

| Part Number | Voltage Rating | Current Rating | Breaking Capacity | Minimum Breaking Current | Cold resistance and watts loss in free air at rated current | | Joule Intergral ($I^2t$) | | Length | Diameter Ø | Weight |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $U_n$ | $I_n$ | $I_1$ | $I_3$ | | | $A^2s$ | | | | |
| | kV | A | kA | A | m Ω | W | Minimum Pre-Arcing | Maximum Total Clearing | mm | mm | kg |
| 3.6ADOSJ6.3 | 3.6 | 6.3 | 40 | 13 | 158 | 9 | $4.5X10^1$ | $1.9X10^2$ | 192 | 50.8 | 1.1 |
| 3.6ADOSJ10 | 3.6 | 10 | 40 | 31 | 79.2 | 11 | $2.3X10^2$ | $9.7X10^2$ | 192 | 50.8 | 1.1 |
| 3.6ADOSJ16 | 3.6 | 16 | 40 | 49 | 50.8 | 18 | $5.5X10^2$ | $2.4X10^3$ | 192 | 50.8 | 1.1 |
| 3.6ADOSJ20 | 3.6 | 20 | 40 | 49 | 38.1 | 21 | $9.8X10^2$ | $4.2X10^3$ | 192 | 50.8 | 1.1 |
| 3.6ADOSJ25 | 3.6 | 25 | 40 | 106 | 28.9 | 25 | $1.3X10^2$ | $1.2X10^3$ | 192 | 50.8 | 1.1 |
| 3.6ADOSJ31.5 | 3.6 | 31.5 | 40 | 106 | 19.2 | 26 | $2.9X10^2$ | $2.7X10^3$ | 192 | 50.8 | 1.1 |
| 3.6ADOSJ40 | 3.6 | 40 | 40 | 106 | 11.6 | 26 | $8.0X10^2$ | $7.5X10^3$ | 192 | 50.8 | 1.1 |
| 3.6ADLSJ6.3 | 3.6 | 6.3 | 40 | 13 | 158 | 9 | $4.5X10^1$ | $1.9X10^2$ | 292 | 50.8 | 1.63 |
| 3.6ADLSJ10 | 3.6 | 10 | 40 | 13 | 95.6 | 13 | $1.3X10^2$ | $5.4X10^2$ | 292 | 50.8 | 1.63 |
| 3.6ADLSJ16 | 3.6 | 16 | 40 | 20 | 63.3 | 22 | $3.0X10^2$ | $1.3X10^3$ | 292 | 50.8 | 1.63 |
| 3.6ADLSJ20 | 3.6 | 20 | 40 | 31 | 45.9 | 25 | $6.3X10^2$ | $2.7X10^3$ | 292 | 50.8 | 1.63 |
| 3.6ADLSJ25 | 3.6 | 25 | 40 | 106 | 28.7 | 25 | $1.3X10^2$ | $1.2X10^3$ | 292 | 50.8 | 1.63 |
| 3.6ADLSJ31.5 | 3.6 | 31.5 | 40 | 106 | 19.1 | 26 | $2.9X10^2$ | $2.7X10^3$ | 292 | 50.8 | 1.63 |
| 3.6ADLSJ40 | 3.6 | 40 | 40 | 106 | 11.4 | 25 | $8.0X10^2$ | $7.5X10^3$ | 292 | 50.8 | 1.63 |
| 12AILSJ100 | 12 | 100 | 31.5 | 176 | 5.03 | 70 | $1.4X10^4$ | $2.0X10^5$ | 292 | 76.2 | 3.3 |
| 17.5AILSJ40 | 17.5 | 40 | 25 | 78 | 26.3 | 58 | $1.3X10^3$ | $1.8X10^4$ | 292 | 76.2 | 3.3 |
| 17.5AILSJ50 | 17.5 | 50 | 25 | 98 | 21.1 | 73 | $2.0X10^3$ | $2.7X10^4$ | 292 | 76.2 | 3.3 |
| 17.5AILSJ63 | 17.5 | 63 | 25 | 156 | 12.3 | 68 | $5.0X10^3$ | $7.0X10^4$ | 292 | 76.2 | 3.3 |
| 17.5AIMSJ100 | 17.5 | 100 | 25 | 176 | 7.33 | 102 | $1.4X10^4$ | $2.0X10^5$ | 442 | 76.2 | 4.5 |
| 24AFMSJ50 | 24 | 50 | 20 | 137 | 29.5 | 102 | $1.8X10^3$ | $2.9X10^4$ | 442 | 76.2 | 4.5 |
| 24AFMSJ63 | 24 | 63 | 20 | 125 | 23.6 | 130 | $3.2X10^3$ | $4.5X10^4$ | 442 | 76.2 | 4.5 |
| 24AIMSJ71 | 24 | 71 | 20 | 176 | 15.1 | 106 | $6.3X10^3$ | $8.5X10^4$ | 442 | 76.2 | 4.5 |

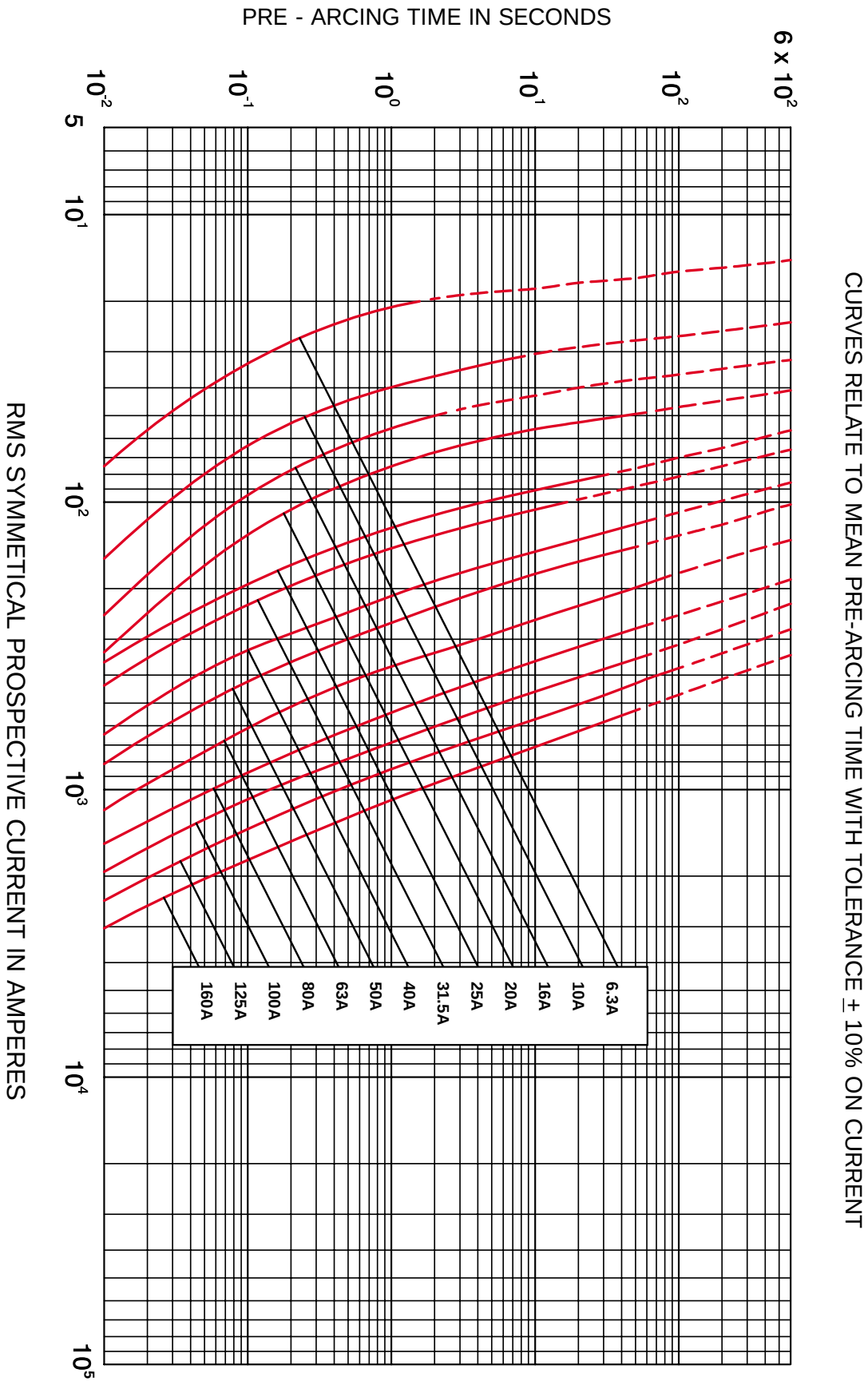
### Notes

**a)** 17.5kV fuse links in 10/12 dimensions are offered, since some switchgear in the 10/12 series is suitable for use at higher voltages.

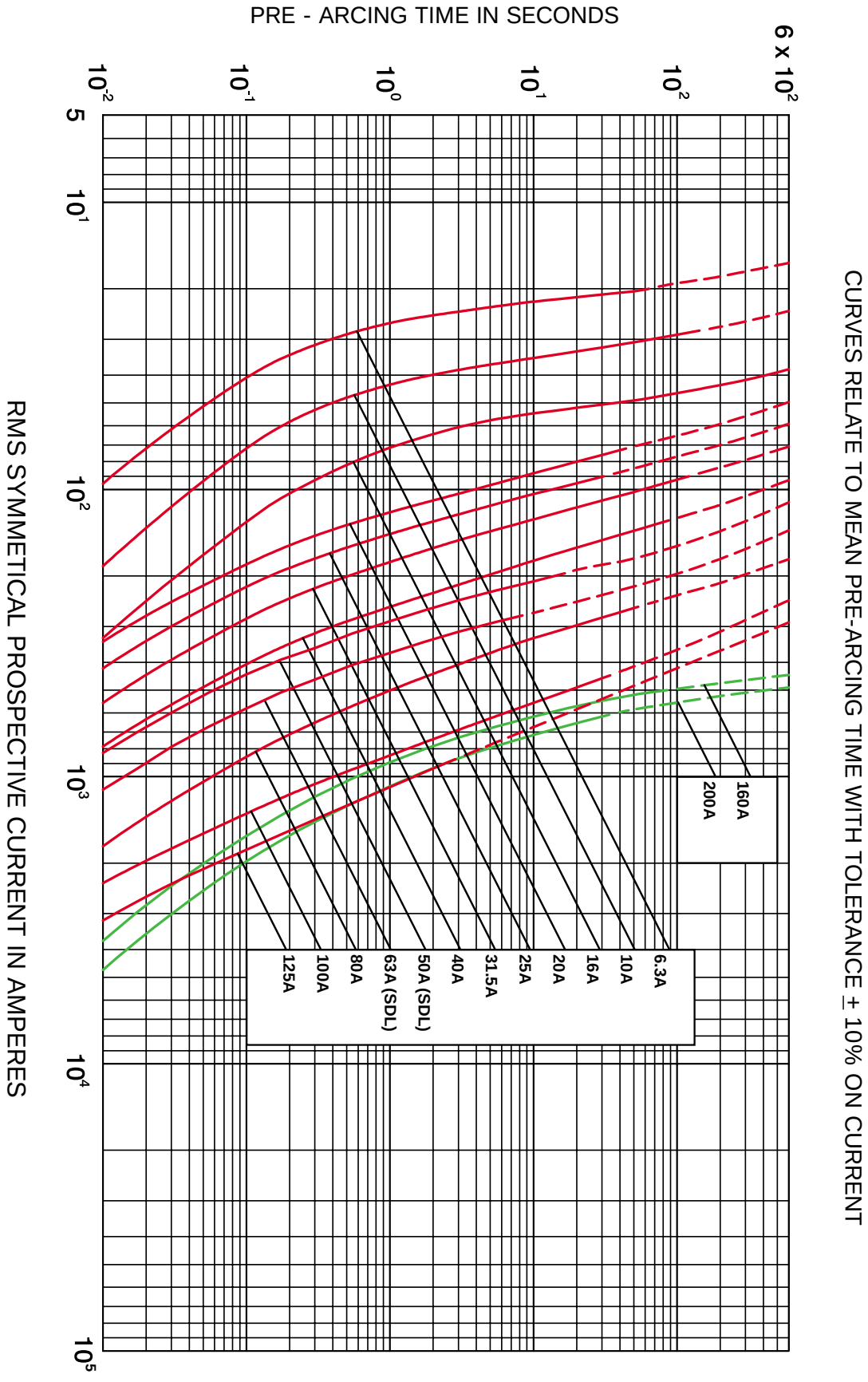
**b)** Fuse links listed are normally for indoor use but versions suitable for outdoor use are olso available in the same ratings and dimensions. For outdoor versions of the '**S**' range, replace the '**S**' with a '**T**' when ordering - for example '**T**DLSJ'

**c)** * All the fuse link code references listed in the proceeding tables are for striker fitted versions, for non-striker versions please replace the letter '**S**' with the letter '**N**' in the code - for example 'SDL**N**J'. For further information on our parts referencing system, please refer to section 10 of this catalogue.

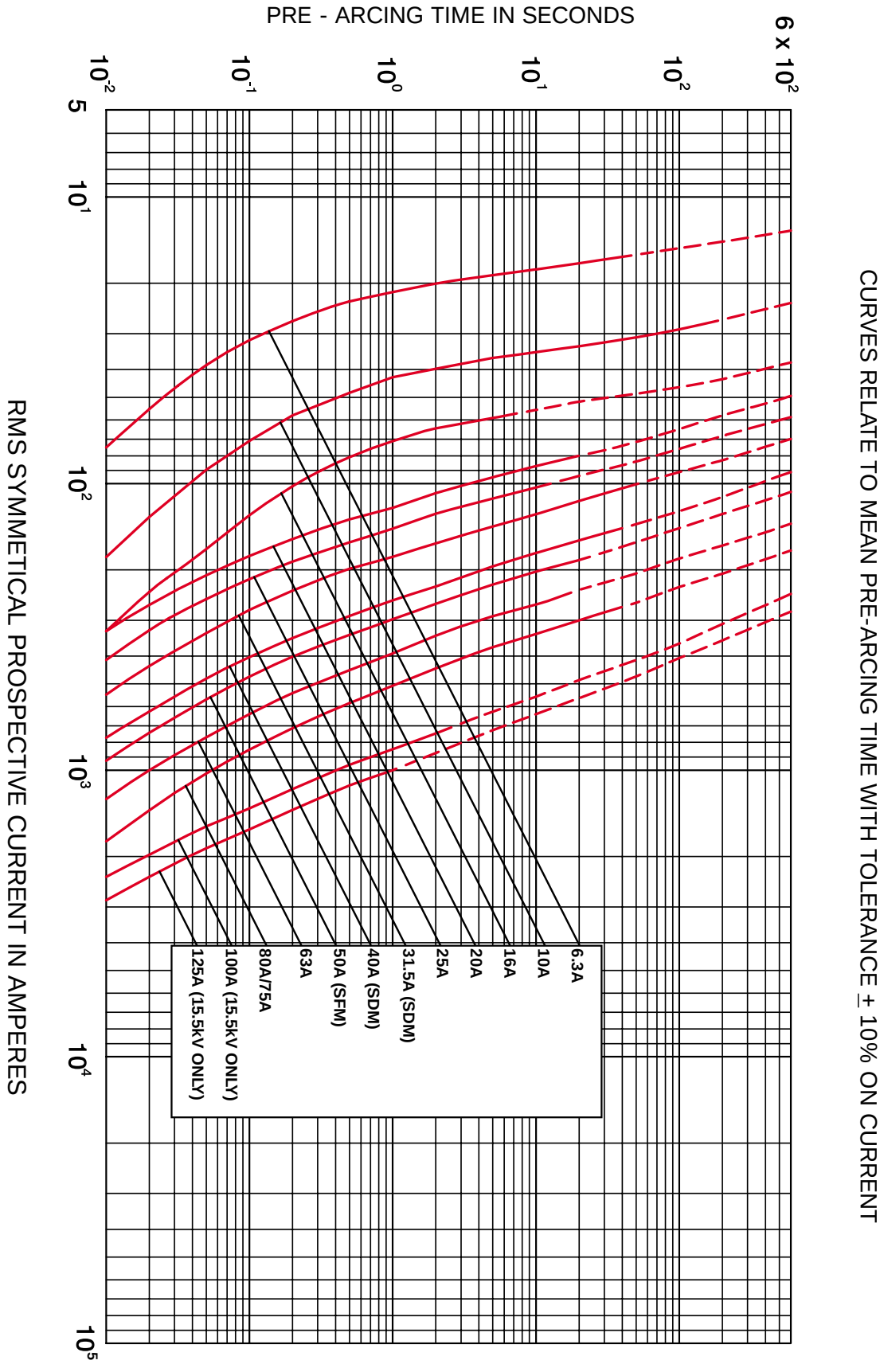
## Time current characteristics for 7.2kV DIN Fuse Links, 'S' range, fuse types SDL, SFL



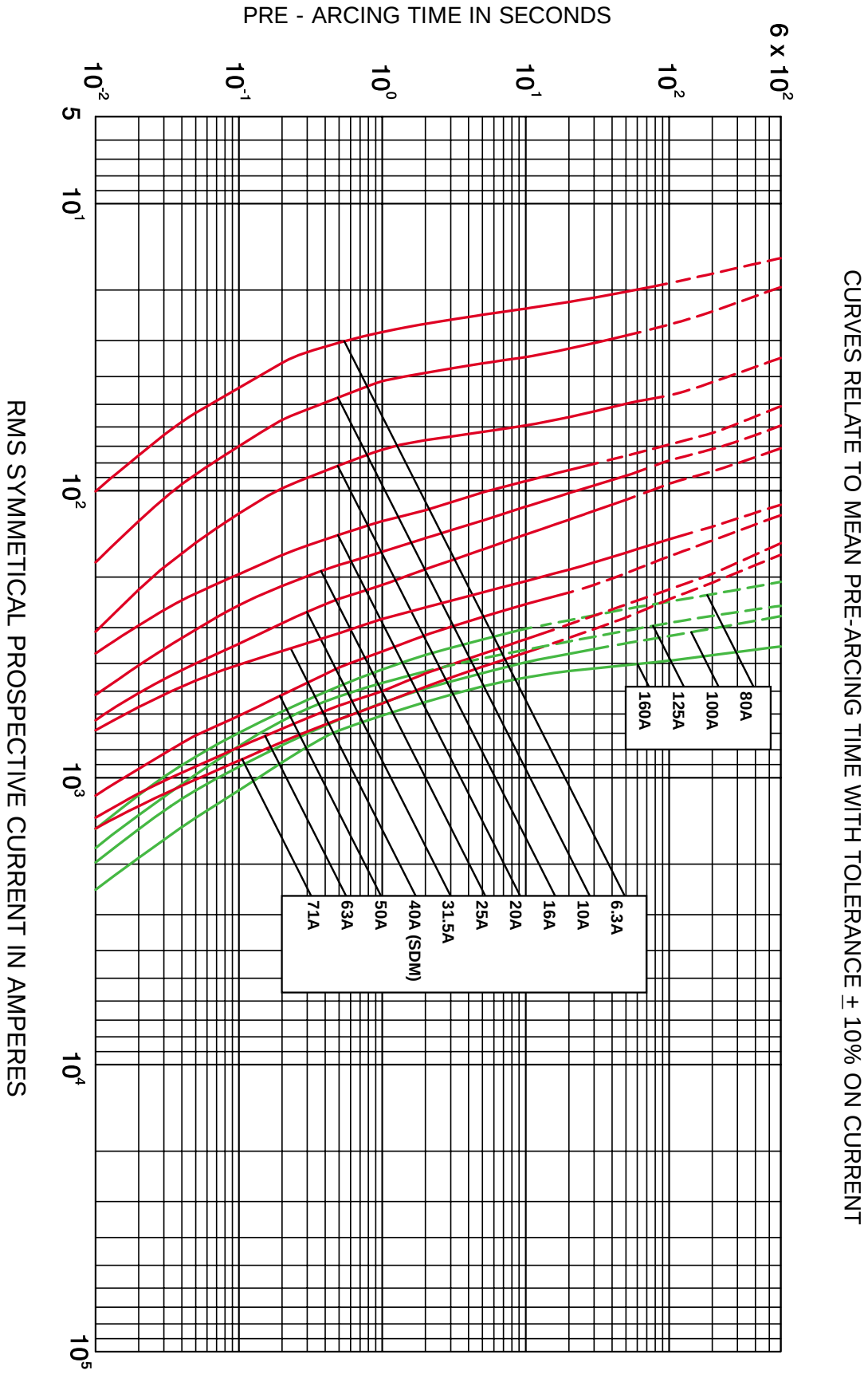
**Time current characteristics for 12kV DIN Fuse Links, 'S' range, fuse types SDL, SFL, SKL and SXL**



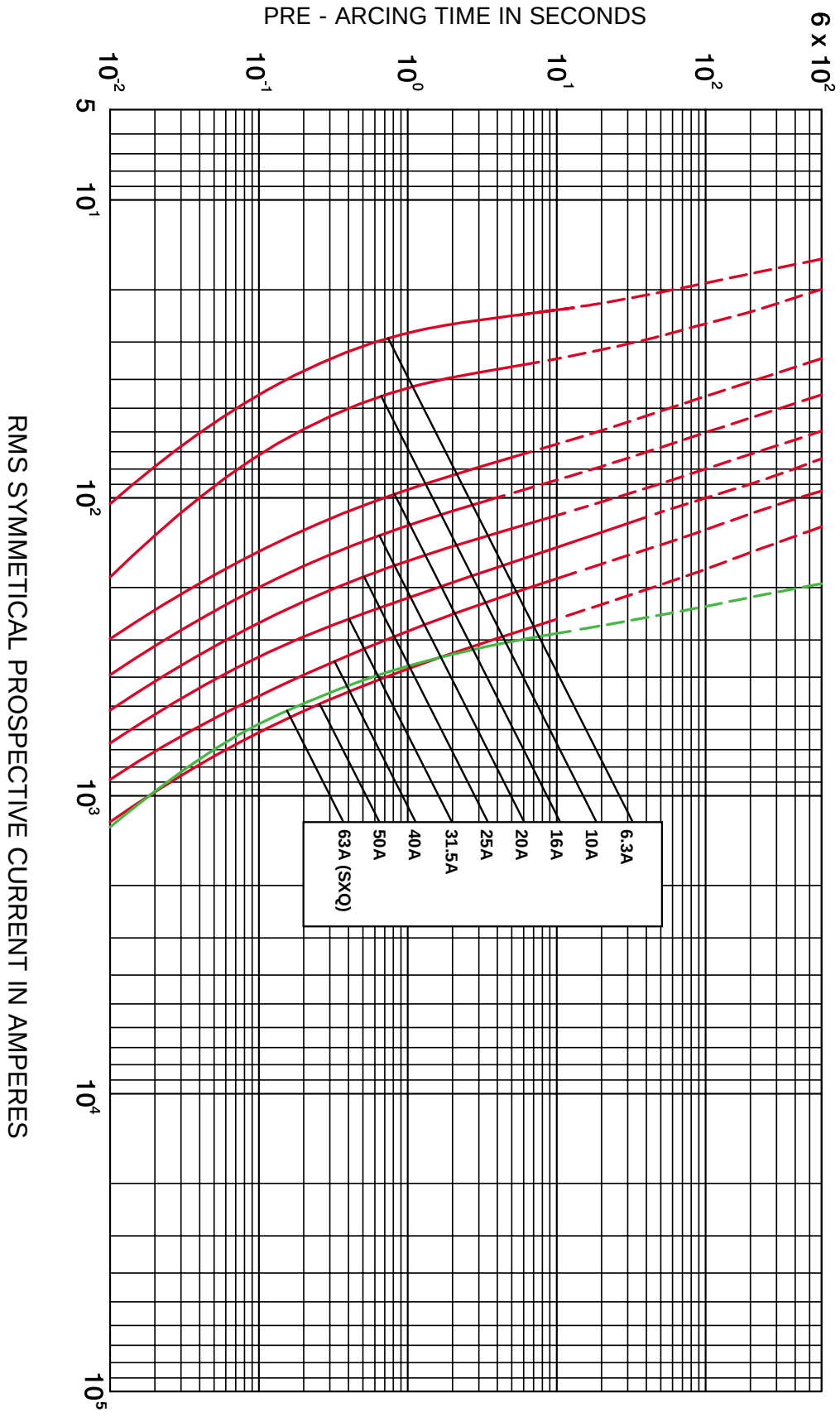
## Time current characteristics for 15.5, 17.5kV DIN Fuse Links, 'S' range, fuse types SDL, SFL, SDM, SFM and SKM



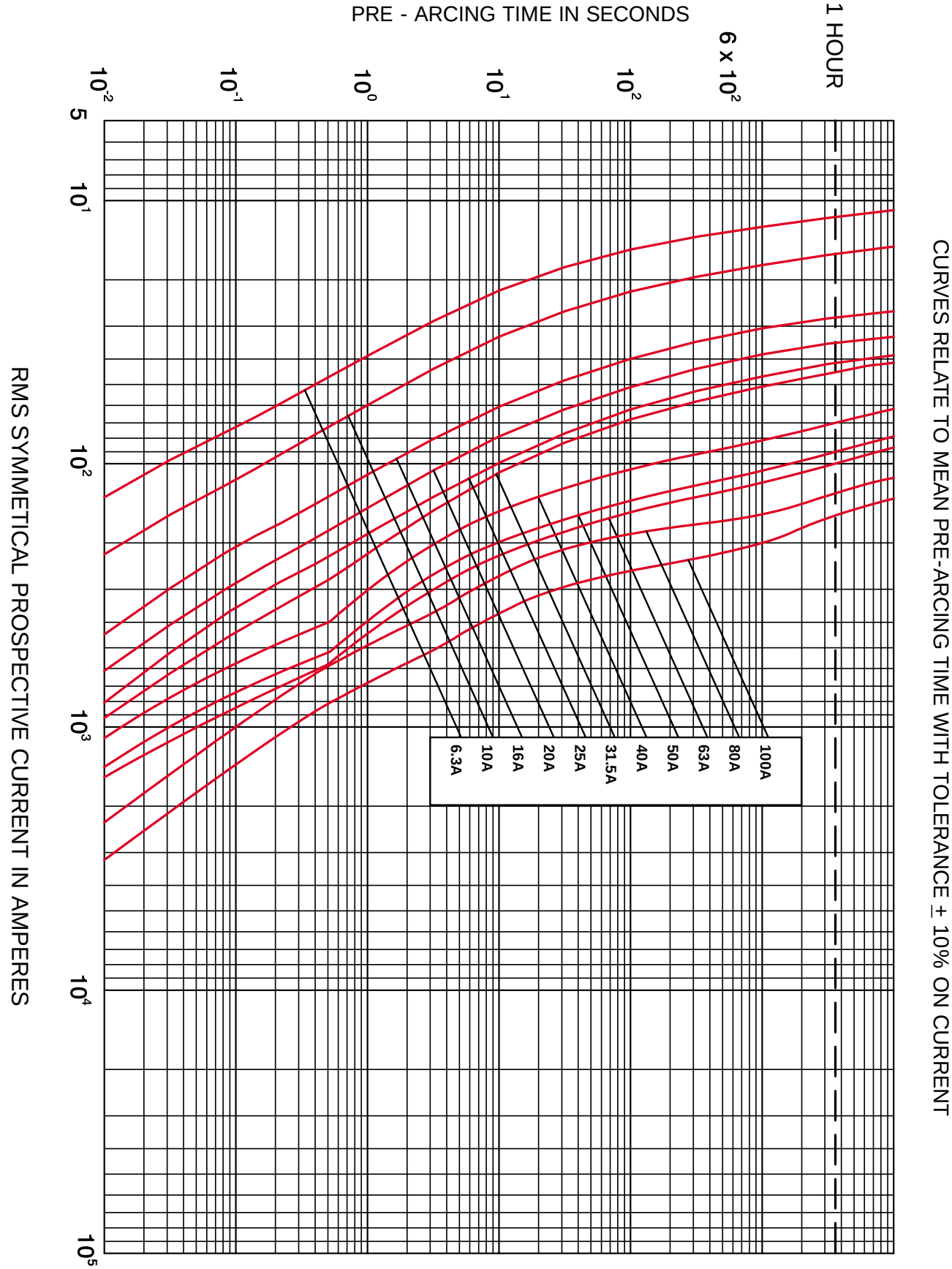
**Time current characteristics for 24kV DIN Fuse Links, 'S' range, fuse types SDM, SXM and SFM**



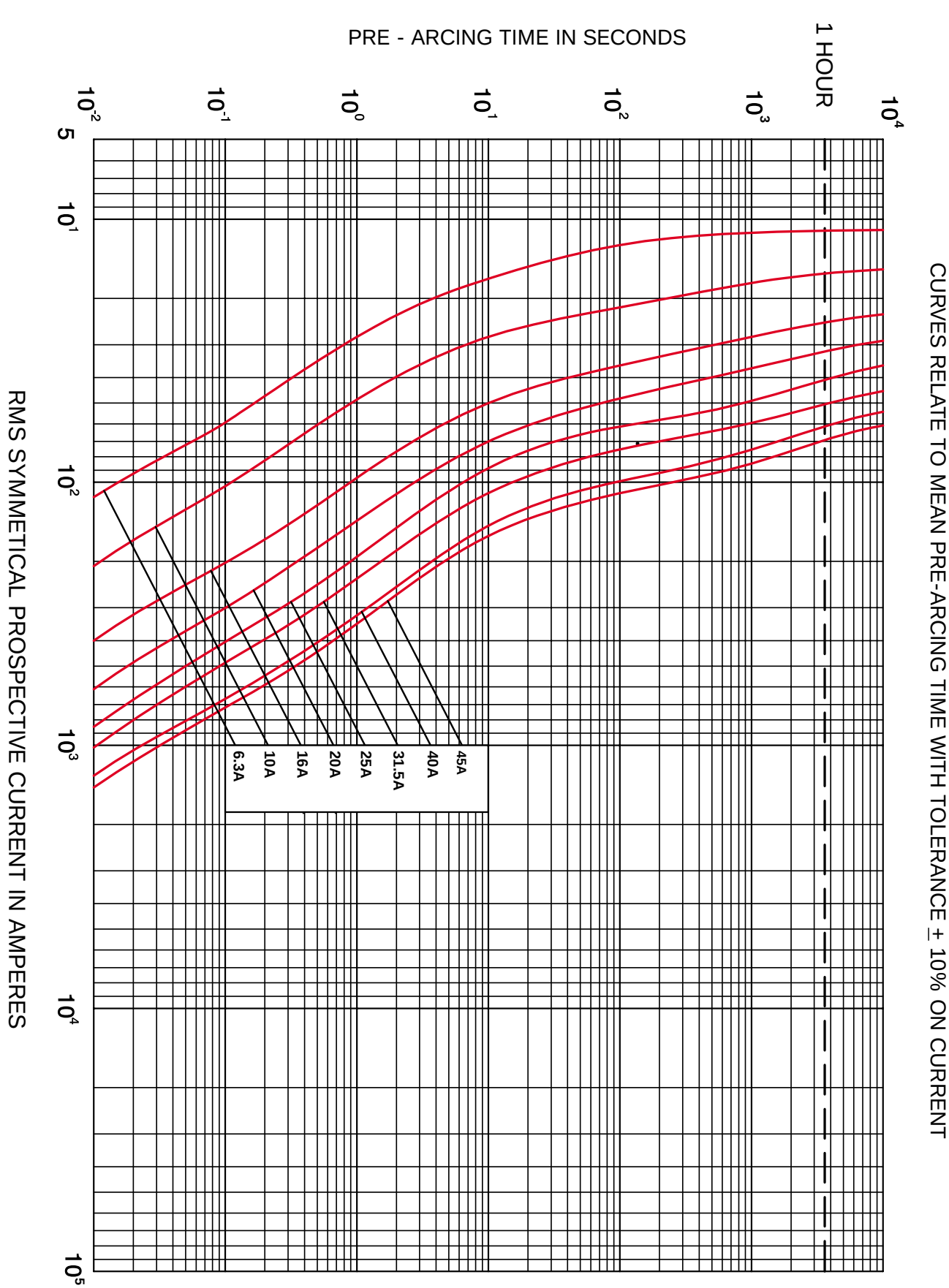
## Time current characteristics for 36kV DIN Fuse Links, 'S' range, fuse types SDQ, SFQ and SXQ



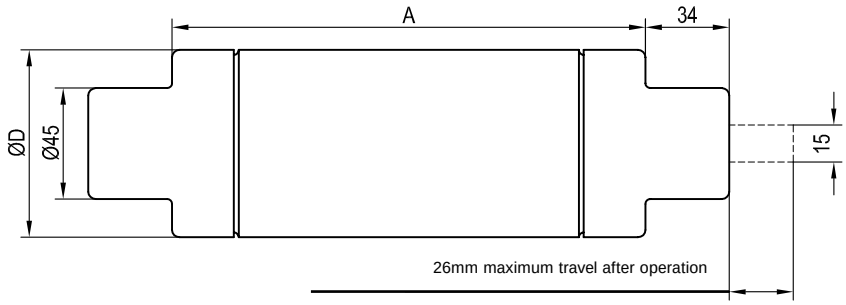
**Time current characteristics for 12kV DIN Fuse Links, 'F' range, fuse types FDL, FFL and FXL**



## Time current characteristics for 24kV DIN Fuse Links, 'F' range, fuse types FDM and FFM



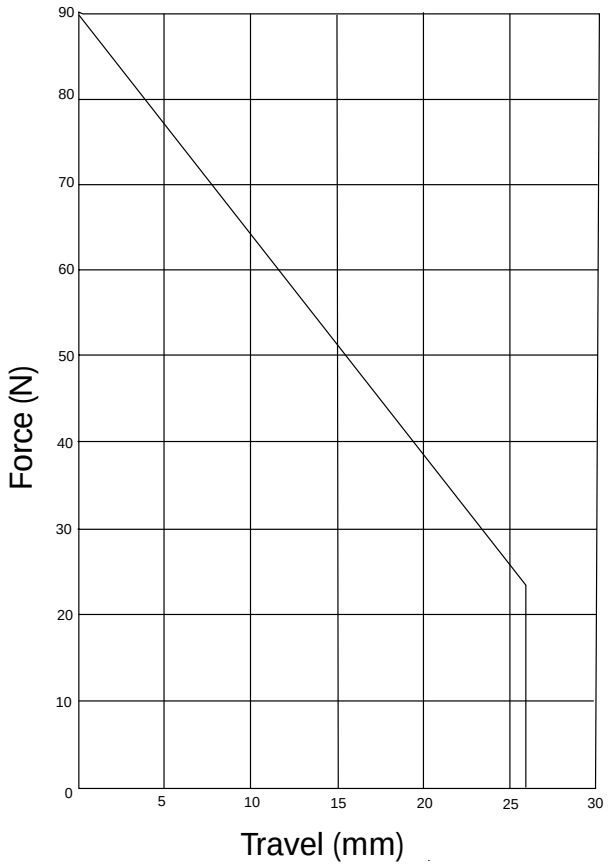
## Striker characteristics



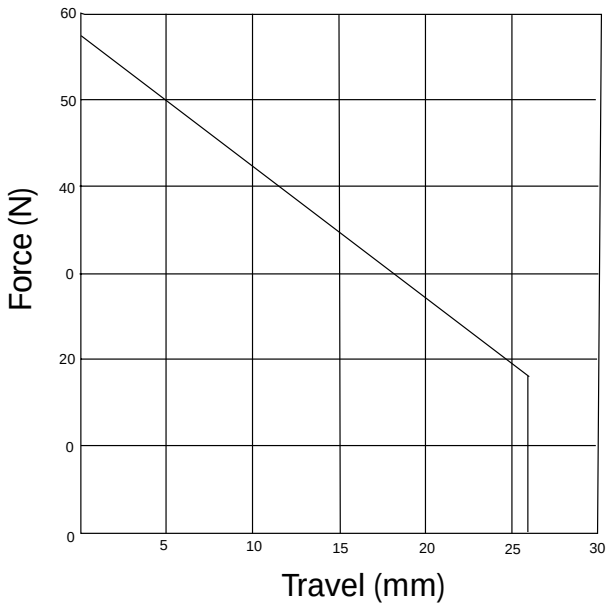

| PRODUCT CODE | A | D |
|---|---|---|
| ADOSJ | 192 | 51 |
| SDOSJ | 192 | 51 |
| ADLSJ | 292 | 51 |
| FDLSJ | 292 | 51 |
| SDLSJ | 292 | 51 |
| FDMSJ | 442 | 51 |
| SDMSJ | 442 | 51 |
| SDQSJ | 537 | 51 |
| SFOSJ | 192 | 76 |
| AILSJ | 292 | 76 |
| FFLSJ | 292 | 76 |
| SFLSJ | 292 | 76 |
| SKLSJ | 292 | 76 |
| AIMSJ | 442 | 76 |
| FFMSJ | 442 | 76 |
| SFMSJ | 442 | 76 |
| SKMSJ | 442 | 76 |
| SFQSJ | 537 | 76 |
| SXLSJ | 292 | 88 |
| SXMSJ | 442 | 88 |
| SXQSJ | 537 | 88 |
| FXLSJ | 292 | 88 |

- Please refer to the ‘how to order’ page 61 of this catalogue for further details of how ordering codes are formatted

**E = Spring Striker 80N to IEC 60282-1 designation ‘medium’**




**S = Spring Striker 50N to DIN 43625 and IEC 60282-1 designation ‘medium’**



## General guide to the selection of DIN Fuse Links for use in the primary circuit of three phase transformers

### For HV DIN Fuse Links type SXLSJ, SDLSJ, SFLSJ, SKLSJ, SDMSJ, SFMSJ, SXMSJ SDQSJ, SFQSJ. Selection guide using LV Fuse Links operating class gG/gL on low voltage side for individual cable exit protection.

**Selection Table for Back-up Fuse Links**

| Tranformer Rating | Transformer Primary Voltage | | | | | |
|---|---|---|---|---|---|---|
| | 10 (kV) | | 20 (kV) | | 30 (kV) | |
| | Rated Current of the High Voltage Fuse Link | | Rated Current of the High Voltage Fuse Link | | Rated Current of the High Voltage Fuse Link | |
| (kVA) | Min | Max | Min | Max | Min | Max |
| 50 | 6.3 | 10 | 6.3 | 6.3 | 3.15 | 3.15 |
| 100 | 16 | 16 | 6.3 | 16 | 6.3 | 10 |
| 125 | 16 | 25 | 10 | 16 | 6.3 | 10 |
| 160 | 16 | 31.5 | 10 | 16 | 6.3 | 10 |
| 200 | 20 | 31.5 | 16 | 20 | 10 | 16 |
| 250 | 25 | 50 | 16 | 25 | 10 | 16 |
| 315 | 31.5 | 63 | 20 | 31.5 | 16 | 16 |
| 400 | 40 | 80 | 20 | 40 | 16 | 25 |
| 500 | 50 | 80 | 25 | 50 | 16 | 31.5 |
| 630 | 63 | 100 | 31.5 | 50 | 20 | 40 |
| 800 | 80 | 125 | 40 | 50 | 25 | 40 |
| 1000 | 100 | 125 | 50 | 71 | 31.5 | 50 |
| 1250 | 125 | 200 | 63 | 100 | 40 | 50 |
| 1600 | 160 | 200 | 71 | 100 | 50 | 63 |
| 2000 | 200 | 200 | 100 | 160 | 63 | 63 |

### For HV DIN Fuse Links type SXLSJ, SDLSJ, SFLSJ, SKLSJ, SDMSJ, SFMSJ, SXMSJ SDQSJ, SFQSJ. Selection guide using LV Fuse Links operating class gG/gL on the low voltage side for overload protection of the transformer.

**Selection Table for Back-up Fuse Links**

| Tranformer Rating | Transformer Primary Voltage | | | | | | Low Voltage |
|---|---|---|---|---|---|---|---|
| | 10 (kV) | | 20 (kV) | | 30 (kV) | | NH Fuse Size |
| | Rated Current of the High Voltage Fuse Link | | Rated Current of the High Voltage Fuse Link | | Rated Current of the High Voltage Fuse Link | | gG/gL |
| (kVA) | Min | Max | Min | Max | Min | Max | (A) |
| 50 | 10 | 10 | 6.3 | 6.3 | 3.15 | 3.15 | 80 |
| 100 | 16 | 16 | 10 | 16 | 6.3 | 10 | 125 |
| 125 | 20 | 25 | 10 | 16 | 6.3 | 10 | 160 |
| 160 | 25 | 31.5 | 16 | 16 | 10 | 10 | 200 |
| 200 | 31.5 | 31.5 | 16 | 20 | 16 | 16 | 250 |
| 250 | 40 | 50 | 20 | 25 | 16 | 16 | 315 |
| 315 | 50 | 63 | 25 | 31.5 | 16 | 20 | 400 |
| 400 | 63 | 80 | 31.5 | 40 | 20 | 25 | 500 |
| 500 | 80 | 80 | 40 | 50 | 25 | 31.5 | 630 |
| 630 | 100 | 100 | 50 | 50 | 31.5 | 40 | 800 |
| 800 | 125 | 125 | 50 | 50 | 40 | 40 | 1000 |
| 1000 | 125 | 125 | 63 | 71 | 50 | 50 | 1250 |

**Selection of these HV fuse links has been based on the following:**

1. The fuse link should withstand transformer magnetising inrush currents, taken as 12 times full load current for 0.1 seconds.
2. The fuse link should discriminate with the rating of secondary fuse link stated or where only individual cable exit protection exists, the highest rating likely to be used.
3. The fuse link should operate within 2 seconds for transformers complying with IEC60076 - 5 in respect of impedance, voltage and short circuit withstand current.
4. The fuse link should operate reasonably quickly in the event of a transformer internal fault, or an earth fault in the secondary terminal zone of the transformer.
5. In the case where there is no secondary fuse link for overload protection, the minimum recommended HV fuse link rating applies to the use of fuse links in encapsulated enclosures where permissible continuous overload is generally limited to 20% of transformer full load current. However if greater overload currents are permissible a higher rating of fuse link may be required. Where the fuse link is used in open air or conditions of unrestricted ventilation a higher permissible overload may be possible.
6. In most cases more than one rating of HV fuse link is recommended for a particular transformer size. Choice of fuse link will then depend on which fuse offers the best protection e.g. having one fuse for several transformer sizes.

Recommendations for other voltages are available on request.

**General guide to the selection of DIN Fuse Links for use in the primary circuit of three phase transformers**

## For HV DIN fuse links type SXLSJ, SDLSJ, SFLSJ, SKLSJ, SDMSJ, SFMSJ, SXMSJ SDQSJ, SFQSJ. Selection guide according to DIN VDE 0670 part 402 using LV fuse links operating class gTr on low voltage side for overload protection of the transformer.

**Selection Table for Back-up Fuse Links**

| Tranformer Rating | Transformer Primary Voltage | | | | | | Low Voltage |
|---|---|---|---|---|---|---|---|
| | 10 (kV) | | 20 (kV) | | 30 (kV) | | NH Fuse Size |
| | Rated Current of the High Voltage Fuse Link | | Rated Current of the High Voltage Fuse Link | | Rated Current of the High Voltage Fuse Link | | gTr |
| (kVA) | Min | Max | Min | Max | Min | Max | (A) |
| 100 | 16 | 16 | 10 | 10 | 6.3 | 6.3 | 100 |
| 125 | 16 | 16 | 10 | 10 | 10 | 10 | 125 |
| 160 | 20 | 25 | 16 | 16 | 10 | 10 | 160 |
| 200 | 25 | 31.5 | 16 | 16 | 16 | 16 | 200 |
| 250 | 31.5 | 40 | 16 | 25 | 16 | 20 | 250 |
| 315 | 40 | 50 | 25 | 25 | 20 | 25 | 315 |
| 400 | 50 | 63 | 25 | 31.5 | 25 | 25 | 400 |
| 500 | 63 | 80 | 31.5 | 40 | 25 | 31.5 | 500 |
| 630 | 80 | 100 | 40 | 50 | 31.5 | 40 | 630 |
| 800 | 100 | 125 | 63 | 63 | 40 | 50 | 800 |
| 1000 | 125 | 160 | 63 | 80 | 40 | 50 | 1000 |

## For HV DIN fuse links type FDLSJ, FFLSJ, FXLSJ, FDMSJ, FFMSJ. Selection guide using LV fuse links operating class gG/gL on low voltage side for individual cable exit protection.

**Selection Table for Full Range Fuse Links**

| Tranformer Rating | Transformer Primary Voltage | | | |
|---|---|---|---|---|
| | 10 (kV) | | 20 (kV) | |
| | Rated Current of the High Voltage Fuse Link | | Rated Current of the High Voltage Fuse Link | |
| (kVA) | Min | Max | Min | Max |
| 50 | 6.3 | 10 | 6.3 | 6.3 |
| 100 | 10 | 20 | 6.3 | 10 |
| 125 | 16 | 25 | 6.3 | 16 |
| 160 | 16 | 31.5 | 10 | 16 |
| 200 | 20 | 40 | 10 | 20 |
| 250 | 25 | 50 | 16 | 25 |
| 315 | 31.5 | 63 | 16 | 31.5 |
| 400 | 40 | 80 | 20 | 40 |
| 500 | 50 | 100 | 25 | 45 |
| 630 | 63 | 100 | 31.5 | 45 |
| 800 | 80 | 100 | 40 | 45 |
| 1000 | 100 | 100 | 45 | 45 |

### Selection of these HV fuse links has been based on the following:

1. The fuse link should withstand transformer magnetising inrush currents, taken as 12 times full load current for 0.1 seconds.
2. The fuse link should discriminate with the rating of secondary fuse link stated or where only individual cable exit protection exists, the highest rating likely to be used.
3. The fuse link should operate within 2 seconds for transformers complying with IEC60076 - 5 in respect of impedance, voltage and short circuit withstand current.
4. The fuse link should operate reasonably quickly in the event of a transformer internal fault, or an earth fault in the secondary terminal zone of the transformer.
5. In the case where there is no secondary fuse link for overload protection, the minimum recommended HV fuse link rating applies to the use of fuse links in encapsulated enclosures where permissible continuous overload is generally limited to 20% of transformer full load current. However if greater overload currents are permissible a higher rating of fuse link may be required. Where the fuse link is used in open air or conditions of unrestricted ventilation a higher permissible overload may be possible.
6. In most cases more than one rating of HV fuse link is recommended for a particular transformer size. Choice of fuse link will then depend on which fuse offers the best protection e.g. having one fuse for several transformer sizes.

Recommendations for other voltages are available on request.

## General guide to the selection of DIN Fuse Links for use in the primary circuit of three phase transformers

### For HV DIN fuse links type FDLSJ, FFLSJ, FXLSJ, FDMSJ, FFMSJ. Selection guide using LV fuse links operating class gG/gL on low voltage side for overload protection of the transformer.

**Selection Table for Full Range Fuse Links**

| Tranformer Rating | Transformer Primary Voltage | | | | Low Voltage |
|---|---|---|---|---|---|
| | 10 (kV) | | 20 (kV) | | NH Fuse Size |
| | Rated Current of the High Voltage Fuse Link | | Rated Current of the High Voltage Fuse Link | | gG/gL |
| (kVA) | Min | Max | Min | Max | (A) |
| 50 | 6.3 | 6.3 | 6.3 | 6.3 | 80 |
| 100 | 10 | 10 | 10 | 10 | 125 |
| 125 | 16 | 16 | 10 | 10 | 160 |
| 160 | 16 | 20 | 16 | 16 | 200 |
| 200 | 20 | 31.5 | 16 | 16 | 250 |
| 250 | 31.5 | 40 | 16 | 20 | 315 |
| 315 | 40 | 40 | 20 | 20 | 400 |
| 400 | 40 | 63 | 25 | 31.5 | 500 |
| 500 | 50 | 63 | 31.5 | 40 | 630 |
| 630 | 100 | 100 | 40 | 45 | 800 |
| 800 | 100 | 100 | - | - | 1000 |

### For fuse links type FDLSJ, FFLSJ, FXLSJ, FDMSJ, FFMSJ. Selection guide according to DIN VDE O670 part 402 using LV fuse links operating class gTr on low voltage side for overload protection of the transformer.

**Selection Table for Full Range Fuse Links**

| Tranformer Rating | Transformer Primary Voltage | | | | Low Voltage |
|---|---|---|---|---|---|
| | 10 (kV) | | 20 (kV) | | NH Fuse Size |
| | Rated Current of the High Voltage Fuse Link | | Rated Current of the High Voltage Fuse Link | | gTr |
| (kVA) | Min | Max | Min | Max | (kVA) |
| 100 | 10 | 20 | 6.3 | 10 | 100 |
| 125 | 16 | 25 | 10 | 16 | 125 |
| 160 | 16 | 31.5 | 10 | 16 | 160 |
| 200 | 20 | 40 | 16 | 20 | 200 |
| 250 | 25 | 50 | 20 | 25 | 250 |
| 315 | 40 | 63 | 20 | 31.5 | 315 |
| 400 | 40 | 80 | 25 | 40 | 400 |
| 500 | 50 | 100 | 31.5 | 45 | 500 |
| 630 | 80 | 100 | 40 | 45 | 630 |
| 800 | 100 | 100 | 45 | 45 | 800 |
| 1000 | 100 | 100 | - | - | 1000 |

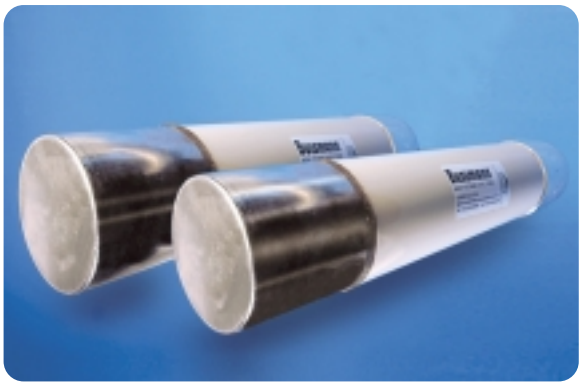
### Selection of these HV fuse links has been based on the following:

1. The fuse link should withstand transformer magnetising inrush currents, taken as 12 times full load current for 0.1 seconds.
2. The fuse link should discriminate with the rating of secondary fuse link stated or where only individual cable exit protection exists, the highest rating likely to be used.
3. The fuse link should operate within 2 seconds for transformers complying with IEC60076 - 5 in respect of impedance, voltage and short circuit withstand current.
4. The fuse link should operate reasonably quickly in the event of a transformer internal fault, or an earth fault in the secondary terminal zone of the transformer.
5. In the case where there is no secondary fuse link for overload protection, the minimum recommended HV fuse link rating applies to the use of fuse links in encapsulated enclosures where permissible continuous overload is generally limited to 20% of transformer full load current. However if greater overload currents are permissible a higher rating of fuse link may be required. Where the fuse link is used in open air or conditions of unrestricted ventilation a higher permissible overload may be possible.
6. In most cases more than one rating of HV fuse link is recommended for a particular transformer size. Choice of fuse link will then depend on which fuse offers the best protection e.g. having one fuse for several transformer sizes.

Recommendations for other voltages are available on request.

### British Standard Motor Fuse Links

### North American Motor Fuse Links



### DIN Dimensioned Motor Fuse Links

- **Motor fuse links comply with IEC60282-1, IEC644 and BS5907.**
- **Available in DIN 43625 and BS2692 dimensions.**
- **Sold in a wide range of ratings from:**
  **3.6 kV – 5 to 450 A**
  **7.2 kV – 5 to 355 A**
- **North American dimensioned products also available. 2R to 24R ratings.**

## Bussmann Motor Fuse Links

The Bussmann range of motor fuse links are designed to meet the specific requirements necessary for motor protection. During the starting cycle of direct on-line motors, the fuse elements will reach a considerably higher temperature than during normal operation; (this is due to the the high amount of current the motor will draw as it starts, typically, 6 times its normal load current value). This results in expansion and contraction of the fuse elements and could cause premature operation of the fuse.

Bussmann motor fuse links encompass an advanced design to minimise this effect. This therefore, negates the need to over specify the fuse rating due to high values of of motor starting current.

Bussmann motor fuse links operate extremely quickly under heavy fault currents, resulting from the time / current characteristic. Low power dissipation ensures low temperature rise, important in multi-tier starters for example. Switching (Arc), voltages are lower than permitted values, therefore, 5.5kV fuses are also suitable for 4.8kV and 2.4kV circuits.

## Application

Fuse Links provide short circuit protection in motor circuits to both the motor starter and cables from the starter to the motor. Overload protection is provided by the motor starter, generally by an overload relay and contactor. Combination striker tripping may also form part of associated equipment which houses the fuse links and motor starters.

## Application Procedure

For any motor the fuse current rating is determined by magnitude and duration of starting current, except in a few situations where the starting currents are very light. The fuse current rating should therefore be selected as follows:

## Direct-on-line Starting

In the absence of specific information the starting current can usually be taken to be six times the motor's full load current. The starting time will depend on the type of the drive but will be approximately as follows:

Pump Motors - 6 seconds

Mill Motors - 10 to 15 seconds

Fan Motors - 60 seconds

These are average values and the appropriate figures for starting current and starting time for actual installation should be obtained wherever possible.

Multiply the starting current by 1.7 and using this value of current and the starting time, (it is recommended that a minimum time of 5 seconds be adopted), plot this point on the time-current characteristics of the fuse link. The correct current rating of the fuse is then chosen as being the one immediately to the right of the point so plotted. The chosen fuse must also have a current rating of at least 1.3 times the full-load current of the associated motor.

The rating chosen will be adequate for normal applications where the associated motor is not started more than twice in given period of one hour.

For applications using more frequent starting duties, a greater derating factor must be applied as shown in the following table.

| | |
|---|---|
| **Maximum** 2 starts per hour - Derating factor 1.7 | **Maximum** 8 starts per hour - Derating factor 2.1 |
| **Maximum** 4 starts per hour - Derating factor 1.9 | **Maximum** 16 starts per hour - Derating factor 2.4 |

## Assisted Starting

A similar method of fuse selection may be used as for direct-on-line starting (see above), but it must be noted that the normal running current of the motor is likely to be closer in value to the nominal current rating of the fuse than for direct-on-line applications.

The rating of fuse chosen will need to be appreciably greater than the motor running current to allow for restricted cooling inside control gear cubicles, particularly where multi-tier starters are involved. In case of doubt refer to Bussmann for further guidance.

## Note

For applications involving more frequent starting duties than 16 times per hour or where unusual duty cycles are involved, consult Bussmann application engineers for advice.

## Table of ratings for motor fuses 3.6 - 7.2kV to British Standard dimensions

| Part Number | Voltage Rating | Current Rating | Breaking Capacity | Minimum Breaking Current | Cold resistance and watts loss in free air at rated current | | Joule Intergral ($I^2t$) | | Length | Diameter Ø | Weight |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $U_n$ | $I_n$ | $I_1$ | $I_3$ | | | $A^2s$ | | | | |
| | kV | A | kA | A | m Ω | W | Minimum Pre-Arcing | Maximum Total Clearing | mm | mm | kg |
| 3.6WJON65 | 3.6 | 5 | 50 | 13 | 148 | 5 | $2.0X10^1$ | $1.6X10^3$ | 192 | 35 | 0.54 |
| 3.6WJON66.3 | 3.6 | 6.3 | 50 | 24 | 56.3 | 8 | $1.6X10^2$ | $1.3X10^3$ | 192 | 35 | 0.54 |
| 3.6WJON610 | 3.6 | 10 | 50 | 24 | 56.3 | 8 | $1.6X10^2$ | $1.3X10^3$ | 192 | 35 | 0.54 |
| 3.6WJON616 | 3.6 | 16 | 50 | 56 | 33.1 | 12 | $1.7X10^2$ | $1.4X10^3$ | 192 | 35 | 0.54 |
| 3.6WJON620 | 3.6 | 20 | 50 | 56 | 22.1 | 12 | $3.9X10^2$ | $3.2X10^3$ | 192 | 35 | 0.54 |
| 3.6WJON625 | 3.6 | 25 | 50 | 70 | 17.7 | 15 | $6.1X10^2$ | $4.9X10^3$ | 192 | 35 | 0.54 |
| 3.6WJON631.5 | 3.6 | 31.5 | 50 | 112 | 10.1 | 14 | $1.2X10^3$ | $9.8X10^3$ | 192 | 35 | 0.54 |
| 3.6WJON640 | 3.6 | 40 | 50 | 112 | 7.54 | 17 | $2.1X10^3$ | $1.7X10^4$ | 192 | 35 | 0.54 |
| 3.6WJON650 | 3.6 | 50 | 50 | 140 | 6.03 | 21 | $3.2X10^3$ | $2.6X10^4$ | 192 | 35 | 0.54 |
| 3.6WDOH650 | 3.6 | 50 | 50 | 180 | 5.36 | 20 | $1.8X10^3$ | $2.4X10^4$ | 192 | 51 | 1.1 |
| 3.6WDOH663 | 3.6 | 63 | 50 | 225 | 3.68 | 21 | $3.8X10^3$ | $4.5X10^4$ | 192 | 51 | 1.1 |
| 3.6WDOH680 | 3.6 | 80 | 50 | 288 | 2.88 | 27 | $6.3X10^3$ | $8.0X10^4$ | 192 | 51 | 1.1 |
| 3.6WDOH6100 | 3.6 | 100 | 50 | 360 | 2.16 | 31 | $9.8X10^3$ | $1.1X10^5$ | 192 | 51 | 1.1 |
| 3.6WDOH6125 | 3.6 | 125 | 50 | 450 | 1.73 | 39 | $1.5X10^4$ | $2.2X10^5$ | 192 | 51 | 1.1 |
| 3.6WFOH6160 | 3.6 | 160 | 50 | 600 | 1.28 | 47 | $3.1X10^4$ | $6.2X10^5$ | 192 | 76 | 2.1 |
| 3.6WFOH6200 | 3.6 | 200 | 50 | 600 | 0.938 | 52 | $5.7X10^4$ | $1.1X10^6$ | 192 | 76 | 2.1 |
| 3.6WDFHO50 | 3.6 | 50 | 50 | 152 | 6.61 | 21 | $1.8X10^3$ | $2.4X10^4$ | 254 | 51 | 1.46 |
| 3.6WDFHO63 | 3.6 | 63 | 50 | 171 | 5.03 | 28 | $3.1X10^3$ | $4.5X10^4$ | 254 | 51 | 1.46 |
| 3.6WDFHO80 | 3.6 | 80 | 50 | 190 | 3.52 | 31 | $6.3X10^3$ | $8.0X10^4$ | 254 | 51 | 1.46 |
| 3.6WDFHO100 | 3.6 | 100 | 50 | 190 | 2.87 | 39 | $9.5X10^3$ | $1.2X10^5$ | 254 | 51 | 1.46 |
| 3.6WDFHO125 | 3.6 | 125 | 50 | 190 | 2.44 | 53 | $1.3X10^4$ | $1.8X10^5$ | 254 | 51 | 1.46 |
| 3.6WFFHO160 | 3.6 | 160 | 50 | 300 | 1.53 | 54 | $3.4X10^4$ | $4.1X10^5$ | 254 | 76 | 3.2 |
| 3.6WFFHO200 | 3.6 | 200 | 50 | 300 | 1.24 | 67 | $5.1X10^4$ | $7.2X10^5$ | 254 | 76 | 3.2 |
| 3.6WKFHO250 | 3.6 | 250 | 50 | 520 | 0.653 | 57 | $1.8X10^5$ | $2.4X10^6$ | 254 | 76 | 3.2 |
| 3.6WKFHO315 | 3.6 | 315 | 50 | 650 | 0.435 | 60 | $4.1X10^5$ | $5.0X10^6$ | 254 | 76 | 3.2 |
| 3.6WKFHO355 | 3.6 | 355 | 50 | 820 | 0.345 | 59 | $6.4X10^5$ | $7.0X10^6$ | 254 | 76 | 3.2 |
| 3.6WKFHO400 | 3.6 | 400 | 50 | 820 | 0.345 | 76 | $6.4X10^5$ | $7.0X10^6$ | 254 | 76 | 3.2 |
| 3.6WFGHO31.5 | 3.6 | 31.5 | 50 | 151 | 18.4 | 25 | $4.5X10^2$ | $6.0X10^3$ | 359 | 76 | 4.1 |
| 3.6WFGHO40 | 3.6 | 40 | 50 | 151 | 13.9 | 31 | $8.0X10^2$ | $1.2X10^4$ | 359 | 76 | 4.1 |
| 3.6WFGHO50 | 3.6 | 50 | 50 | 151 | 9.24 | 32 | $1.8X10^3$ | $2.2X10^4$ | 359 | 76 | 4.1 |
| 3.6WFGHO63 | 3.6 | 63 | 50 | 151 | 6.93 | 38 | $3.2X10^3$ | $4.5X10^4$ | 359 | 76 | 4.1 |
| 3.6WFGHO80 | 3.6 | 80 | 50 | 170 | 5.47 | 48 | $5.1X10^3$ | $7.5X10^4$ | 359 | 76 | 4.1 |
| 3.6WFGHO100 | 3.6 | 100 | 50 | 212 | 4.40 | 62 | $7.9X10^3$ | $1.2X10^5$ | 359 | 76 | 4.1 |
| 3.6WFGHO125 | 3.6 | 125 | 50 | 212 | 3.60 | 79 | $1.2X10^4$ | $1.7X10^5$ | 359 | 76 | 4.1 |
| 3.6WFGHO160 | 3.6 | 160 | 50 | 300 | 2.16 | 75 | $3.4X10^4$ | $4.2X10^5$ | 359 | 76 | 4.1 |
| 3.6WFGHO200 | 3.6 | 200 | 50 | 300 | 1.77 | 95 | $5.1X10^4$ | $7.0X10^5$ | 359 | 76 | 4.1 |
| 3.6WFGHO250 | 3.6 | 250 | 50 | 500 | 1.13 | 96 | $1.3X10^6$ | $1.9X10^6$ | 359 | 76 | 4.1 |
| 3.6WKGHO315 | 3.6 | 315 | 50 | 852 | 0.646 | 89 | $4.5X10^5$ | $6.0X10^6$ | 359 | 76 | 3.9 |
| 3.6WKGHO355 | 3.6 | 355 | 50 | 852 | 0.512 | 90 | $6.4X10^5$ | $8.5X10^6$ | 359 | 76 | 3.9 |
| 3.6WKGHO400 | 3.6 | 400 | 50 | 960 | 0.454 | 100 | $8.2X10^5$ | $1.1X10^7$ | 359 | 76 | 3.9 |
| 3.6WKGHO450 | 3.6 | 450 | 50 | 1150 | 0.379 | 108 | $1.2X10^6$ | $1.5X10^7$ | 359 | 76 | 3.9 |
| 7.2WFNHO25 | 7.2 | 25 | 40 | 84 | 38.7 | 34 | $1.4X10^2$ | $2.1X10^3$ | 403 | 76 | 4.4 |
| 7.2WFNHO31.5 | 7.2 | 31.5 | 40 | 96 | 25.5 | 35 | $3.1X10^2$ | $4.7X10^3$ | 403 | 76 | 4.4 |
| 7.2WFNHO40 | 7.2 | 40 | 40 | 107 | 18.2 | 40 | $6.1X10^2$ | $8.0X10^3$ | 403 | 76 | 4.4 |
| 7.2WFNHO50 | 7.2 | 50 | 40 | 122 | 13.3 | 46 | $1.2X10^3$ | $1.5X10^4$ | 403 | 76 | 4.4 |
| 7.2WFNHO63 | 7.2 | 63 | 40 | 133 | 10.4 | 56 | $1.9X10^3$ | $3.0X10^4$ | 403 | 76 | 4.4 |
| 7.2WFNHO80 | 7.2 | 80 | 40 | 133 | 7.30 | 65 | $3.8X10^3$ | $5.8X10^4$ | 403 | 76 | 4.4 |
| 7.2WFNHO100 | 7.2 | 100 | 40 | 262 | 4.92 | 69 | $9.8X10^3$ | $1.3X10^5$ | 403 | 76 | 4.4 |
| 7.2WFNHO125 | 7.2 | 125 | 40 | 300 | 2.94 | 63 | $2.4X10^4$ | $2.4X10^5$ | 403 | 76 | 4.4 |
| 7.2WFNHO160 | 7.2 | 160 | 40 | 337 | 2.05 | 72 | $5.0X10^4$ | $7.0X10^5$ | 403 | 76 | 4.4 |
| 7.2WKNHO200 | 7.2 | 200 | 40 | 500 | 1.63 | 90 | $8.8X10^4$ | $1.3X10^6$ | 403 | 76 | 4.4 |
| 7.2WKNHO224 | 7.2 | 224 | 40 | 500 | 1.44 | 98 | $1.1X10^5$ | $1.6X10^6$ | 403 | 76 | 4.4 |
| 7.2WKNHO250 | 7.2 | 250 | 40 | 960 | 1.11 | 105 | $2.2X10^5$ | $1.6X10^6$ | 403 | 76 | 4.4 |
| 7.2WKNHO315 | 7.2 | 315 | 40 | 960 | 0.779 | 107 | $4.5X10^5$ | $3.1X10^6$ | 403 | 76 | 4.4 |

- WDOH6 fuse links also available in the range 6.3 to 40A as code ADOH6.

## Table of ratings for motor fuses 3.6 - 7.2kV to DIN dimensions

| Part Number | Voltage Rating | Current Rating | Breaking Capacity | Minimum Breaking Current | Cold resistance and watts loss in free air at rated current | | Joule Intergral ($I^2t$) | | Length | Diameter Ø | Weight |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $U_n$ | $I_n$ | $I_1$ | $I_3$ | | | $A^2s$ | | | | |
| | kV | A | kA | A | m Ω | W | Minimum Pre-Arcing | Maximum Total Clearing | mm | mm | kg |
| 3.6WDOSJ50 | 3.6 | 50 | 50 | 180 | 5.36 | 20 | $1.8X10^3$ | $2.4X10^4$ | 192 | 51 | 1.1 |
| 3.6WDOSJ63 | 3.6 | 63 | 50 | 225 | 3.68 | 21 | $3.8X10^3$ | $4.5X10^4$ | 192 | 51 | 1.1 |
| 3.6WDOSJ80 | 3.6 | 80 | 50 | 288 | 2.88 | 27 | $6.3X10^3$ | $8.0X10^4$ | 192 | 51 | 1.1 |
| 3.6WDOSJ100 | 3.6 | 100 | 50 | 360 | 2.16 | 31 | $9.8X10^3$ | $1.1X10^5$ | 192 | 51 | 1.1 |
| 3.6WDOSJ125 | 3.6 | 125 | 50 | 450 | 1.73 | 39 | $1.5X10^4$ | $2.2X10^5$ | 192 | 51 | 1.1 |
| 3.6WFOSJ160 | 3.6 | 160 | 50 | 600 | 1.28 | 47 | $3.1X10^4$ | $6.2X10^5$ | 192 | 76 | 2.1 |
| 3.6WFOSJ200 | 3.6 | 200 | 50 | 600 | 0.938 | 52 | $5.7X10^4$ | $1.1X10^6$ | 192 | 76 | 2.1 |
| 3.6WDLSJ50 | 3.6 | 50 | 50 | 152 | 7.73 | 27 | $1.8X10^3$ | $2.4X10^4$ | 292 | 51 | 1.63 |
| 3.6WDLSJ63 | 3.6 | 63 | 50 | 171 | 5.9 | 32 | $3.1X10^3$ | $4.5X10^4$ | 292 | 51 | 1.63 |
| 3.6WDLSJ80 | 3.6 | 80 | 50 | 190 | 4.12 | 37 | $6.3X10^3$ | $8.0X10^4$ | 292 | 51 | 1.63 |
| 3.6WDLSJ100 | 3.6 | 100 | 50 | 190 | 3.38 | 46 | $9.5X10^3$ | $1.2X10^5$ | 292 | 51 | 1.63 |
| 3.6WDLSJ125 | 3.6 | 125 | 50 | 190 | 2.85 | 61 | $1.3X10^4$ | $1.8X10^5$ | 292 | 51 | 1.63 |
| 3.6WFLSJ160 | 3.6 | 160 | 50 | 300 | 1.74 | 61 | $3.4X10^4$ | $4.1X10^5$ | 292 | 76 | 3.16 |
| 3.6WFLSJ200 | 3.6 | 200 | 50 | 300 | 1.42 | 80 | $5.1X10^4$ | $7.2X10^5$ | 292 | 76 | 3.16 |
| 3.6WKLSJ250 | 3.6 | 250 | 50 | 820 | 0.741 | 67 | $1.9X10^5$ | $2.4X10^6$ | 292 | 76 | 3.16 |
| 3.6WKLSJ315 | 3.6 | 315 | 50 | 820 | 0.507 | 69 | $4.0X10^5$ | $5.0X10^6$ | 292 | 76 | 3.16 |
| 3.6WKLSJ400 | 3.6 | 400 | 50 | 820 | 0.401 | 90 | $6.4X10^5$ | $7.0X10^6$ | 292 | 76 | 3.16 |
| 7.2WFMSJ25 | 7.2 | 25 | 63 | 84 | 33.9 | 33 | $1.4X10^2$ | $2.1X10^3$ | 442 | 76 | 5.2 |
| 7.2WFMSJ31.5 | 7.2 | 31.5 | 63 | 96 | 25.4 | 40 | $3.1X10^2$ | $4.7X10^3$ | 442 | 76 | 5.2 |
| 7.2WFMSJ40 | 7.2 | 40 | 63 | 107 | 17.8 | 56 | $6.1X10^2$ | $8.0X10^3$ | 442 | 76 | 5.2 |
| 7.2WFMSJ50 | 7.2 | 50 | 63 | 122 | 14.8 | 53 | $1.2X10^3$ | $1.5X10^4$ | 442 | 76 | 5.2 |
| 7.2WFMSJ63 | 7.2 | 63 | 63 | 133 | 11.6 | 61 | $1.9X10^3$ | $3.0X10^4$ | 442 | 76 | 5.2 |
| 7.2WFMSJ80 | 7.2 | 80 | 63 | 133 | 8.12 | 72 | $3.8X10^3$ | $5.8X10^4$ | 442 | 76 | 5.2 |
| 7.2WFMSJ100 | 7.2 | 100 | 63 | 262 | 5.33 | 74 | $9.8X10^3$ | $1.3X10^5$ | 442 | 76 | 5.2 |
| 7.2WFMSJ125 | 7.2 | 125 | 63 | 300 | 3.19 | 70 | $2.4X10^4$ | $2.4X10^5$ | 442 | 76 | 5.2 |
| 7.2WFMSJ160 | 7.2 | 160 | 63 | 337 | 2.23 | 79 | $5.0X10^4$ | $7.0X10^5$ | 442 | 76 | 5.2 |
| 7.2WKMSJ200 | 7.2 | 200 | 63 | 500 | 1.79 | 99 | $8.8X10^4$ | $1.3X10^6$ | 442 | 76 | 5.2 |
| 7.2WKMSJ224 | 7.2 | 224 | 63 | 500 | 1.59 | 110 | $1.1X10^5$ | $1.6X10^6$ | 442 | 76 | 5.2 |
| 7.2WKMSJ250 | 7.2 | 250 | 63 | 960 | 1.23 | 107 | $2.2X10^5$ | $1.6X10^6$ | 442 | 76 | 5.2 |
| 7.2WKMSJ315 | 7.2 | 315 | 63 | 960 | 0.869 | 120 | $4.5X10^5$ | $3.1X10^6$ | 442 | 76 | 5.2 |
| 7.2WKMSJ355 | 7.2 | 355 | 63 | 1000 | 0.724 | 125 | $6.4X10^5$ | $3.9X10^6$ | 442 | 76 | 5.2 |

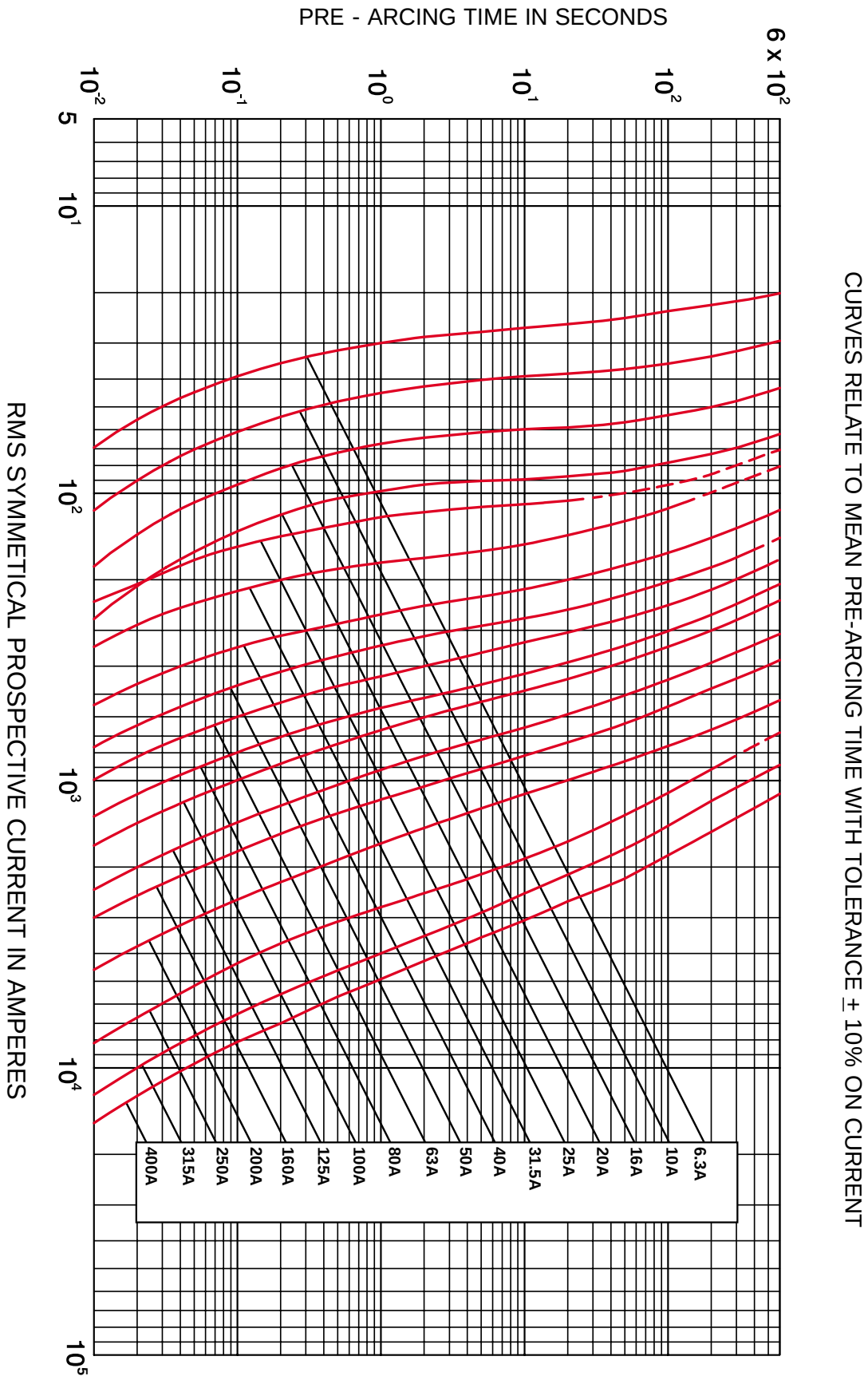
### Higher Current Ratings

Higher ratings than those tabulated above can be obtained by using fuse links connected in parallel. Special fixing arrangements for connecting up to 3 fuse links in parallel, are available. Please contact Bussmann application engineers for more details. The code designations for these arrangements are given in ‘How to Order’ (page 61), dimensional drawings are given on page 26.

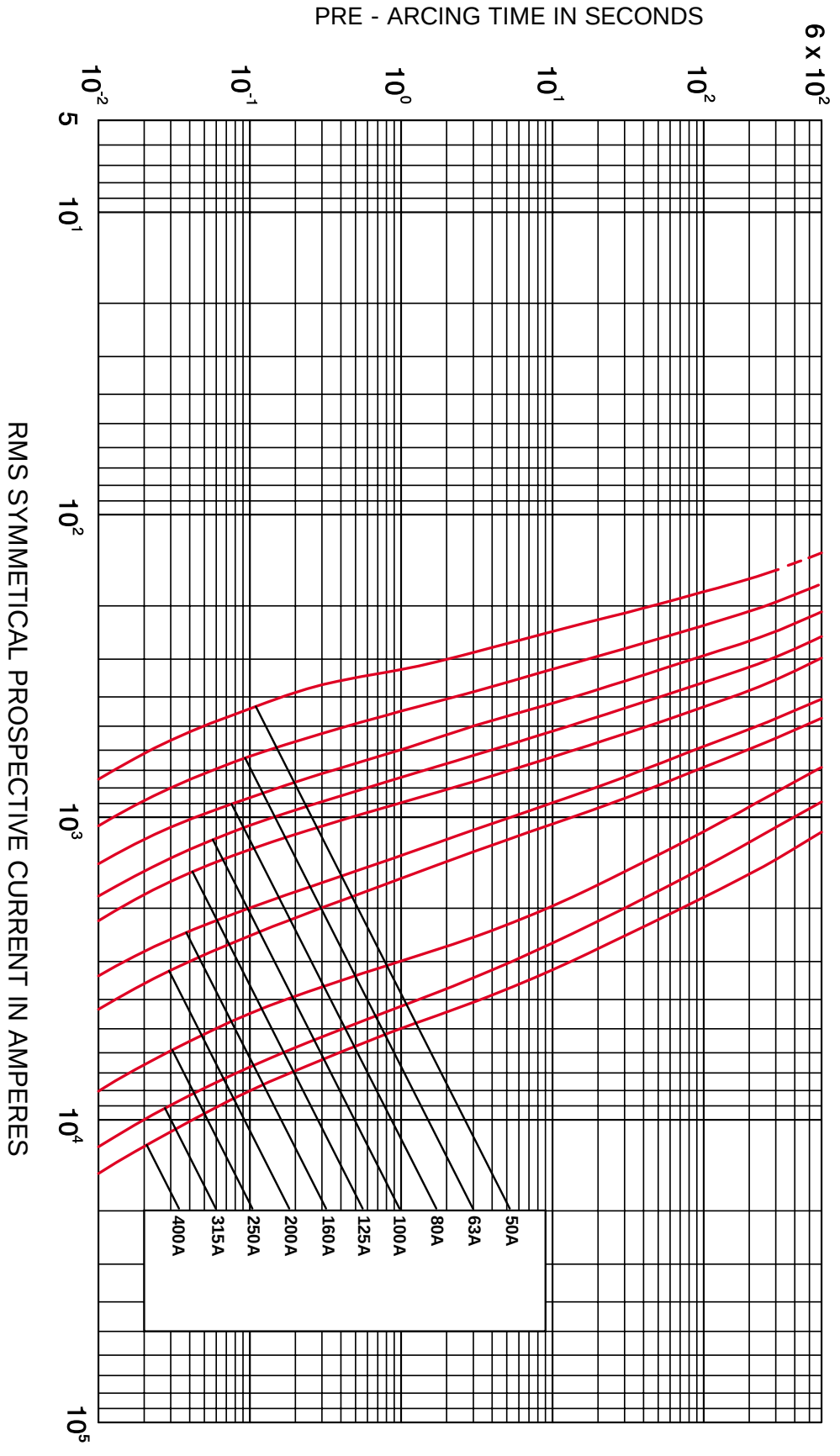
## Table of ratings for motor fuses 2.75 - 5.5kV to USA dimensions

| Part Number | Voltage Rating | Current Rating | Breaking Capacity | Minimum Breaking Current | Cold resistance and watts loss in free air at rated current | | Joule Intergral ($I^2t$) | | Length | Diameter Ø | Weight |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $U_n$ | $I_n$ | $I_1$ | $I_3$ | | | $A^2s$ | | | | |
| | kV | A | kA | A | m Ω | W | Minimum Pre-Arcing | Maximum Total Clearing | mm | mm | kg |
| 2.75VFRHA*R | 2.75 | 2R | 60 | 180 | 6.15 | 52 | $8.1x10^3$ | $2.8x10^4$ | 276 | 76 | 2.5 |
| 2.75VFRHA*R | 2.75 | 3R | 60 | 229 | 4.04 | 57 | $1.9x10^4$ | $7.5x10^4$ | 276 | 76 | 2.5 |
| 2.75VFRHA*R | 2.75 | 4R | 60 | 257 | 2.69 | 62 | $4.2x10^4$ | $1.4x10^5$ | 276 | 76 | 2.5 |
| 2.75VFRHA*R | 2.75 | 6R | 60 | 525 | 1.62 | 65 | $3.9x10^4$ | $3.4x10^5$ | 276 | 76 | 2.5 |
| 2.75VKRHA*R | 2.75 | 9R | 60 | 500 | 1.15 | 70 | $8.8x10^4$ | $8.4x10^5$ | 276 | 76 | 2.5 |
| 2.75VKRHA*R | 2.75 | 12R | 60 | 500 | 1.03 | 80 | $1.1x10^5$ | $1.2x10^6$ | 276 | 76 | 2.5 |
| 2.75VKRHK*R | 2.75 | 18R | 60 | 500 | 0.577 | 140 | $3.5x10^5$ | $3.2x10^6$ | 276 | 76 | 5.2 |
| 2.75VKRHK*R | 2.75 | 24R | 60 | 500 | 0.514 | 156 | $4.5x10^5$ | $5.5x10^6$ | 276 | 76 | 5.2 |
| 5.5VFNHA*R | 5.5 | 2R | 60 | 180 | 8.35 | 70 | $8.1x10^3$ | $2.8x10^4$ | 403 | 76 | 3.8 |
| 5.5VFNHA*R | 5.5 | 3R | 60 | 229 | 5.48 | 77 | $1.9x10^4$ | $7.9x10^4$ | 403 | 76 | 3.8 |
| 5.5VFNHA*R | 5.5 | 4R | 60 | 257 | 3.65 | 85 | $4.2x10^4$ | $1.6x10^5$ | 403 | 76 | 3.8 |
| 5.5VFNHA*R | 5.5 | 6R | 60 | 525 | 2.31 | 91 | $3.9x10^4$ | $3.6x10^5$ | 403 | 76 | 3.8 |
| 5.5VKNHA*R | 5.5 | 9R | 60 | 500 | 1.63 | 99 | $8.8x10^4$ | $8.8x10^5$ | 403 | 76 | 3.8 |
| 5.5VKNHA*R | 5.5 | 12R | 60 | 500 | 1.45 | 110 | $1.1x10^5$ | $1.3x10^6$ | 403 | 76 | 3.8 |
| 5.5VKNHK*R | 5.5 | 18R | 60 | 500 | 0.815 | 198 | $3.5x10^5$ | $3.4x10^6$ | 403 | 76 | 7.8 |
| 5.5VKNHK*R | 5.5 | 24R | 60 | 500 | 0.725 | 220 | $4.5x10^5$ | $5.8x10^6$ | 403 | 76 | 7.8 |

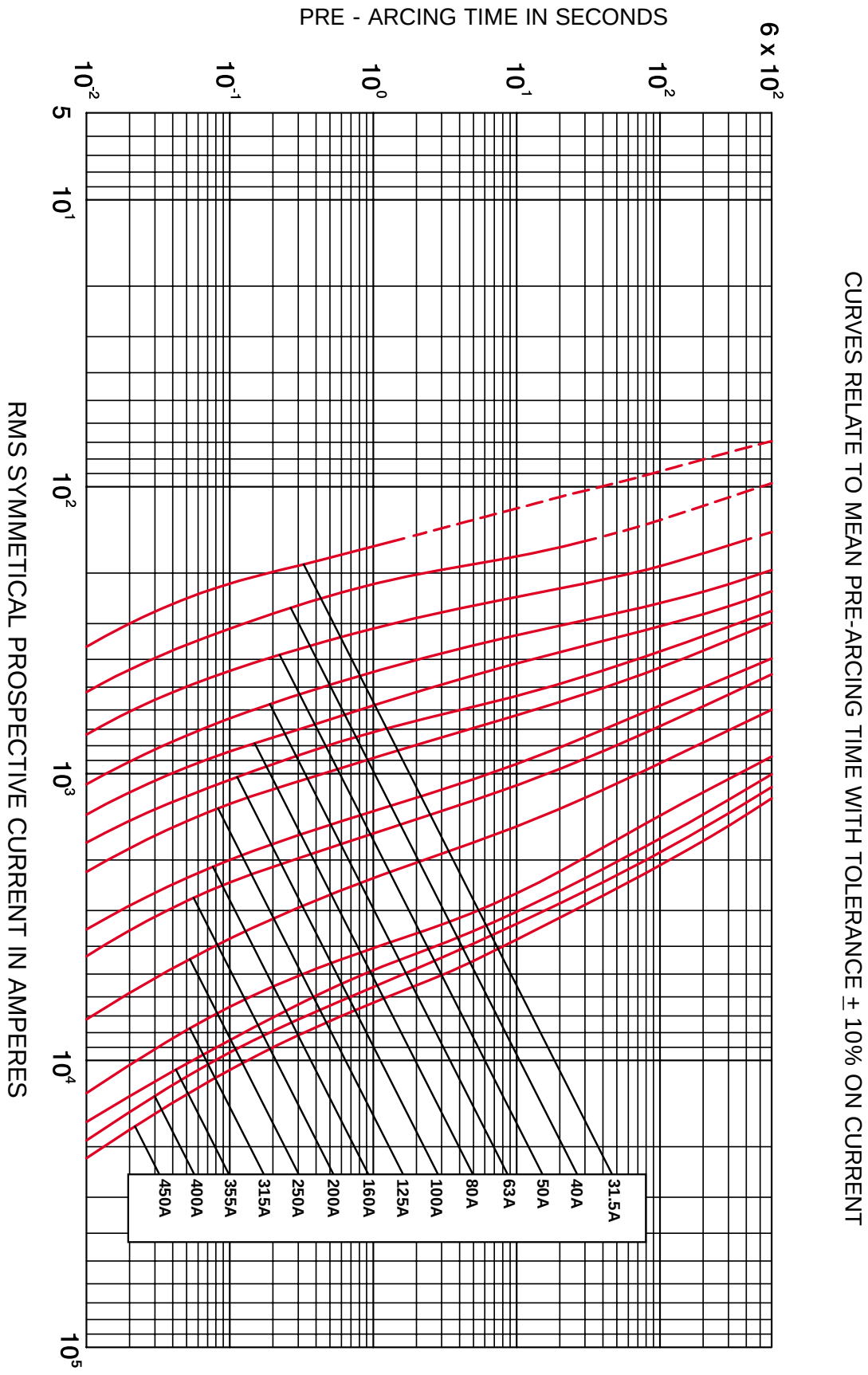
**Time current characteristics for 3.6kV Motor Fuse Links, fuse types ADL, WDL, WFL and WKL**



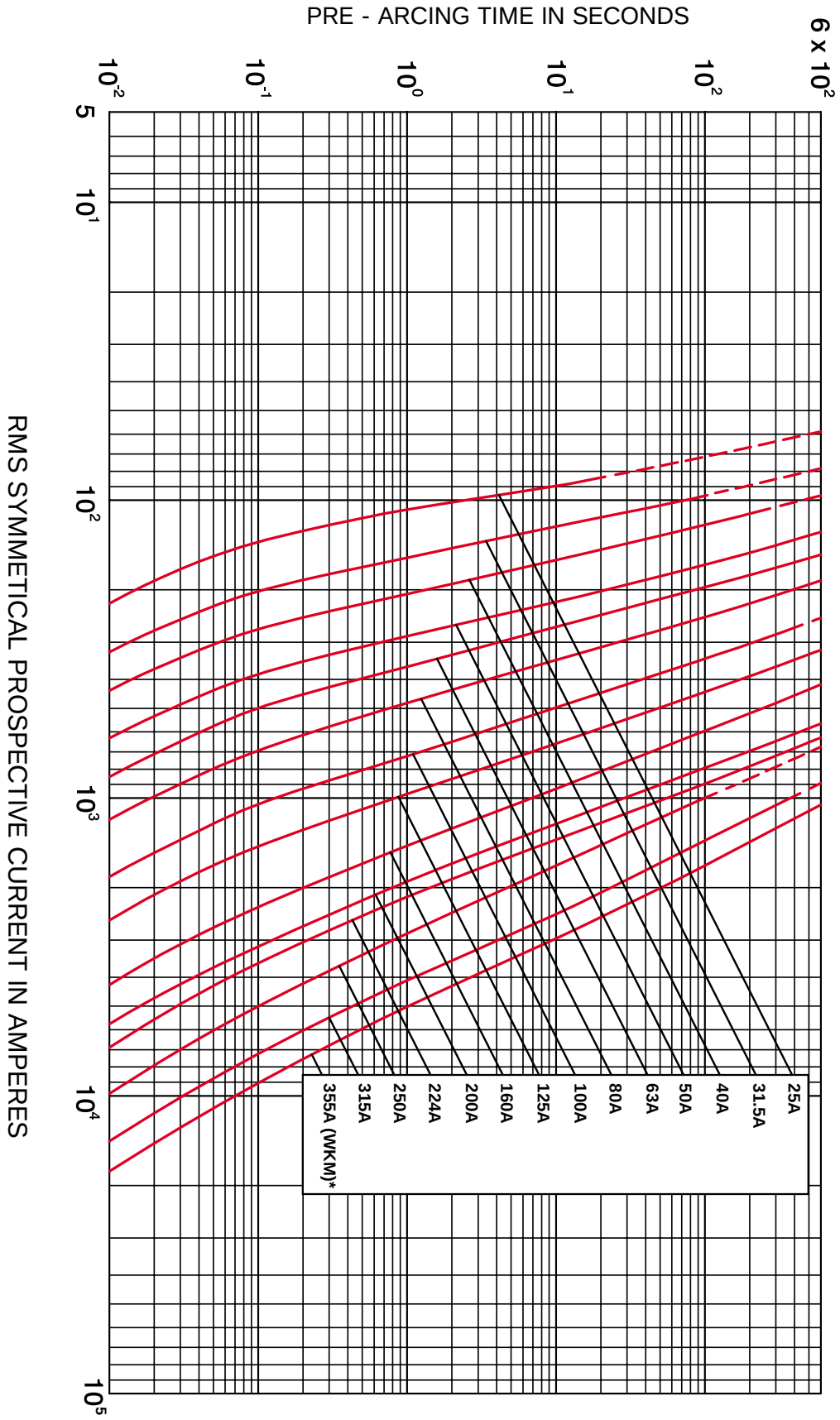
## Time current characteristics for 3.6kV Motor Fuse Links, fuse types WDF, WFF and WKF



## Time current characteristics for 3.6kV Motor Fuse Links, fuse types WFG and WKG



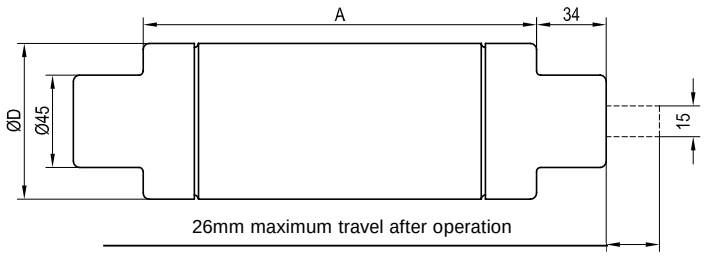
**Time current characteristics for 7.2kV Motor Fuse Links, fuse types WFN, WKN, WFM and WKM (* only WKM)**



## Dimensions (mm)

### Fuse Link type: DIN

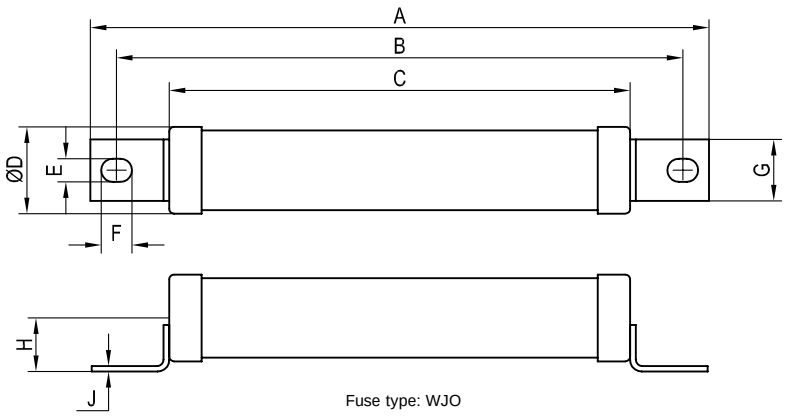
| FUSE LINK TYPE | A | D |
|---|---|---|
| WDOSJ | 192 | 51 |
| WDLSJ | 292 | 51 |
| WFOSJ | 192 | 76 |
| WFLSJ | 292 | 76 |
| WKLSJ | 292 | 76 |
| WFMSJ | 442 | 76 |
| WKMSJ | 442 | 76 |



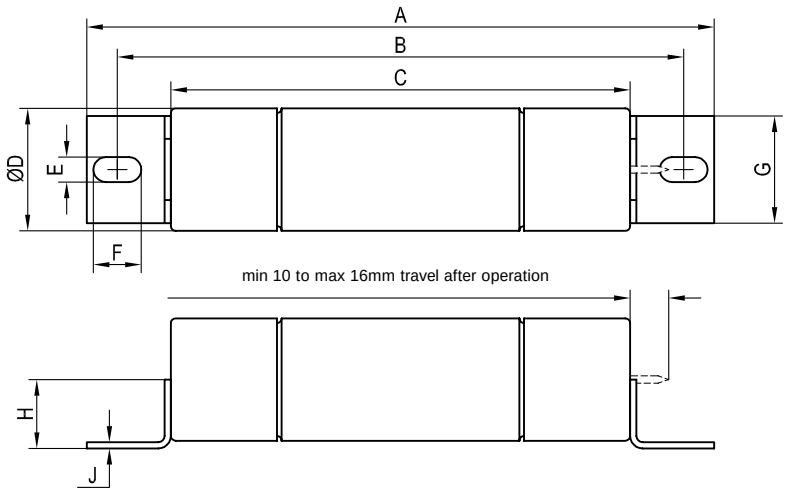

### Fuse Link type: Tag Type “6” - BS 2692 Standard

| FUSE LINK TYPE | A | B | C | D | E | F | G | H | J |
|---|---|---|---|---|---|---|---|---|---|
| +WJON6 | 257 | 235 | 192 | 36 | 9.5 | 13 | 25 | 23 | 2.4 |
| WDO*H6 | 261 | 235 | 192 | 51 | 10.5 | 13 | 25 | 29 | 2.6 |
| WFO*H6 | 261 | 235 | 192 | 76 | 10.5 | 20 | 64 | 42 | 2.6 |

**+ Fuse type not available with striker**




Fuse type: WJO

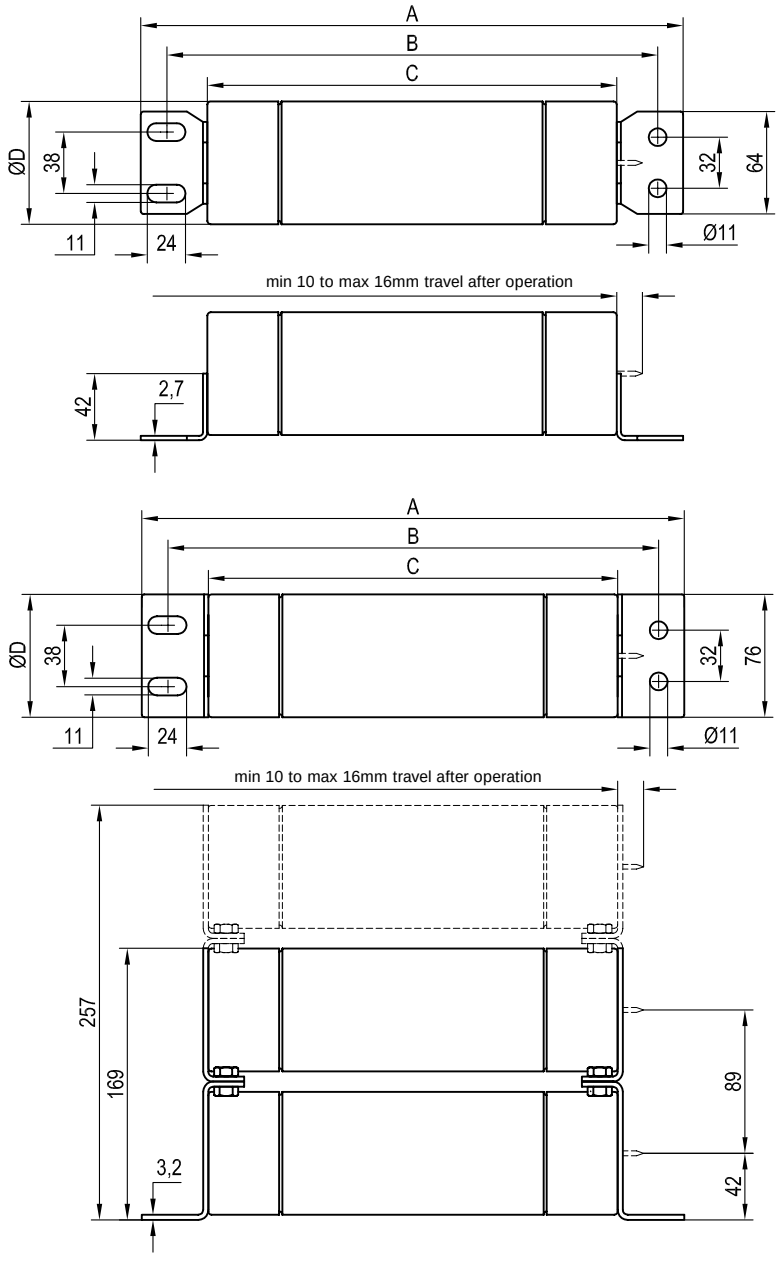



Fuse type: WDO, WFO

**Dimensions in mm**

## Fuse Link type: Tag Type “0” - BS 2692 Standard

| FUSE LINK TYPE | A | B | C | D |
|---|---|---|---|---|
| WDFHO | 337 | 305 | 254 | 51 |
| WFFHO | 337 | 305 | 254 | 76 |
| WKFHO | 337 | 305 | 254 | 76 |
| WFGHO | 442 | 410 | 359 | 76 |
| WKGHO | 442 | 410 | 359 | 76 |
| WFNHO | 486 | 454 | 403 | 76 |
| WKNHO | 486 | 454 | 403 | 76 |




**Triple barrel fuse link (3rd barrel shown dotted) with 03 tags.**

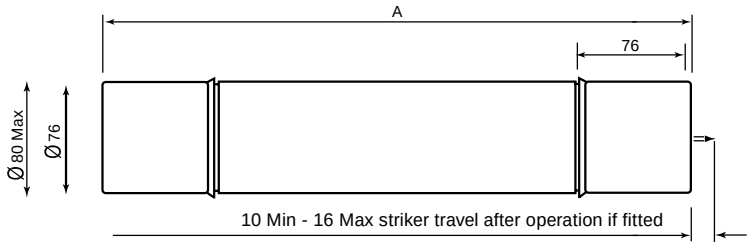
**Double barrel fuse link with 02 tags shown in full lines.**

## Dimensions (mm)

### Fuse Link type: USA Motor

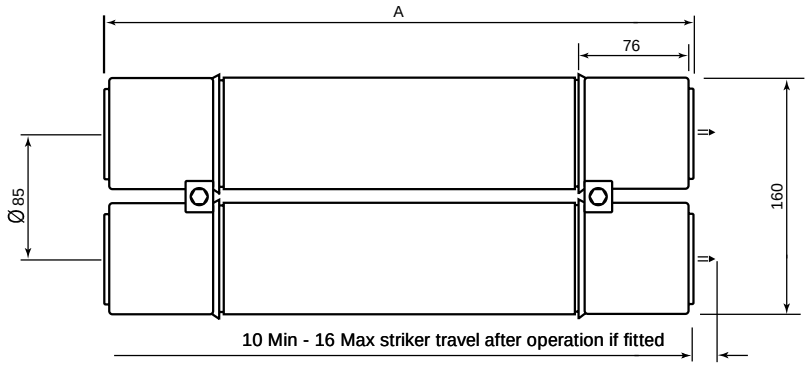
### A Tags (ferrule)

| FUSE LINK TYPE | A |
|---|---|
| VFRHA | 276 |
| VKRHA | 276 |
| VKRHK | 276 |
| VFNHA | 403 |
| VKNHA | 403 |
| VKNHK | 403 |




### K Tags (Double barrel fuse links)

| FUSE LINK TYPE | A |
|---|---|
| VFRHA | 276 |
| VKRHA | 276 |
| VKRHK | 276 |
| VFNHA | 403 |
| VKNHA | 403 |
| VKNHK | 403 |



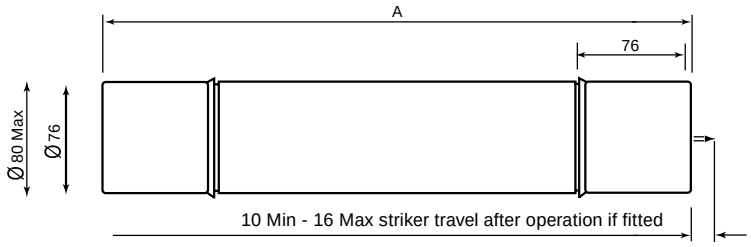

K Tags (Double barrel fuse links)

## Dimensions (mm)

### Fuse Link type: USA Motor

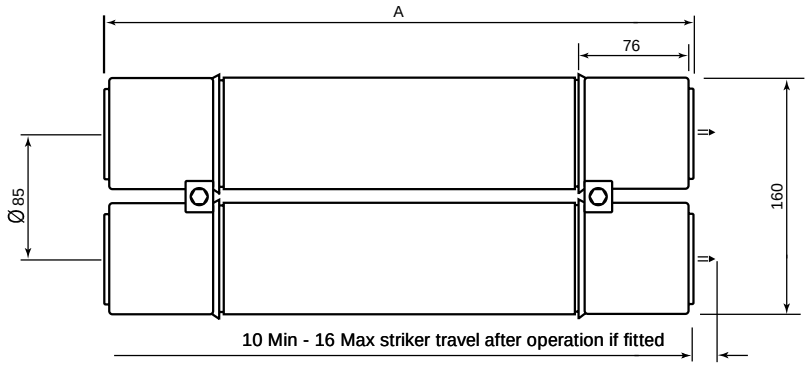
### A Tags (ferrule)

| FUSE LINK TYPE | A |
|---|---|
| VFRHA | 276 |
| VKRHA | 276 |
| VKRHK | 276 |
| VFNHA | 403 |
| VKNHA | 403 |
| VKNHK | 403 |




### K Tags (Double barrel fuse links)

| FUSE LINK TYPE | A |
|---|---|
| VFRHA | 276 |
| VKRHA | 276 |
| VKRHK | 276 |
| VFNHA | 403 |
| VKNHA | 403 |
| VKNHK | 403 |




K Tags (Double barrel fuse links)

- **British Standard VT Fuse Links.**
- **A range of voltage transformer primary Fuse Links to BS2692-1 and IEC60282-1.**
- **Wide range of ratings from 1 kV to 36 kV.**
- **3.15 Amp industry standard current ratings.**
- **CAV range with ratings from 3.6kV to 38kV.**

## Bussmann Voltage and Auxiliary Transformer Fuse Links

Bussmann manufacture a wide range of voltage transformer (VT) fuse links. In North America they are referred to as Potential Transformer fuses. These fuse links are designed for use in the primary side of voltage transformers to provide system isolation in the event of faults occurring in the transformer circuit.

Voltage transformer fuse links, have a preferred current rating of 3.15A. Experience has shown that there is a risk of spurious operation by transient overcurrents where lower current ratings are used. In addition, in order to minimise the risk of deterioration of the fine fuse elements caused by corona, it is desirable to mount the fuse links so that the earthed metal is not in the immediate vicinity of the part of the barrel between the ferrules.

Higher current and ‘E’ ratings are available for special applications, including auxiliary transformers.

A range of VT fuse links with a breaking capacity of 200kA for use at the output terminals of large turbo alternators can also be ordered. For further information, please contact Bussmann application engineers.

Types prefixed ‘A’ or ‘N’ are suitable for use in Air only. Types prefixed ‘O’ may be used under oil.

- **For DIN dimensioned voltage transformer and auxiliary transformer fuse links, please refer to DIN dimensioned fuse link section.**

## Selection Table

## Table of ratings for voltage transformer fuses 1.1 - 36kV

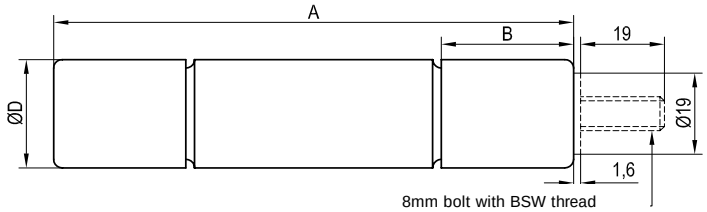
| Part Number | Voltage Rating | Current Rating | Breaking Capacity | Cold Resistance | Joule Intergral ($I^2t$) | | Length | Diameter Ø | Weight |
|---|---|---|---|---|---|---|---|---|---|
| | $U_n$ | $I_n$ | $I_1$ | | $A^2s$ | | | | |
| | kV | A | kA | Ω | Minimum Pre-Arcing | Maximum Total Clearing | mm | mm | kg |
| 1.1NBUN*2 | 1.1 | 2 | 50 | 0.145 | $6.3X10^0$ | $1.8X10^1$ | 86 | 25.4 | 0.12 |
| 1.1NBUN*3.15 | 1.1 | 3.15 | 50 | 0.107 | $1.2X10^1$ | $3.4X10^1$ | 86 | 25.4 | 0.12 |
| 1.1NBUN*6.3 | 1.1 | 6.3 | 50 | 0.065 | $3.2X10^1$ | $9.2X10^1$ | 86 | 25.4 | 0.12 |
| 3.6ABWN*3.15 | 3.6 | 3.15 | 50 | 0.358 | $6.3X10^0$ | $1.8X10^1$ | 142 | 25.4 | 0.19 |
| 3.6ABWN*6.3 | 3.6 | 6.3 | 50 | 0.120 | $4.8X10^1$ | $3.1X10^2$ | 142 | 25.4 | 0.19 |
| 3.6ABCN*3.15 | 3.6 | 3.15 | 50 | 0.358 | $6.3X10^0$ | $1.8X10^1$ | 195 | 25.4 | 0.245 |
| 3.6ABCN*6.3 | 3.6 | 6.3 | 50 | 0.120 | $4.8X10^1$ | $3.1X10^2$ | 195 | 25.4 | 0.245 |
| 3.6ABCN*10 | 3.6 | 10 | 50 | 0.080 | $1.1X10^2$ | $7.0X10^2$ | 195 | 25.4 | 0.245 |
| 5.5AMWNA0.5E | 5.5 | 0.5 | 50 | 32.5 | $1.2X10^0$ | $3.5X10^0$ | 142 | 20.6 | 0.114 |
| 5.5AMWNA1E | 5.5 | 1 | 50 | 16.0 | $5.0X10^0$ | $1.4X10^1$ | 142 | 20.6 | 0.114 |
| 5.5AMWNA2E | 5.5 | 2 | 50 | 0.584 | $4.0X10^0$ | $1.2X10^1$ | 142 | 20.6 | 0.114 |
| 5.5AMWNA3E | 5.5 | 3 | 50 | 0.320 | $1.8X10^1$ | $1.1X10^2$ | 142 | 20.6 | 0.114 |
| 5.5AMWNA4E | 5.5 | 4 | 50 | 0.190 | $4.6X10^1$ | $3.0X10^2$ | 142 | 20.6 | 0.114 |
| 5.5AMWNA5E | 5.5 | 5 | 50 | 0.147 | $7.9X10^1$ | $5.1X10^2$ | 142 | 20.6 | 0.114 |
| 5.5ABWNA0.5E | 5.5 | 0.5 | 50 | 50.2 | $0.49X10^0$ | $1.4X10^0$ | 142 | 25.4 | 0.19 |
| 5.5ABWNA1E | 5.5 | 1 | 50 | 25.1 | $2.0X10^0$ | $5.7X10^0$ | 142 | 25.4 | 0.19 |
| 5.5ABWNA2E | 5.5 | 2 | 50 | 1.08 | $1.2X10^0$ | $3.4X10^0$ | 142 | 25.4 | 0.19 |
| 5.5ABWNA3E | 5.5 | 3 | 50 | 0.469 | $6.3X10^0$ | $1.8X10^1$ | 142 | 25.4 | 0.19 |
| 5.5ABWNA5E | 5.5 | 5 | 50 | 0.199 | $3.2X10^1$ | $2.0X10^2$ | 142 | 25.4 | 0.19 |
| 7.2ABWN*3.15 | 7.2 | 3.15 | 45 | 0.614 | $6.3X10^0$ | $4.0X10^1$ | 142 | 25.4 | 0.19 |
| 7.2ABWN*6.3 | 7.2 | 6.3 | 45 | 0.240 | $4.8X10^1$ | $3.1X10^2$ | 142 | 25.4 | 0.19 |
| 7.2ABCN*3.15 | 7.2 | 3.15 | 45 | 0.614 | $6.3X10^0$ | $4.0X10^1$ | 195 | 25.4 | 0.245 |
| 7.2ABCN*6.3 | 7.2 | 6.3 | 45 | 0.240 | $4.8X10^1$ | $3.1X10^2$ | 195 | 25.4 | 0.245 |
| 7.2OBCN*3.15 | 7.2 | 3.15 | 45 | 0.614 | $6.3X10^0$ | 4.0X10 | 195 | 25.4 | 0.245 |
| 7.2OBCN*6.3 | 7.2 | 6.3 | 45 | 0.240 | $4.8X10^1$ | $3.1X10^2$ | 195 | 25.4 | 0.245 |
| 7.2OBWN*3.15 | 7.2 | 3.15 | 45 | 0.614 | $6.3X10^0$ | 4.0X10 | 142 | 25.4 | 0.19 |
| 7.2OBWN*6.3 | 7.2 | 6.3 | 45 | 0.240 | $4.8X10^1$ | $3.1X10^2$ | 142 | 25.4 | 0.19 |
| 12ABCN*3.15 | 12 | 3.15 | 45 | 1.21 | $6.3X10^0$ | $1.8X10^1$ | 195 | 25.4 | 0.245 |
| 12OBCN*3.15 | 12 | 3.15 | 45 | 1.21 | $6.3X10^0$ | $1.8X10^1$ | 195 | 25.4 | 0.245 |
| 15.5ABFN*3.15 | 15.5 | 3.15 | 32 | 1.24 | $6.3X10^0$ | $4.0X10^1$ | 254 | 25.4 | 0.31 |
| 15.5OBFN*3.15 | 15.5 | 3.15 | 32 | 1.24 | $6.3X10^0$ | $4.0X10^1$ | 254 | 25.4 | 0.31 |
| 17.5ABGN*3.15 | 17.5 | 3.15 | 35 | 1.45 | $6.3X10^0$ | $4.0X10^1$ | 359 | 25.4 | 0.43 |
| 17.5OBGN*3.15 | 17.5 | 3.15 | 35 | 1.45 | $6.3X10^0$ | $4.0X10^1$ | 359 | 25.4 | 0.43 |
| 24ABGN*3.15 | 24 | 3.15 | 25 | 2.00 | $6.3X10^0$ | $4.0X10^1$ | 359 | 25.4 | 0.43 |
| 24OBGN*3.15 | 24 | 3.15 | 25 | 2.00 | $6.3X10^0$ | $4.0X10^1$ | 359 | 25.4 | 0.43 |
| 36OBGN*3.15 | 36 | 3.15 | 31.5 | 2.05 | $1.2X10^1$ | $7.7X10^1$ | 359 | 25.4 | 0.43 |

A 36kV AGBN* 3.15A is also available for certain indoor applications. Please contact Bussmann's application engineers for further information.

* The last letter of the ordering code on these items is normally either 'A' or '22', please refer to 'how to order' page 61 for an explanation.

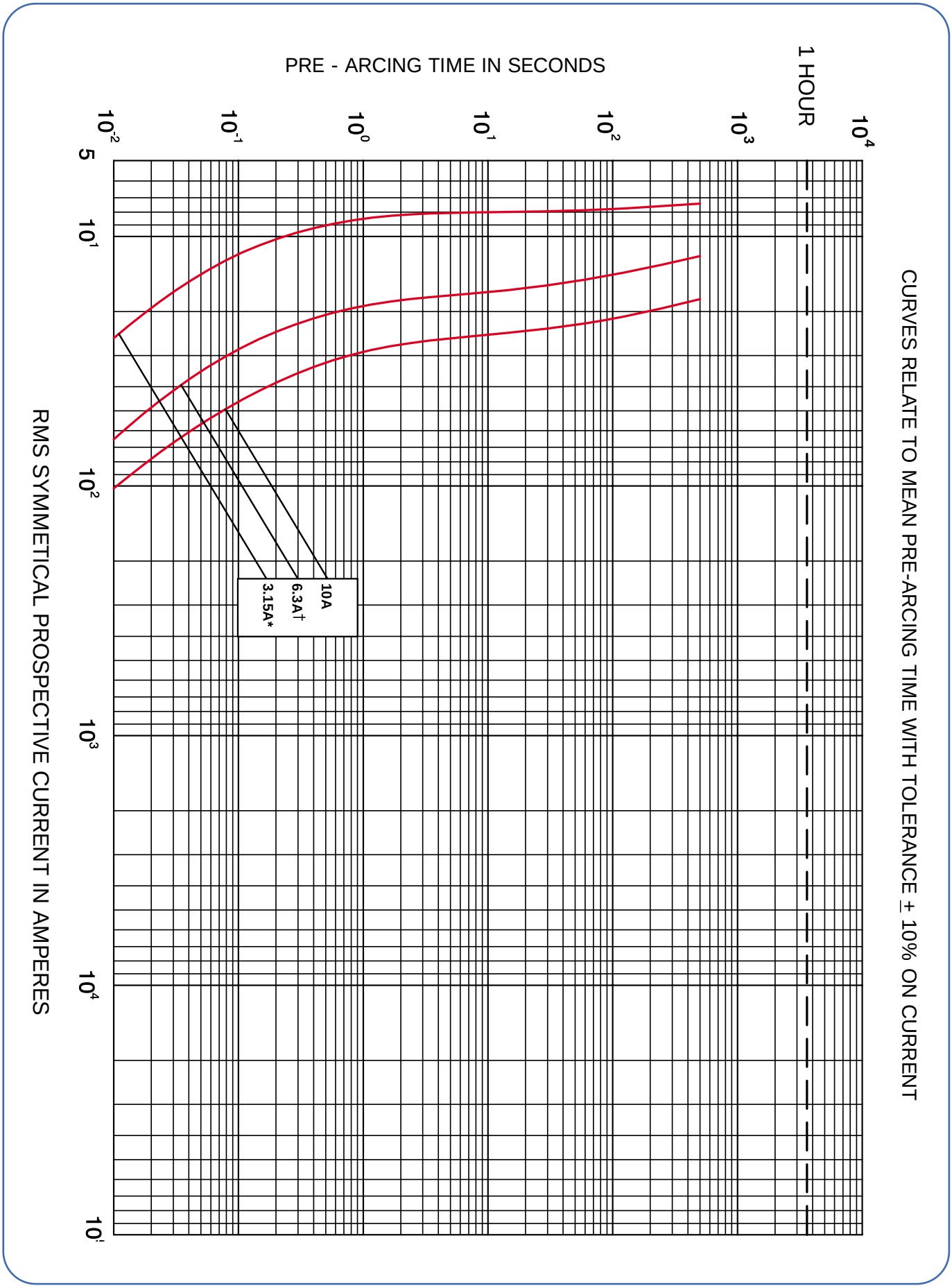
## Fuse Link type: TAG type "A" Ferrule and "22"

| FUSE LINK TYPE | A | B | D |
|---|---|---|---|
| NBUN* | 86 | 17.5 | 25.4 |
| ABWNA | 142 | 30 | 25.4 |
| AMWNA | 142 | 16 | 20.5 |
| OBWN* | 142 | 30 | 25.4 |
| ABCN* | 195 | 30 | 25.4 |
| OBCN* | 195 | 30 | 25.4 |
| ABFN* | 254 | 30 | 25.4 |
| OBFN* | 254 | 30 | 25.4 |
| ABGN* | 359 | 30 | 25.4 |
| OBGN* | 359 | 30 | 25.4 |



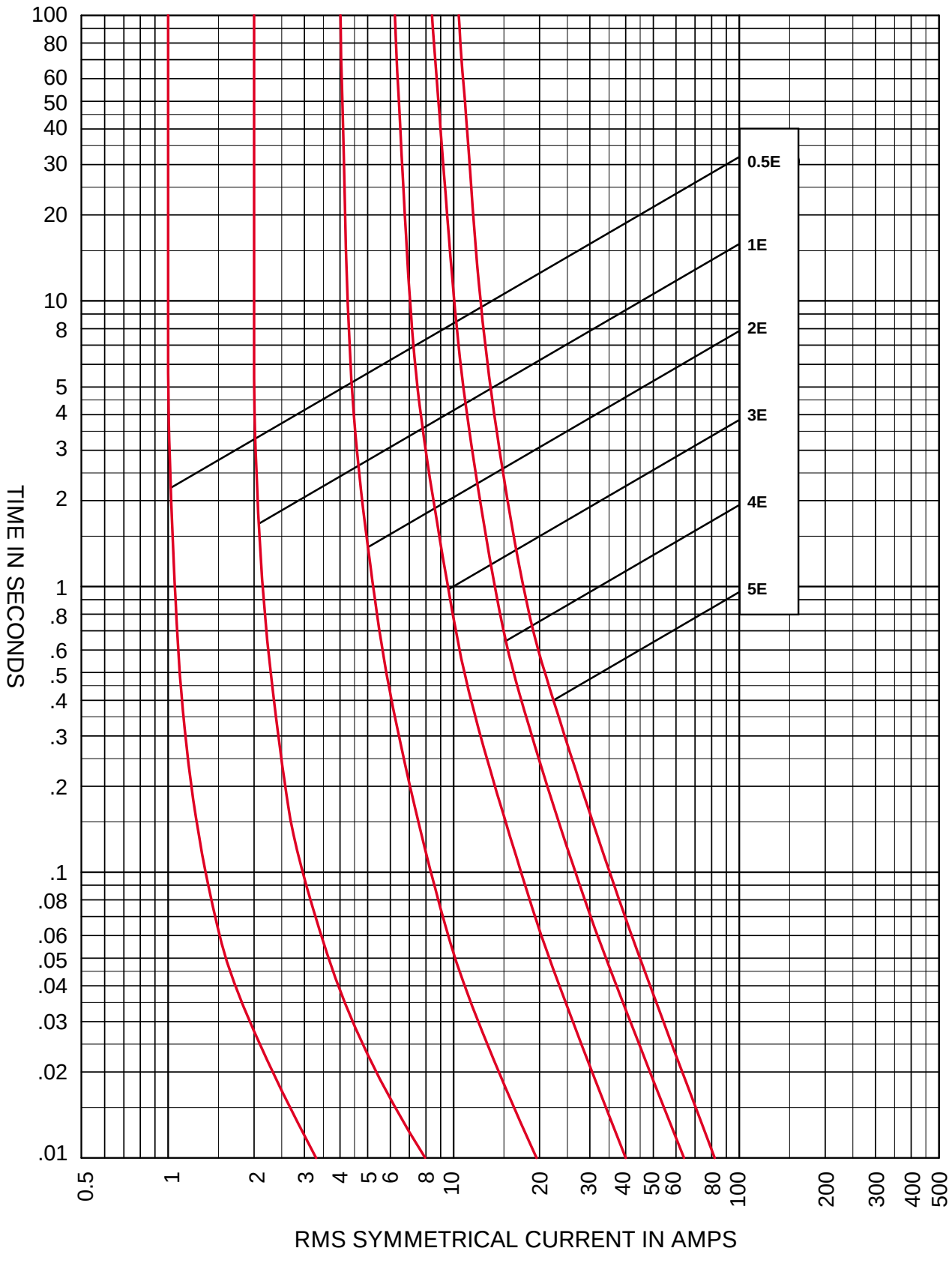

Ferrule Fuse Link Tag type "A" shown in full lines and "22" Tag shown in dotted lines

## Time current characteristics for 3.6 to 36kV VT Fuse Links of 3.15, 6.3 and 10 Amp ratings

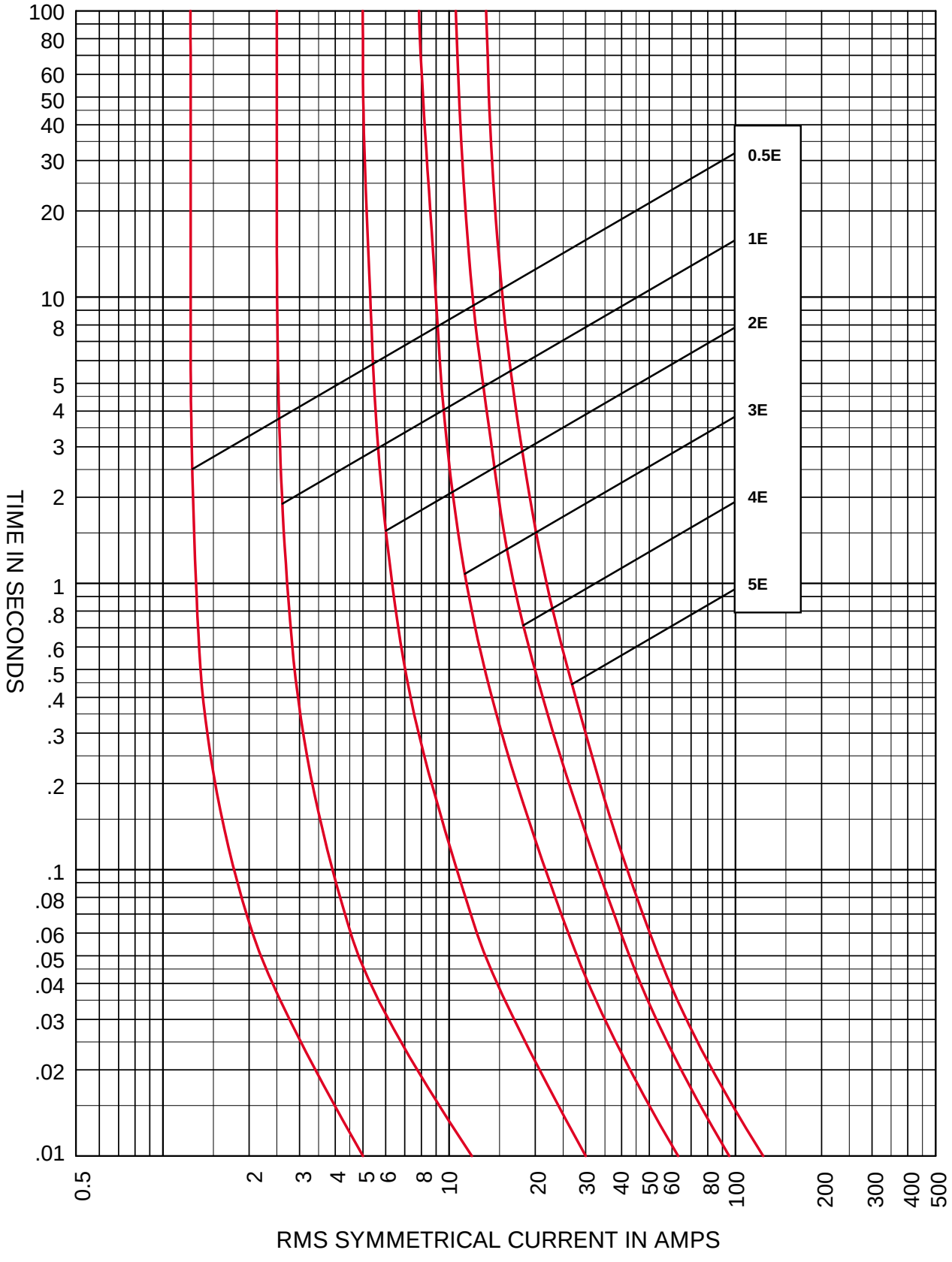



* Curve valid for all 3.15A ratings shown in the selection table.
† Curve valid for all 6.3A ratings shown in the selection table.

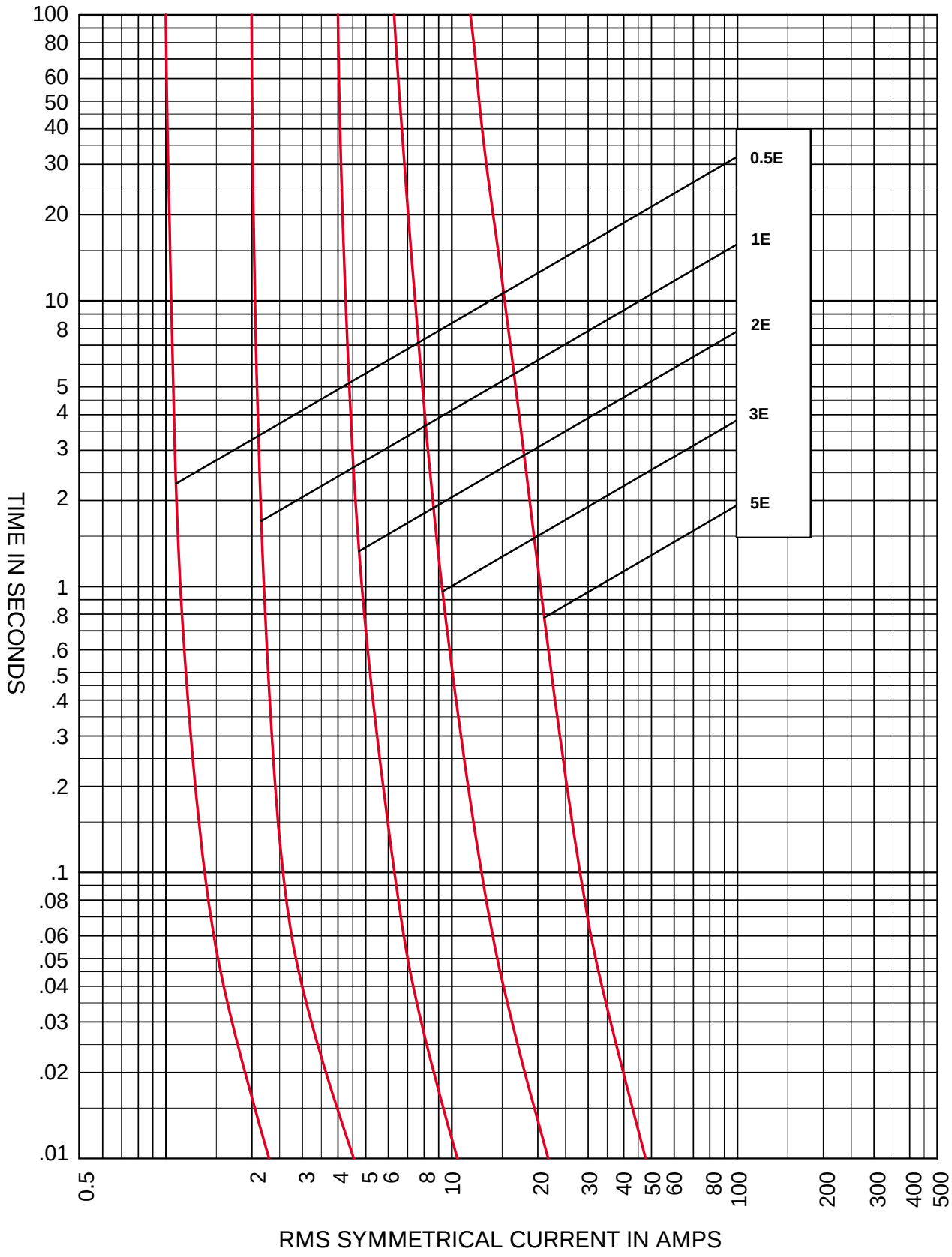
**Time current characteristics for E rated 5.5kV VT Fuse Links, fuse type ABWNA (minimum melting times)**



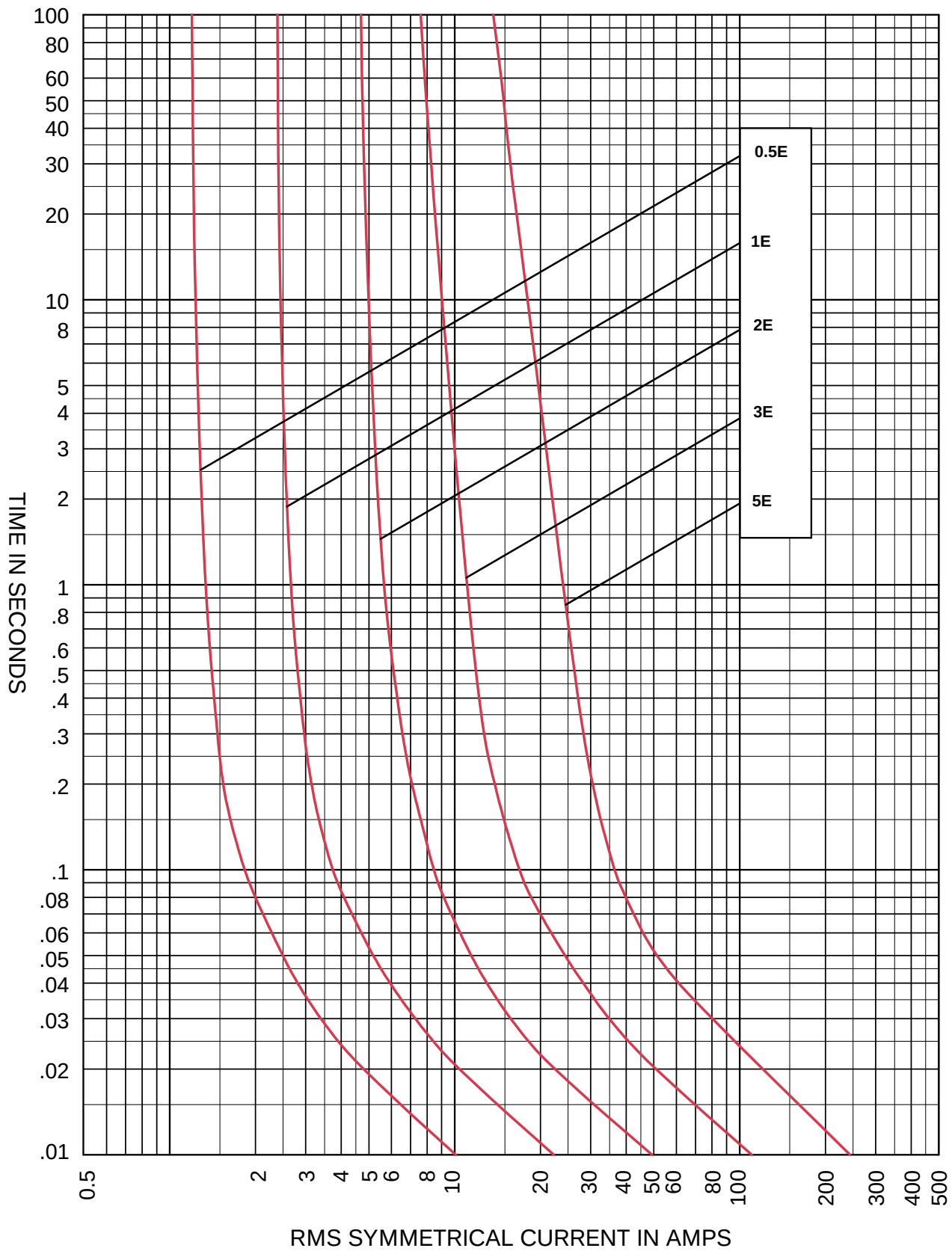
**Time current characteristics for E rated 5.5kV VT Fuse Links, fuse type ABWNA (maximum melting times)**



**Time current characteristics for E rated 5.5kV VT Fuse Links, fuse type AMWNA (minimum melting times)**



**Time current characteristics for E rated 5.5kV VT Fuse Links, fuse type AMWNA (maximum melting times)**



## Selection Table

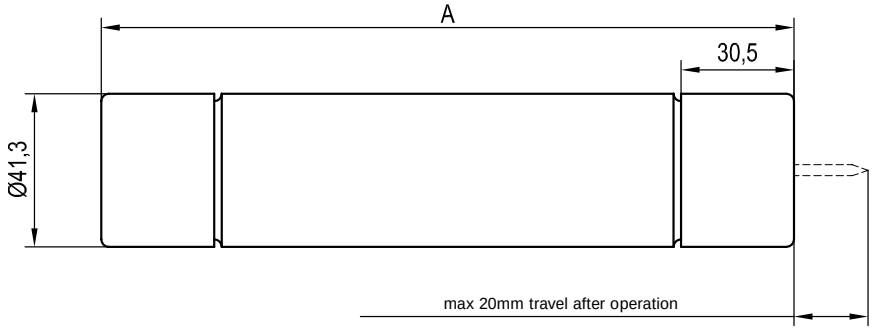
### Table of ratings for voltage transformer fuses, 3.6 - 38kV type CAV

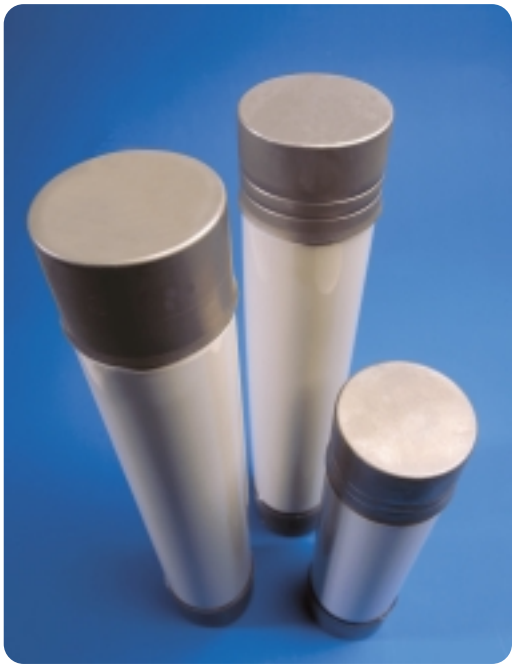
| Part Number | Voltage Rating | Current Rating | Breaking Capacity | Cold resistance in free air at rated current | Joule Intergral ($I^2t$) | | Length | Diameter Ø | Weight |
|---|---|---|---|---|---|---|---|---|---|
| | $U_n$ | $I_n$ | $I_1$ | | $A^2s$ | | | | |
| | kV | A | kA | Ω | Minimum Pre-Arcing | Maximum Total Clearing | mm | mm | kg |
| 3.6CAV2 | 3.6 | 2 | 50 | 0.492 | $6.2X10^0$ | $1.8X10^1$ | 220 | 41.3 | 0.7 |
| 5.5 CAV15E | 5.5 | 15 | 50 | 0.488 | $5.5X10^2$ | $3.5X10^3$ | 187 | 41.3 | 0.6 |
| 5.5CAVH0.5E | 5.5 | 0.5 | 50 | 12.1 | $1.4X10^1$ | $9.0X10^1$ | 187 | 41.3 | 0.6 |
| 5.5CAVH1E | 5.5 | 1 | 50 | 12.1 | $1.4X10^1$ | $9.0X10^1$ | 187 | 41.3 | 0.6 |
| 5.5CAVH2E | 5.5 | 2 | 50 | 0.388 | $1.8X10^1$ | $1.1X10^2$ | 187 | 41.3 | 0.6 |
| 7.2CAV2 | 7.2 | 2 | 40 | 0.893 | $6.2X10^0$ | $1.8X10^1$ | 220 | 41.3 | 0.7 |
| 7.2CAV4 | 7.2 | 4 | 40 | 0.503 | $2.0X10^1$ | $5.7X10^1$ | 220 | 41.3 | 0.7 |
| 7.2CAV6 | 7.2 | 6 | 40 | 0.321 | $4.8X10^1$ | $1.4X10^2$ | 220 | 41.3 | 0.7 |
| 7.2CAV10 | 7.2 | 10 | 40 | 0.215 | $1.1X10^2$ | $3.2X10^2$ | 220 | 41.3 | 0.7 |
| 12CAV2 | 12 | 2 | 40 | 1.34 | $6.2X10^0$ | $1.8X10^1$ | 220 | 41.3 | 0.7 |
| 15.5CAV0.5E | 15.5 | 0.5 | 80 | 151 | $0.5X10^0$ | $1.5X10^0$ | 327 | 41.3 | 0.9 |
| 15.5CAV1E | 15.5 | 1 | 80 | 75.4 | $2.0X10^0$ | $5.8X10^0$ | 327 | 41.3 | 0.9 |
| 15.5CAV2E | 15.5 | 2 | 80 | 32.3 | $1.2X10^0$ | $3.5X10^0$ | 327 | 41.3 | 0.9 |
| 15.5CAV3E | 15.5 | 3 | 80 | 16.2 | $4.8X10^0$ | $1.4X10^1$ | 327 | 41.3 | 0.9 |
| 15.5CAV5E | 15.5 | 5 | 80 | 0.659 | $2.0X10^1$ | $1.3X10^2$ | 327 | 41.3 | 0.9 |
| 15.5CAV7E | 15.5 | 7 | 80 | 0.375 | $7.1X10^1$ | $4.5X10^2$ | 327 | 41.3 | 0.9 |
| 15.5CAVH0.5E | 15.5 | 0.5 | 80 | 30.1 | $1.4X10^1$ | $9.0X10^1$ | 327 | 41.3 | 0.9 |
| 15.5CAVH1E | 15.5 | 1 | 80 | 30.1 | $1.4X10^1$ | $9.0X10^1$ | 327 | 41.3 | 0.9 |
| 15.5CAVH2E | 15.5 | 2 | 80 | 0.947 | $1.8X10^1$ | $1.1X10^2$ | 327 | 41.3 | 0.9 |
| 17.5CAV2 | 17.5 | 2 | 40 | 1.69 | $6.3X10^0$ | $1.8X10^1$ | 220 | 41.3 | 0.7 |
| 17.5CAV4 | 17.5 | 4 | 40 | 0.611 | $4.8X10^1$ | $1.4X10^2$ | 220 | 41.3 | 0.7 |
| 17.5CAV6 | 17.5 | 6 | 40 | 0.362 | $1.4X10^2$ | $4.0X10^2$ | 220 | 41.3 | 0.7 |
| 17.5CAV10 | 17.5 | 10 | 40 | 0.239 | $3.2X10^2$ | $9.2X10^2$ | 220 | 41.3 | 0.7 |
| 24CAV2 | 24 | 2 | 40 | 2.54 | $6.2X10^0$ | $1.8X10^1$ | 340 | 41.3 | 1.0 |
| 24CAV3 | 24 | 3 | 40 | 1.43 | $2.0X10^1$ | $5.7X10^1$ | 340 | 41.3 | 1.0 |
| 24CAV4 | 24 | 4 | 40 | 0.916 | $4.8X10^1$ | $1.4X10^2$ | 340 | 41.3 | 1.0 |
| 36CAV2 | 36 | 2 | 40 | 3.12 | $6.2X10^0$ | $1.8X10^1$ | 440 | 41.3 | 1.2 |
| 36CAV4 | 36 | 4 | 40 | 1.12 | $4.8X10^1$ | $1.4X10^2$ | 440 | 41.3 | 1.2 |
| 38CAV4E | 38 | 4 | 40 | 2.42 | $1.2X10^1$ | $3.4X10^1$ | 440 | 41.3 | 1.2 |
| 38CAVH0.5E | 38 | 0.5 | 40 | 66.6 | $1.4X10^1$ | $9.0X10^1$ | 440 | 41.3 | 1.2 |
| 38CAVH1E | 38 | 1 | 40 | 66.6 | $1.4X10^1$ | $9.0X10^1$ | 440 | 41.3 | 1.2 |
| 38CAVH2E | 38 | 2 | 40 | 2.20 | $1.8X10^1$ | $1.1X10^2$ | 440 | 41.3 | 1.2 |

- These Voltage Transformer fuse links are available in the ratings shown in the table above. CAV fuse links are suitable for indoor use in air only. Type CAVH Fuse links are fitted with striker pins which may be used for indication purposes.

## Fuse Link type: CAV (Shown with striker fitted)

| FUSE LINK TYPE | A |
|---|---|
| 3.6CAV | 220 |
| 5.5CAV<br>5.5CAVH | 187 |
| 7.2CAV | 220 |
| 12CAV | 220 |
| 15.5CAV<br>15.5CAVH | 327 |
| 17.5CAV | 220 |
| 24CAV | 340 |
| 36CAV | 440 |
| 38CAV<br>38CAVH | 440 |





- **Fuse Links comply with IEC 282-1, BS2692-1 and ESI Standard 12-8.**
- **7.2 and 12kV Fuse Links tested at highest system voltage and approved by the UK Electricity Association approvals panel.**
- **Voltage ranges 3.6 to 24kV.**
- **Fitted with powerful pyrotechnic striker pin.**

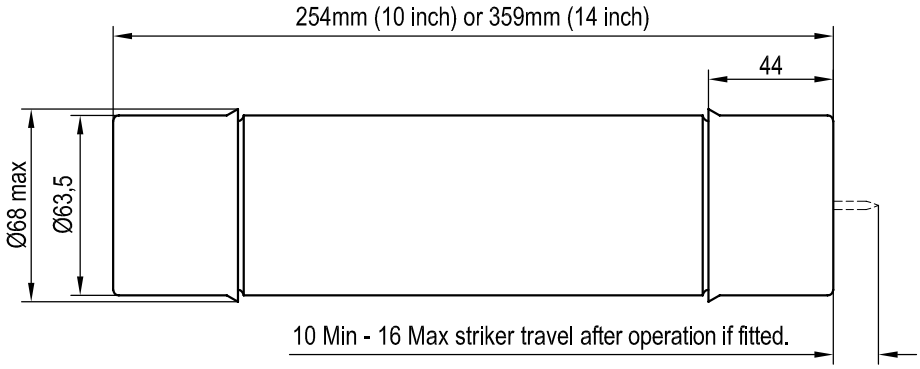
## Bussmann under oil Fuse Links

The Bussmann range of oil tight fuse links are designed for use in oil filled switchgear. This type was pioneered in the U.K. and the Bussmann range has been in continuous manufacture for almost 40 years, being by far the most widely used device of its kind in the world. Over 1,000,000 Bussmann branded fuse links have been put into service without a single reported case of oil ingress. A unique triple seal system ensures against long term seal deterioration. Low power dissipation ensures cool running in oil filled switchgear.

The range is not suitable for use inside oil filled transformer tanks where high oil temperatures may be expected.

## Current Limiting Fuse Links for use in Oil Switchgear

**Dimensions (mm)**



## Selection Table

# Table of ratings for British Standard Oil tight fuses 3.6 - 24kV

| Part Number | Voltage Rating | Current Rating | Breaking Capacity | Dimensional Reference | Cold resistance in free air at rated current | Joule Intergral ($I^2t$) | | Length | Diameter Ø | Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| | $U_n$ | $I_n$ | $I_1$ | BS 2692 | | $A^2s$ | | | | |
| | kV | A | kA | | m Ω | Minimum Pre-Arcing | Maximum Total Clearing | mm | mm | kg |
| 3.6OEFMA6.3 | 3.6 | 6.3 | 50 | F01 | 207 | $2.0X10^1$ | $4.9X10^2$ | 254 | 63.5 | 1.9 |
| 3.6OEFMA10 | 3.6 | 10 | 50 | | 83.6 | $1.4X10^2$ | $1.4X10^3$ | 254 | 63.5 | 1.9 |
| 3.6OEFMA16 | 3.6 | 16 | 50 | | 42.5 | $1.7X10^2$ | $2.4X10^3$ | 254 | 63.5 | 1.9 |
| 3.6OEFMA20 | 3.6 | 20 | 50 | | 33.9 | $2.7X10^2$ | $3.6X10^3$ | 254 | 63.5 | 1.9 |
| 3.6OEFMA25 | 3.6 | 25 | 50 | | 26.5 | $4.5X10^2$ | $4.8X10^3$ | 254 | 63.5 | 1.9 |
| 3.6OEFMA31.5 | 3.6 | 31.5 | 50 | | 17.6 | $1.0X10^3$ | $8.8X10^3$ | 254 | 63.5 | 1.9 |
| 3.6OEFMA40 | 3.6 | 40 | 50 | | 15.4 | $8.9X10^3$ | $1.0X10^4$ | 254 | 63.5 | 1.9 |
| 3.6OEFMA50 | 3.6 | 50 | 50 | | 11.5 | $1.6X10^3$ | $1.4X10^4$ | 254 | 63.5 | 1.9 |
| 3.6OEFMA63 | 3.6 | 63 | 50 | | 7.60 | $3.3X10^3$ | $2.4X10^4$ | 254 | 63.5 | 1.9 |
| 3.6OEFMA80 | 3.6 | 80 | 50 | | 6.03 | $5.2X10^3$ | $3.4X10^4$ | 254 | 63.5 | 1.9 |
| 3.6OEFMA100 | 3.6 | 100 | 50 | | 4.02 | $1.2X10^4$ | $6.2X10^4$ | 254 | 63.5 | 1.9 |
| 3.6OEFMA125 | 3.6 | 125 | 50 | | 3.02 | $2.1X10^4$ | $9.6X10^4$ | 254 | 63.5 | 1.9 |
| 3.6OEFMA160 | 3.6 | 160 | 50 | | 2.21 | $1.5X10^4$ | $1.6X10^5$ | 254 | 63.5 | 1.9 |
| 3.6OEFMA200 | 3.6 | 200 | 50 | | 1.74 | $2.4X10^4$ | $2.3X10^5$ | 254 | 63.5 | 1.9 |
| 3.6OEGMA63 | 3.6 | 63 | 50 | F02 | 11.0 | $3.2X10^3$ | $1.9X10^4$ | 254 | 63.5 | 2.6 |
| 3.6OEGMA80 | 3.6 | 80 | 50 | | 8.70 | $5.2X10^3$ | $2.7X10^4$ | 254 | 63.5 | 2.6 |
| 3.6OEGMA100 | 3.6 | 100 | 50 | | 5.50 | $5.0X10^3$ | $4.9X10^4$ | 254 | 63.5 | 2.6 |
| 3.6OEGMA125 | 3.6 | 125 | 50 | | 4.59 | $7.2X10^3$ | $6.4X10^4$ | 254 | 63.5 | 2.6 |
| 3.6OEGMA160 | 3.6 | 160 | 50 | | 3.44 | $1.3X10^4$ | $1.0X10^5$ | 254 | 63.5 | 2.6 |
| 3.6OEGMA200 | 3.6 | 200 | 50 | | 2.29 | $2.9X10^4$ | $1.8X10^5$ | 254 | 63.5 | 2.6 |
| 3.6OLGMA250 | 3.6 | 250 | 50 | F02 | 1.72 | $5.1X10^4$ | $2.7X10^5$ | 254 | 63.5 | 2.6 |
| 7.2OEFMA80 | 7.2 | 80 | 45 | F01 | 8.36 | $3.2X10^3$ | $5.8X10^4$ | 254 | 63.5 | 1.9 |
| 7.2OEFMA100 | 7.2 | 100 | 45 | | 5.59 | $6.3X10^3$ | $9.0X10^4$ | 254 | 63.5 | 1.9 |
| 7.2OEFMA112 | 7.2 | 112 | 45 | | 4.57 | $9.1X10^3$ | $1.3X10^5$ | 254 | 63.5 | 1.9 |
| 7.2OHGMA100 | 7.2 | 100 | 45 | F02 | 6.09 | $5.0X10^3$ | $7.5X10^4$ | 359 | 63.5 | 2.6 |
| 7.2OHGMA125 | 7.2 | 125 | 45 | | 5.08 | $7.2X10^3$ | $9.6X10^4$ | 359 | 63.5 | 2.6 |
| 7.2OHGMA140 | 7.2 | 140 | 45 | | 4.35 | $9.8X10^3$ | $1.4X10^5$ | 359 | 63.5 | 2.6 |
| 7.2OHGMA160 | 7.2 | 160 | 45 | | 3.81 | $1.3X10^4$ | $1.8X10^5$ | 359 | 63.5 | 2.6 |
| 12OEFMA6.3 | 12 | 6.3 | 40 | F01 | 520 | $2.0X10^1$ | $6.1X10^2$ | 254 | 63.5 | 1.9 |
| 12OEFMA10 | 12 | 10 | 40 | | 214 | $1.4X10^2$ | $1.8X10^3$ | 254 | 63.5 | 1.9 |
| 12OEFMA16 | 12 | 16 | 40 | | 108 | $1.7X10^2$ | $3.0X10^3$ | 254 | 63.5 | 1.9 |
| 12OEFMA20 | 12 | 20 | 40 | | 77.0 | $3.4X10^2$ | $5.0X10^3$ | 254 | 63.5 | 1.9 |
| 12OEFMA25 | 12 | 25 | 40 | | 57.8 | $4.0X10^2$ | $6.5X10^3$ | 254 | 63.5 | 1.9 |
| 12OEFMA31.5 | 12 | 31.5 | 40 | | 38.5 | $8.9X10^2$ | $1.2X10^4$ | 254 | 63.5 | 1.9 |
| 12OEFMA40 | 12 | 40 | 40 | | 28.2 | $1.5X10^3$ | $1.8X10^4$ | 254 | 63.5 | 1.9 |
| 12OEFMA50 | 12 | 50 | 40 | | 20.1 | $2.9X10^3$ | $2.8X10^4$ | 254 | 63.5 | 1.9 |
| 12OEFMA63 | 12 | 63 | 40 | | 15.1 | $5.1X10^3$ | $4.3X10^4$ | 254 | 63.5 | 1.9 |
| 12OHFMA71 | 12 | 71 | 45 | F01 | 12.3 | $3.2X10^3$ | $5.4X10^4$ | 254 | 63.5 | 1.9 |
| 12OHFMA80 | 12 | 80 | 45 | | 10.9 | $4.1X10^3$ | $7.0X10^4$ | 254 | 63.5 | 1.9 |
| 12OHGMA6.3 | 12 | 6.3 | 40 | F02 | 520 | $2.0X10^1$ | $6.1X10^2$ | 359 | 63.5 | 2.6 |
| 12OHGMA10 | 12 | 10 | 40 | | 214 | $1.4X10^2$ | $1.8X10^3$ | 359 | 63.5 | 2.6 |
| 12OHGMA16 | 12 | 16 | 40 | | 108 | $1.7X10^2$ | $3.0X10^3$ | 359 | 63.5 | 2.6 |
| 12OHGMA20 | 12 | 20 | 40 | | 77.0 | $3.4X10^2$ | $5.0X10^3$ | 359 | 63.5 | 2.6 |
| 12OHGMA25 | 12 | 25 | 40 | | 57.8 | $4.0X10^2$ | $6.5X10^3$ | 359 | 63.5 | 2.6 |
| 12OHGMA31.5 | 12 | 31.5 | 40 | | 38.5 | $8.9X10^2$ | $1.2X10^4$ | 359 | 63.5 | 2.6 |
| 12OHGMA40 | 12 | 40 | 40 | | 28.2 | $1.5X10^3$ | $1.8X10^4$ | 359 | 63.5 | 2.6 |
| 12OHGMA50 | 12 | 50 | 40 | | 22.6 | $2.3X10^3$ | $2.4X10^4$ | 359 | 63.5 | 2.6 |
| 12OHGMA63 | 12 | 63 | 40 | | 17.0 | $4.1X10^3$ | $3.7X10^4$ | 359 | 63.5 | 2.6 |
| 12OHGMA71 | 12 | 71 | 40 | | 16.6 | $2.0X10^3$ | $3.9X10^4$ | 359 | 63.5 | 2.6 |
| 12OHGMA80 | 12 | 80 | 40 | | 13.4 | $3.2X10^3$ | $5.5X10^4$ | 359 | 63.5 | 2.6 |
| 12OHGMA90 | 12 | 90 | 40 | | 12.2 | $3.8X10^3$ | $6.2X10^4$ | 359 | 63.5 | 2.6 |
| 12OHGMA100 | 12 | 100 | 40 | | 8.75 | $6.3X10^3$ | $8.9X10^4$ | 359 | 63.5 | 2.6 |
| 12OLGMA125 | 12 | 125 | 40 | F02 | 7.09 | $1.0X10^4$ | $1.7X10^5$ | 359 | 63.5 | 2.6 |
| 15.5OEFMA6.3 | 15.5 | 6.3 | 40 | F01 | 392 | $4.8X10^1$ | $1.0X10^3$ | 254 | 63.5 | 1.9 |
| 15.5OEFMA10 | 15.5 | 10 | 40 | | 188 | $4.0X10^1$ | $3.4X10^3$ | 254 | 63.5 | 1.9 |
| 15.5OEFMA16 | 15.5 | 16 | 40 | | 101 | $2.7X10^1$ | $3.4X10^3$ | 254 | 63.5 | 1.9 |
| 15.5OEFMA20 | 15.5 | 20 | 40 | | 78.7 | $4.5X10^1$ | $4.9X10^3$ | 254 | 63.5 | 1.9 |
| 15.5OEFMA25 | 15.5 | 25 | 40 | | 55.3 | $5.2X10^1$ | $1.1X10^4$ | 254 | 63.5 | 1.9 |
| 15.5OEFMA31.5 | 15.5 | 31.5 | 40 | | 36.9 | $1.2X10^3$ | $1.5X10^4$ | 254 | 63.5 | 1.9 |
| 15.5OEFMA40 | 15.5 | 40 | 40 | | 29.5 | $1.8X10^3$ | $2.0X10^4$ | 254 | 63.5 | 1.9 |
| 15.5OEFMA50 | 15.5 | 50 | 40 | | 22.1 | $3.3X10^3$ | $3.0X10^4$ | 254 | 63.5 | 1.9 |
| 15.5OEFMA63 | 15.5 | 63 | 40 | | 17.8 | $2.0X10^3$ | $3.9X10^4$ | 254 | 63.5 | 1.9 |
| 15.5OHGMA71 | 15.5 | 71 | 40 | F02 | 17.7 | $2.5X10^3$ | $4.4X10^4$ | 359 | 63.5 | 2.6 |
| 15.5OHGMA80 | 15.5 | 80 | 40 | | 15.5 | $3.2X10^3$ | $5.4X10^4$ | 359 | 63.5 | 2.6 |
| 15.5OHGMA90 | 15.5 | 90 | 40 | | 11.6 | $5.0X10^3$ | $7.5X10^4$ | 359 | 63.5 | 2.6 |
| 15.5OLGMA100 | 15.5 | 100 | 40 | F02 | 10.0 | $7.2X10^3$ | $9.6X10^4$ | 359 | 63.5 | 2.6 |
| 17.5OHGMA6.3 | 17.5 | 6.3 | 35 | F02 | 665 | $2.0X10^1$ | $6.1X10^2$ | 359 | 63.5 | 2.6 |
| 17.5OHGMA10 | 17.5 | 10 | 35 | | 282 | $1.4X10^2$ | $1.8X10^3$ | 359 | 63.5 | 2.6 |
| 17.5OHGMA16 | 17.5 | 16 | 35 | | 139 | $1.7X10^2$ | $3.0X10^3$ | 359 | 63.5 | 2.6 |
| 1 7.5OHGMA20 | 17.5 | 20 | 35 | | 100 | $3.4X10^2$ | $5.0X10^3$ | 359 | 63.5 | 2.6 |
| 17.5OHGMA25 | 17.5 | 25 | 35 | | 74.7 | $4.0X10^2$ | $6.5X10^3$ | 359 | 63.5 | 2.6 |
| 17.5OHGMA31.5 | 17.5 | 31.5 | 35 | | 49.8 | $9.0X10^2$ | $1.2X10^4$ | 359 | 63.5 | 2.6 |
| 17.5OHGMA40 | 17.5 | 40 | 35 | | 36.5 | $1.5X10^3$ | $1.9X10^4$ | 359 | 63.5 | 2.6 |
| 17.5OHGMA50 | 17.5 | 50 | 35 | | 26.0 | $2.9X10^3$ | $2.9X10^4$ | 359 | 63.5 | 2.6 |
| 17.5OHGMA63 | 17.5 | 63 | 35 | | 19.5 | $5.2X10^3$ | $4.5X10^4$ | 359 | 63.5 | 2.6 |
| 17.5OHGMA80 | 17.5 | 80 | 35 | | 15.5 | $3.8X10^3$ | $5.7X10^4$ | 359 | 63.5 | 2.6 |
| 24OEGMA6.3 | 24 | 6.3 | 25 | F02 | 605 | $4.8X10^1$ | $1.0X10^3$ | 359 | 63.5 | 2.6 |
| 24OEGMA10 | 24 | 10 | 25 | | 290 | $2.5X10^2$ | $3.4X10^3$ | 359 | 63.5 | 2.6 |
| 24OEGMA16 | 24 | 16 | 25 | | 153 | $2.7X10^2$ | $3.4X10^3$ | 359 | 63.5 | 2.6 |
| 24OEGMA20 | 24 | 20 | 25 | | 119 | $4.4X10^2$ | $4.9X10^3$ | 359 | 63.5 | 2.6 |
| 24OEGMA25 | 24 | 25 | 25 | | 84.5 | $5.2X10^2$ | $1.1X10^4$ | 359 | 63.5 | 2.6 |
| 24OEGMA31.5 | 24 | 31.5 | 25 | | 55.9 | $1.2X10^3$ | $1.5X10^4$ | 359 | 63.5 | 2.6 |
| 24OEGMA40 | 24 | 40 | 25 | | 44.7 | $1.8X10^3$ | $2.0X10^4$ | 359 | 63.5 | 2.6 |
| 24OEGMA50 | 24 | 50 | 25 | | 34.0 | $1.2X10^3$ | $2.4X10^4$ | 359 | 63.5 | 2.6 |

## General guide to the selection of Oil tight Fuse Links for use in the primary circuit of three phase transformers

### Transformer Priority Voltage

| Transformer kVA | 3.3kV | | | 6.6kV | | | 11kV | | | | 13.8kV | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Product Code | Current Rating (A) | Rating kV | Product Code | Current Rating (A) | Rating kV | ESI 12-8 Ref. | Product Code | Current Rating (A) | Rating kV | Product Code | Current Rating (A) | Rating kV |
| 200 | OEFMA | 63 | 3.6 | OEFMA | 31.5 | 12 | 01 | OEFMA | 25 | 12 | OEFMA | 16 | 15.5 |
| 250 | OEFMA | 80 | 3.6 | OEFMA | 40 | 12 | - | OEFMA | 25 | 12 | OEFMA | 20 | 15.5 |
| 300/315 | OEFMA | 100 | 3.6 | OEFMA | 50 | 12 | 02 | OEFMA | 31.5 | 12 | OEFMA | 25 | 15.5 |
| 400 | OEFMA | 125 | 3.6 | OEFMA | 63 | 12 | - | OEFMA | 40 | 12 | OEFMA | 31.5 | 15.5 |
| 500 | OEFMA | 160 | 3.6 | OEFMA | 71 | 12 | 03 | OEFMA | 50 | 12 | OEFMA | 40 | 15.5 |
| 630 | OEFMA | 200 | 3.6 | OEFMA | 100 | 7.2 | - | OEFMA | 63 | 12 | OEFMA | 50 | 15.5 |
| 750/800 | OLGMA | 250 | 3.6 | OHGMA | 125 | 7.2 | 04 | OHFMA | 80 | 12 | OEFMA | 63 | 15.5 |
| 1000 | OLGMA | 250* | 3.6 | OHGMA | 140 | 7.2 | 05 | OGFMA | 90† | 12 | OHGMA | 71 | 15.5 |
| 1250 | - | - | - | OHGMA | 160* | 7.2 | - | OGFMA | 100 | 12 | OHGMA | 90 | 15.5 |
| 1600 | - | - | - | - | - | - | - | OLGMA | 125* | 12 | OLGMA | 100* | 15.5 |

**Selection of these fuse links has been based on a compromise between the following:**

**1** Withstand against magnetising inrush current is taken as 12 times full-load current for 0.1 second.

**2** Withstand against 150% permissible overload current. Recommendations marked with an asterisk or dagger have the following significance:

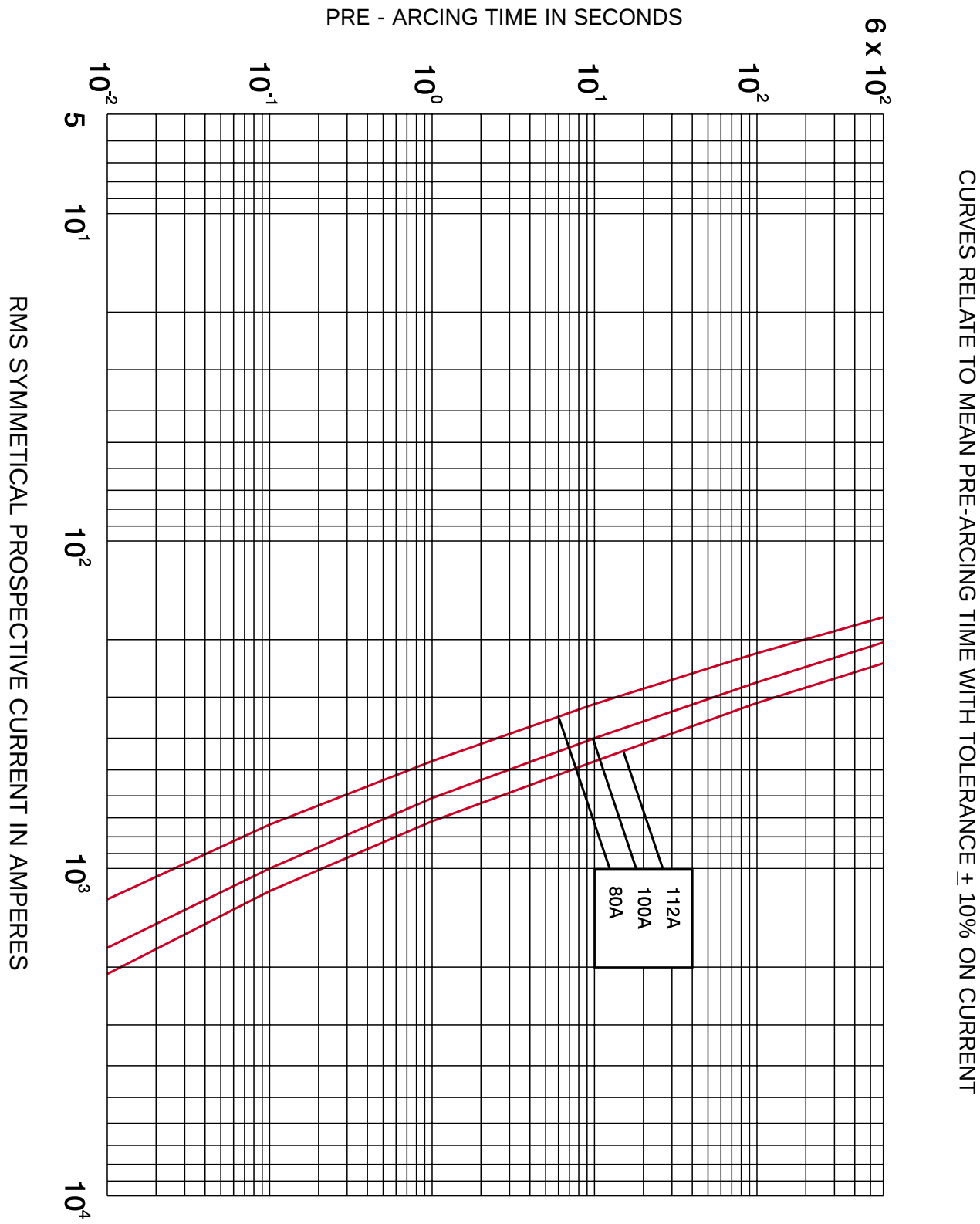
* Limited to permissible overload of 130%
† Permits use of a 12kV OHFMA 80A fuse with a 1000 kVA transformer where permissible overload does not exceed 130%.

**3** For 6.6kV systems, 12kV fuse links are recommended where possible in the interests of standardisation.

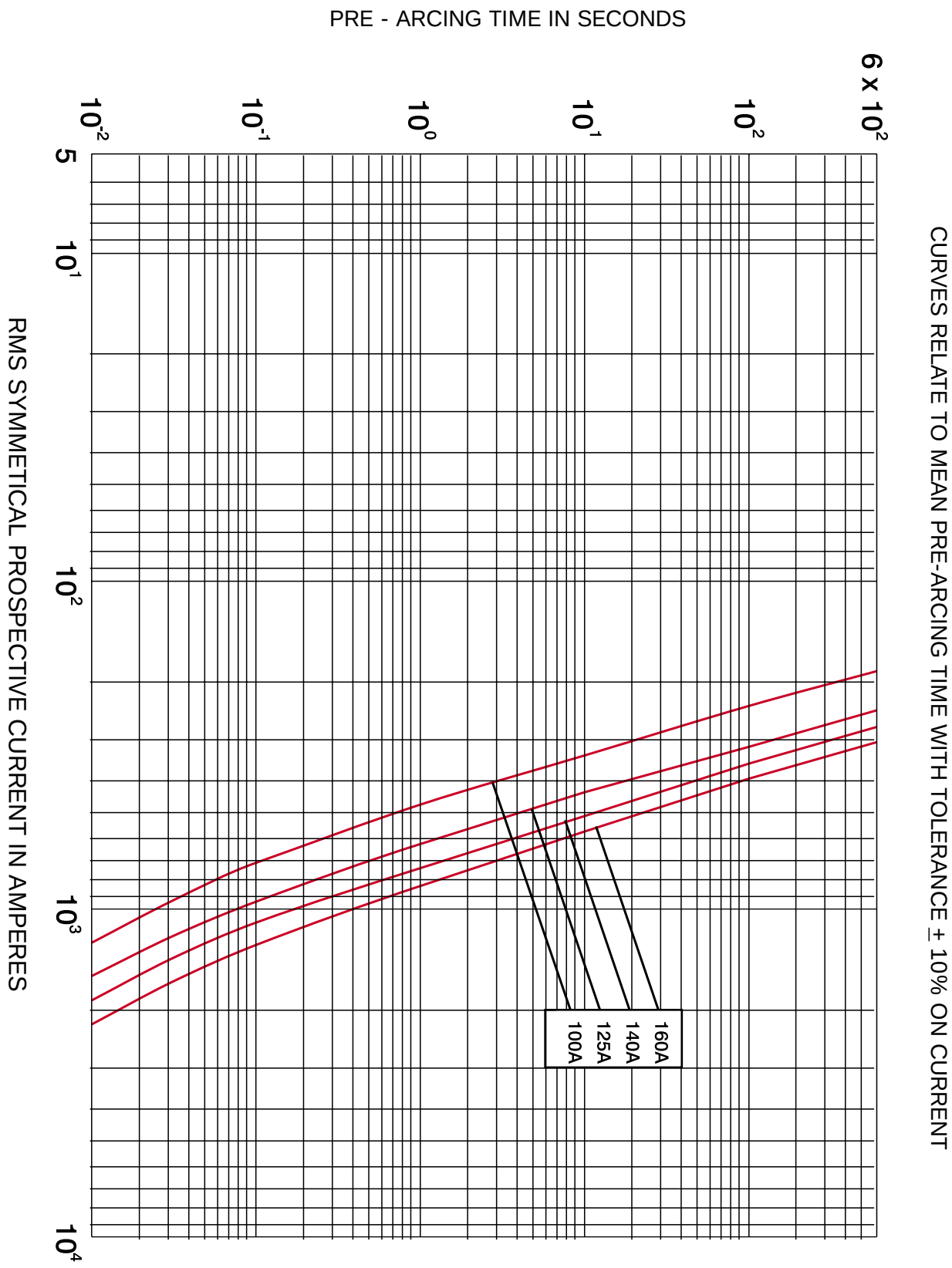
**4** Wherever possible, 254mm long fuse links are offered rather than equivalent 359mm types.

**5** The above recommendations are not generally applicable to transformers feeding motor circuits with starting currents in excess of the transformer full load current. In this event, please consult Bussmann application engineers.

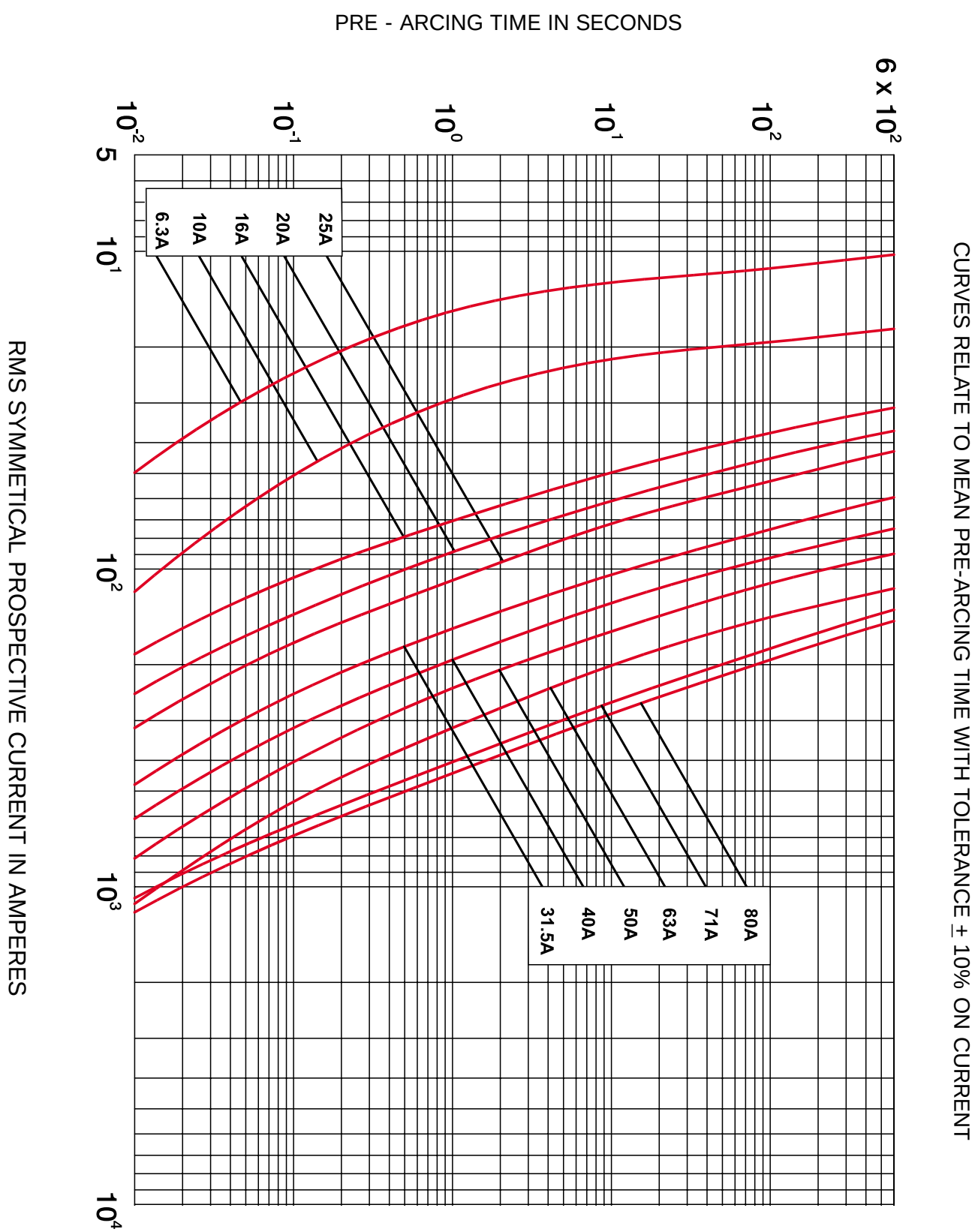
## Time current characteristics for 7.2kV Oil Fuse Links, fuse type OEF



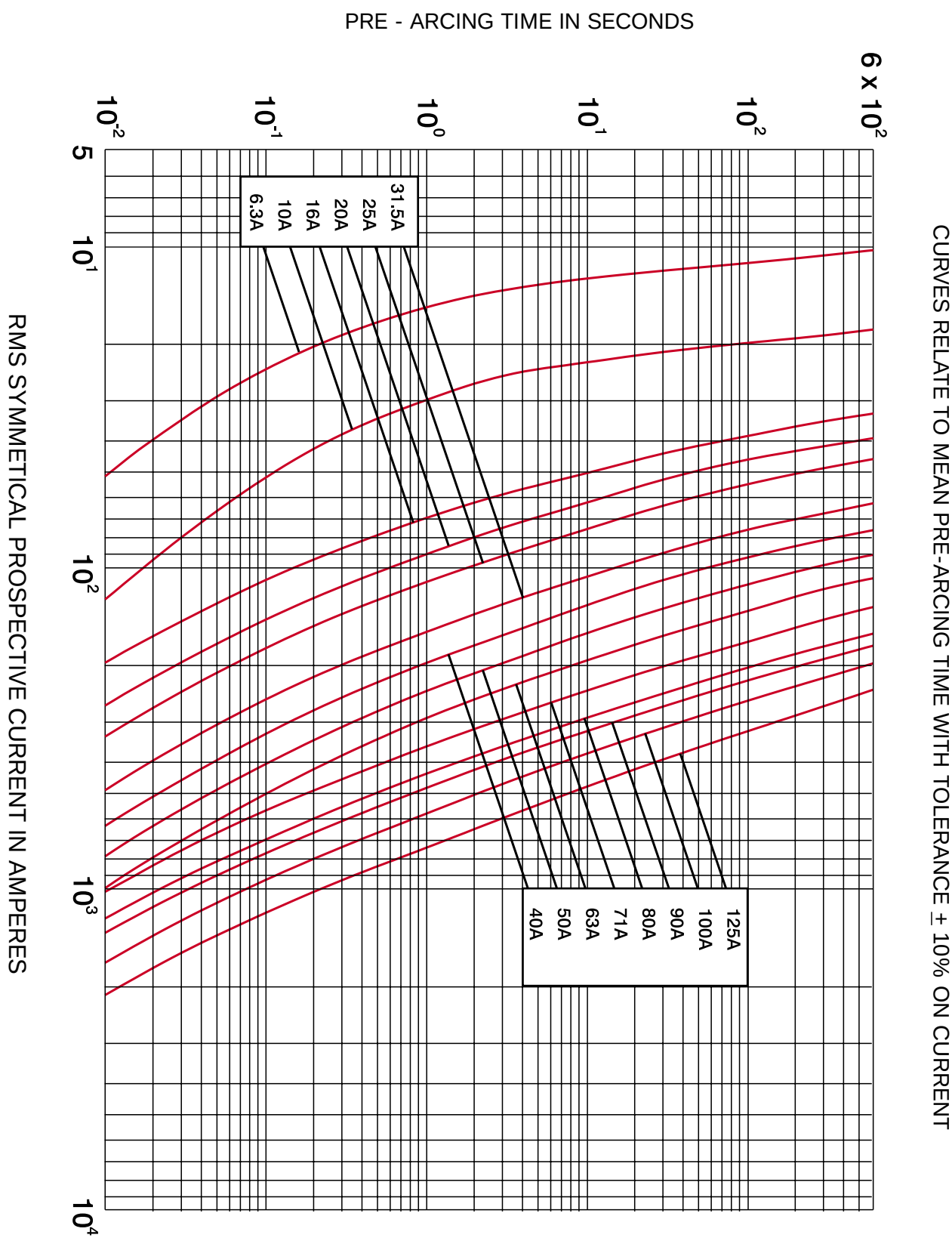
## Time current characteristics for 7.2kV Oil Fuse Links, fuse type OHG



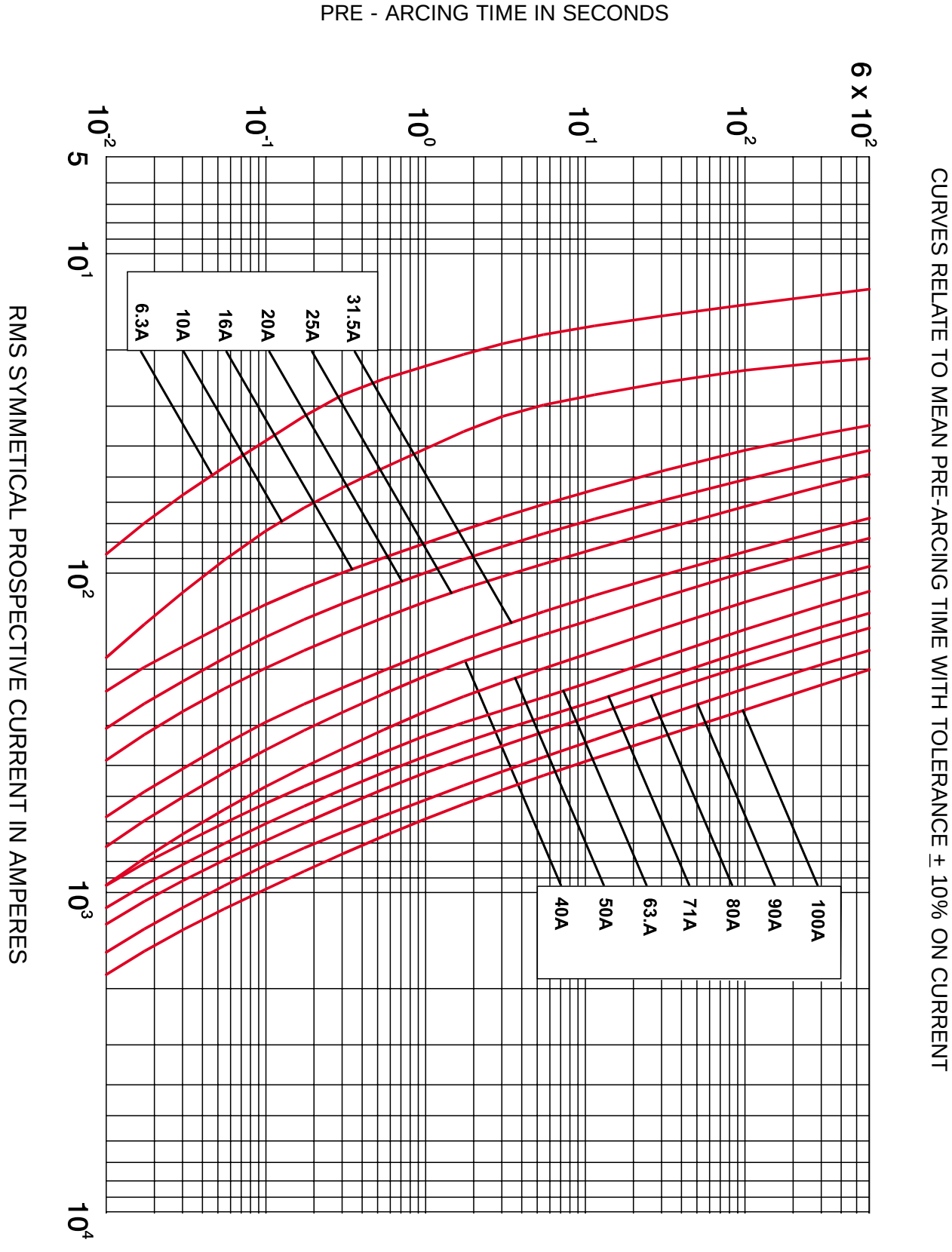
**Time current characteristics for 12kV Oil Fuse Links, fuse types OEF and OHF**



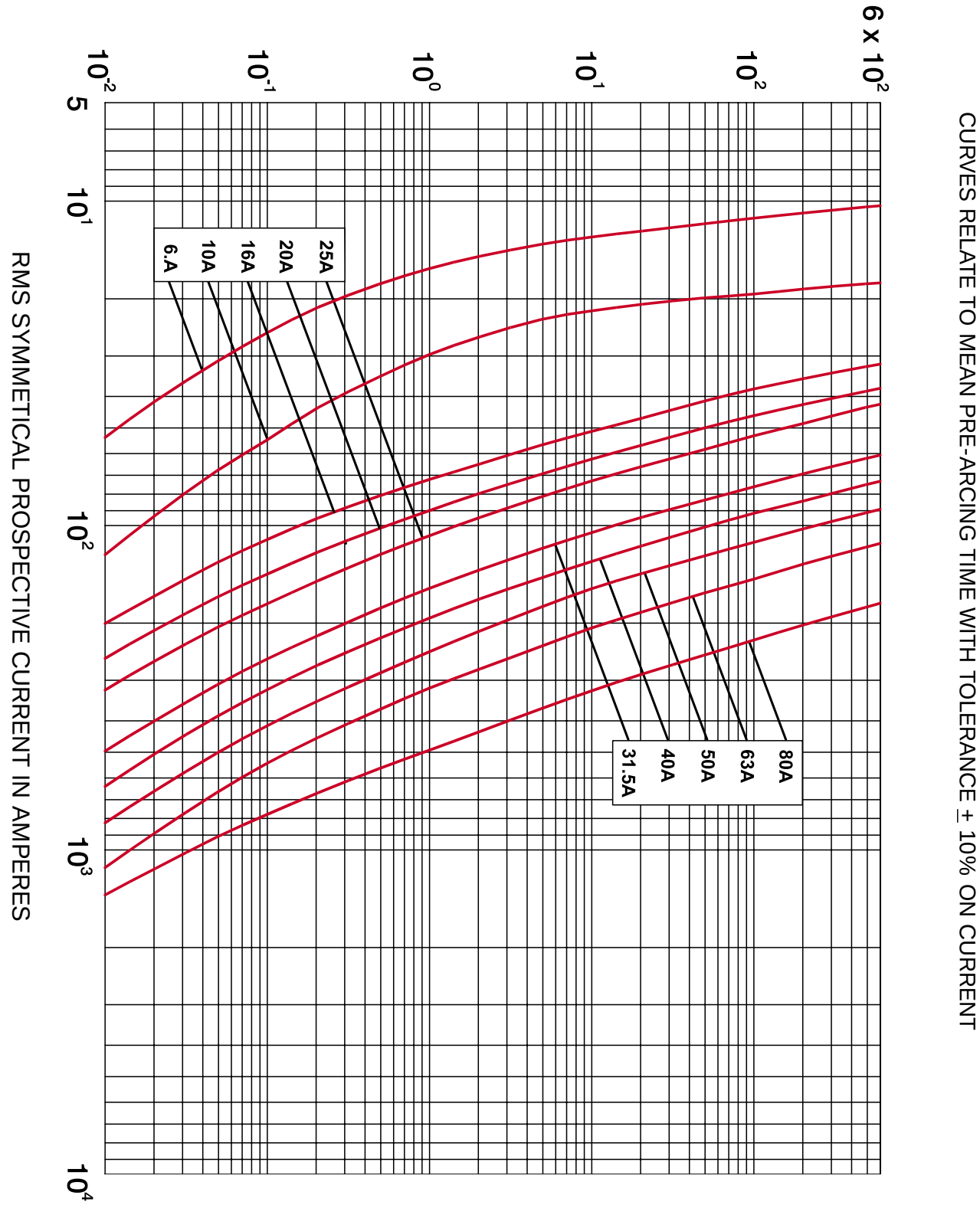
## Time current characteristics for 12kV Oil Fuse Links, fuse types OHG and OLG



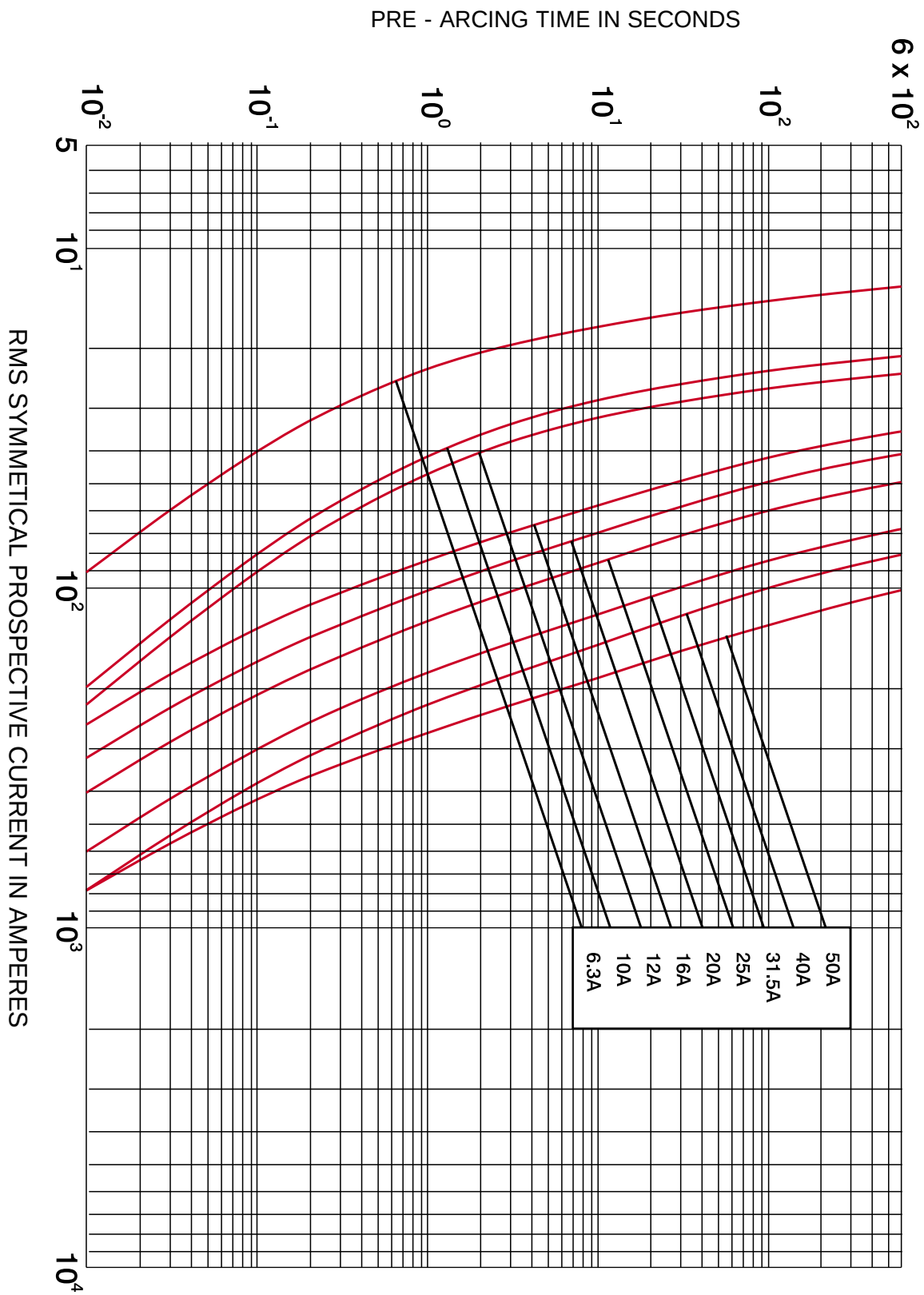
## Time current characteristics for 15.5kV Oil Fuse Links, fuse types OEF, OHG and OLG



## Time current characteristics for 17.5kV Oil Fuse Links, fuse type OHG



**Time current characteristics for 24kV Oil Fuse Links, fuse type OEG**



- **High Voltage fuse links for use in Air, comply with BS 2962-1 dimensions.**
- **Available in voltage ranges 3.6 to 72.5kV.**
- **Full range performance option available at 12kV and 24kV.**
- **Wide variety of fixing arrangements available.**
- **Powerful pyrotechnic striker fitted.**
- **E-rated North American dimension products also available.**
- **Suitable for indoor or outdoor use.**

**British Standard Range**

## Bussmann Fuse Links for use in air

The Bussmann range of fuse links for use in air are available in British Standard form, BS 2692, Part 1 1975. A number of options are available, including **full range capability**, and alternative fixing arrangements such as different types of tag, studs and collars etc. Details are available on application. Higher current ratings can be obtained by using fuse links in parallel and special fixing arrangements are available for this purpose.

## Bussmann Air Range - USA Dimensions

A comprehensive range of 'E' rated North American Dimension fuse links for industrial applications is also available. These are the latest technology **full range fuse links** in USA Industrial Standard 2 inch and 3 inch diameter ferrule style. Extended ratings in double barrel assemblies; striker, indicator and tag versions are also available.

## Table of ratings for British Standard air fuses 3.6 - 72.5kV

| Part Number * | Voltage Rating | Current Rating | Breaking Capacity | Cold resistance in free air at rated current | Joule Intergral ($I^2t$) | | Length | Diameter Ø | Weight |
|---|---|---|---|---|---|---|---|---|---|
| | $U_n$ | $I_n$ | $I_1$ | | $A^2s$ | | | | |
| | kV | A | kA | m Ω | Minimum Pre-Arcing | Maximum Total Clearing | mm | mm | kg |
| 3.6ADFH*6.3 | 3.6 | 6.3 | 40 | 208 | $4.8x10^1$ | $7.2x10^2$ | 254 | 50.8 | 1.5 |
| 3.6ADFH*10 | 3.6 | 10 | 40 | 91.8 | $2.3x10^2$ | $2.3x10^3$ | 254 | 50.8 | 1.5 |
| 3.6ADFH*16 | 3.6 | 16 | 40 | 31.1 | $7.2x10^1$ | $1.0x10^3$ | 254 | 50.8 | 1.5 |
| 3.6ADFH*20 | 3.6 | 20 | 40 | 24.9 | $1.1x10^2$ | $1.5x10^3$ | 254 | 50.8 | 1.5 |
| 3.6ADFH*25 | 3.6 | 25 | 40 | 18.6 | $2.0x10^2$ | $2.1x10^3$ | 254 | 50.8 | 1.5 |
| 3.6ADFH*31.5 | 3.6 | 31.5 | 40 | 14.9 | $3.1x10^2$ | $2.8x10^3$ | 254 | 50.8 | 1.5 |
| 3.6ADFH*40 | 3.6 | 40 | 40 | 10.0 | $7.1x10^2$ | $7.7x10^3$ | 254 | 50.8 | 1.5 |
| 3.6ADGH*6.3 | 3.6 | 6.3 | 25 | 185 | $4.8x10^1$ | $7.2x10^2$ | 359 | 50.8 | 2.1 |
| 3.6ADGH*10 | 3.6 | 10 | 25 | 77.1 | $3.1x10^2$ | $4.7x10^3$ | 359 | 50.8 | 2.1 |
| 3.6ADGH*16 | 3.6 | 16 | 25 | 58.6 | $5.5x10^2$ | $8.3x10^3$ | 359 | 50.8 | 2.1 |
| 3.6ADGH*20 | 3.6 | 20 | 25 | 44.0 | $9.8x10^2$ | $1.5x10^4$ | 359 | 50.8 | 2.1 |
| 3.6ADGH*25 | 3.6 | 25 | 25 | 36.9 | $1.3x10^2$ | $1.5x10^3$ | 359 | 50.8 | 2.1 |
| 3.6ADGH*31.5 | 3.6 | 31.5 | 25 | 24.6 | $2.9x10^2$ | $3.5x10^3$ | 359 | 50.8 | 2.1 |
| 3.6ADGH*40 | 3.6 | 40 | 25 | 13.9 | $8.0x10^2$ | $9.6x10^3$ | 359 | 50.8 | 2.1 |
| 3.6ADGH*50 | 3.6 | 50 | 25 | 9.91 | $1.6x10^3$ | $1.9x10^4$ | 359 | 50.8 | 2.1 |
| 3.6ADGH*63 | 3.6 | 63 | 25 | 7.05 | $3.1x10^3$ | $3.7x10^4$ | 359 | 50.8 | 2.1 |
| 3.6ADGH*80 | 3.6 | 80 | 25 | 4.94 | $6.3x10^3$ | $7.6x10^4$ | 359 | 50.8 | 2.1 |
| 3.6ADGH*100 | 3.6 | 100 | 25 | 3.96 | $9.8x10^3$ | $1.2x10^5$ | 359 | 50.8 | 2.1 |
| 7.2ADFH*6.3 | 7.2 | 6.3 | 20 | 206 | $4.8x10^1$ | $5.6x10^2$ | 254 | 50.8 | 1.5 |
| 7.2ADFH*10 | 7.2 | 10 | 20 | 83.0 | $7.2x10^1$ | $9.4x10^2$ | 254 | 50.8 | 1.5 |
| 7.2ADFH*16 | 7.2 | 16 | 20 | 52.3 | $7.2x10^1$ | $8.6x10^2$ | 254 | 50.8 | 1.5 |
| 7.2ADFH*20 | 7.2 | 20 | 20 | 41.8 | $1.1x10^2$ | $1.5x10^3$ | 254 | 50.8 | 1.5 |
| 7.2ADFH*25 | 7.2 | 25 | 20 | 31.5 | $2.0x10^2$ | $2.6x10^3$ | 254 | 50.8 | 1.5 |
| 7.2ADFH*31.5 | 7.2 | 31.5 | 20 | 22.8 | $3.8x10^2$ | $4.8x10^3$ | 254 | 50.8 | 1.5 |
| 7.2ADFH*40 | 7.2 | 40 | 20 | 15.6 | $8.0x10^2$ | $1.1x10^4$ | 254 | 50.8 | 1.5 |
| 7.2ADFH*50 | 7.2 | 50 | 20 | 11.8 | $1.3x10^3$ | $1.4x10^4$ | 254 | 50.8 | 1.5 |
| 7.2ADFH*63 | 7.2 | 63 | 20 | 8.41 | $2.5x10^3$ | $2.9x10^4$ | 254 | 50.8 | 1.5 |
| 7.2AFFH*80 | 7.2 | 80 | 20 | 5.83 | $6.3x10^3$ | $6.9x10^4$ | 254 | 76.2 | 2.8 |
| 7.2AFFH*100 | 7.2 | 100 | 20 | 4.38 | $9.8x10^3$ | $1.4x10^5$ | 254 | 76.2 | 2.8 |
| 7.2BDGH*6.3 | 7.2 | 6.3 | 40 | 206 | $5.1x10^1$ | $6.0x10^2$ | 359 | 50.8 | 2.1 |
| 7.2BDGH*10 | 7.2 | 10 | 40 | 83.0 | $1.0x10^2$ | $1.3x10^3$ | 359 | 50.8 | 2.1 |
| 7.2BDGH*16 | 7.2 | 16 | 40 | 52.3 | $8.4x10^1$ | $1.0x10^3$ | 359 | 50.8 | 2.1 |
| 7.2BDGH*20 | 7.2 | 20 | 40 | 41.8 | $1.1x10^2$ | $1.5x10^3$ | 359 | 50.8 | 2.1 |
| 7.2BDGH*25 | 7.2 | 25 | 40 | 31.4 | $2.0x10^2$ | $2.6x10^3$ | 359 | 50.8 | 2.1 |
| 7.2BDGH*31.5 | 7.2 | 31.5 | 40 | 22.8 | $4.6x10^2$ | $5.8x10^3$ | 359 | 50.8 | 2.1 |
| 7.2BDGH*40 | 7.2 | 40 | 40 | 15.7 | $8.0x10^2$ | $1.1x10^4$ | 359 | 50.8 | 2.1 |
| 7.2BDGH*50 | 7.2 | 50 | 40 | 11.8 | $1.6x10^3$ | $1.8x10^4$ | 359 | 50.8 | 2.1 |
| 7.2BDGH*63 | 7.2 | 63 | 40 | 7.48 | $3.6x10^3$ | $4.3x10^4$ | 359 | 50.8 | 2.1 |
| 7.2BDGH*80 | 7.2 | 80 | 40 | 5.82 | $6.4x10^3$ | $7.0x10^4$ | 359 | 50.8 | 2.1 |
| 7.2BFGH*90 | 7.2 | 90 | 40 | 4.72 | $1.0x10^4$ | $1.4x10^5$ | 359 | 76.2 | 4.2 |
| 7.2BFGH*100 | 7.2 | 100 | 40 | 4.05 | $1.3x10^4$ | $1.9x10^5$ | 359 | 76.2 | 4.2 |
| 7.2BFGH*125 | 7.2 | 125 | 40 | 3.15 | $1.6x10^4$ | $1.9x10^5$ | 359 | 76.2 | 4.2 |
| 7.2BFGH*140 | 7.2 | 140 | 40 | 2.57 | $2.4x10^4$ | $3.3x10^5$ | 359 | 76.2 | 4.2 |
| 7.2BFGH*160 | 7.2 | 160 | 40 | 2.35 | $2.9x10^4$ | $4.0x10^5$ | 359 | 76.2 | 4.2 |
| 12ADFH*6.3 | 12 | 6.3 | 12 | 356 | $4.8x10^1$ | $5.0x10^2$ | 254 | 50.8 | 1.5 |
| 12ADFH*10 | 12 | 10 | 12 | 89.8 | $1.3x10^2$ | $2.0x10^3$ | 254 | 50.8 | 1.5 |
| 12ADFH*16 | 12 | 16 | 12 | 56.5 | $1.3x10^2$ | $2.0x10^3$ | 254 | 50.8 | 1.5 |
| 12ADFH*20 | 12 | 20 | 12 | 36.2 | $3.1x10^2$ | $3.5x10^3$ | 254 | 50.8 | 1.5 |
| 12ADFH*25 | 12 | 25 | 12 | 28.3 | $5.1x10^2$ | $6.1x10^3$ | 254 | 50.8 | 1.5 |
| 12ADFH*31.5 | 12 | 31.5 | 12 | 22.6 | $8.0x10^2$ | $9.0x10^3$ | 254 | 50.8 | 1.5 |
| 12AFFH*40 | 12 | 40 | 12 | 21.8 | $1.2x10^3$ | $1.5x10^4$ | 254 | 76.2 | 2.8 |
| 12AFFH*50 | 12 | 50 | 12 | 15.7 | $2.0x10^3$ | $2.5x10^4$ | 254 | 76.2 | 2.8 |
| 12AFFH*63 | 12 | 63 | 12 | 12.5 | $3.1x10^3$ | $3.9x10^4$ | 254 | 76.2 | 2.8 |
| 12BDGH*6.3 | 12 | 6.3 | 40 | 356 | $5.2x10^1$ | $5.0x10^2$ | 359 | 50.8 | 2.1 |
| 12BDGH*10 | 12 | 10 | 40 | 138 | $6.4x10^1$ | $1.0x10^3$ | 359 | 50.8 | 2.1 |
| 12BDGH*16 | 12 | 16 | 40 | 87.0 | $6.4x10^1$ | $1.0x10^3$ | 359 | 50.8 | 2.1 |
| 12BDGH*20 | 12 | 20 | 40 | 63.3 | $1.6x10^2$ | $1.8x10^3$ | 359 | 50.8 | 2.1 |
| 12BDGH*22.4 | 12 | 22.4 | 40 | 49.7 | $2.4x10^2$ | $3.0x10^3$ | 359 | 50.8 | 2.1 |
| 12BDGH*25 | 12 | 25 | 40 | 43.5 | $3.2x10^2$ | $3.8x10^3$ | 359 | 50.8 | 2.1 |
| 12BDGH*31.5 | 12 | 31.5 | 40 | 32.6 | $5.8x10^2$ | $6.5x10^3$ | 359 | 50.8 | 2.1 |
| 12BDGH*35.5 | 12 | 35.5 | 40 | 24.5 | $9.0x10^2$ | $1.1x10^4$ | 359 | 50.8 | 2.1 |
| 12BDGH*40 | 12 | 40 | 40 | 21.8 | $1.2x10^3$ | $1.5x10^4$ | 359 | 50.8 | 2.1 |
| 12BDGH*45 | 12 | 45 | 40 | 17.5 | $1.8x10^3$ | $2.3x10^4$ | 359 | 50.8 | 2.1 |
| 12BDGH*50 | 12 | 50 | 40 | 14.5 | $2.5x10^3$ | $3.2x10^4$ | 359 | 50.8 | 2.1 |
| 12BFGH*56 | 12 | 56 | 40 | 14.6 | $2.9x10^3$ | $3.7x10^4$ | 359 | 76.2 | 4.2 |
| 12BFGH*63 | 12 | 63 | 40 | 12.8 | $3.4x10^3$ | $4.5x10^4$ | 359 | 76.2 | 4.2 |
| 12BFGH*71 | 12 | 71 | 40 | 10.6 | $4.6x10^3$ | $6.3x10^4$ | 359 | 76.2 | 4.2 |
| 12BFGH*80 | 12 | 80 | 40 | 9.73 | $6.1x10^3$ | $7.8x10^4$ | 359 | 76.2 | 4.2 |
| 12BFGH*90 | 12 | 90 | 40 | 8.37 | $8.1x10^3$ | $1.0x10^5$ | 359 | 76.2 | 4.2 |
| 12BFGH*100 | 12 | 100 | 40 | 6.88 | $1.1x10^3$ | $1.4x10^5$ | 359 | 76.2 | 4.2 |
| 12AKGH*112 | 12 | 112 | 20 | 5.25 | $1.5x10^4$ | $1.9x10^5$ | 359 | 76.2 | 4.3 |
| 12AKGH*125 | 12 | 125 | 20 | 4.92 | $2.1x10^4$ | $2.4x10^5$ | 359 | 76.2 | 4.3 |

*The last letter of the ordering code on these items describes the tag required, please refer to *"How to order"* (page 61) for an explanation.

## Table of ratings for British Standard air fuses 3.6 - 72.5kV

| Part Number | Voltage Rating | Current Rating | Breaking Capacity | Cold resistance in free air at rated current | Joule Intergral ($I^2t$) | | Length | Diameter Ø | Weight |
|---|---|---|---|---|---|---|---|---|---|
| | $U_n$ | $I_n$ | $I_1$ | | $A^2s$ | | | | |
| | kV | A | kA | m Ω | Minimum Pre-Arcing | Maximum Total Clearing | mm | mm | kg |
| Fullrange | 12 | 10 | 40 | 90.6 | $2.7x10^2$ | $4.7x10^3$ | 359 | 76.2 | 4.1 |
| 12FFGN4910 | 12 | 16 | 40 | 69.1 | $4.2x10^2$ | $6.1x10^3$ | 359 | 76.2 | 4.1 |
| 12FFGN4916 | 12 | 20 | 40 | 45.6 | $9.5x10^2$ | $1.1x10^4$ | 359 | 76.2 | 4.1 |
| 12FFGN4920 | 12 | 25 | 40 | 36.5 | $1.6x10^3$ | $1.5x10^4$ | 359 | 76.2 | 4.1 |
| 12FFGN4925 | 12 | 31.5 | 40 | 25.4 | $3.1x10^3$ | $2.5x10^4$ | 359 | 76.2 | 4.1 |
| 12FFGN4931.5 | 12 | 40 | 40 | 19.7 | $4.7x10^3$ | $3.8x10^4$ | 359 | 76.2 | 4.1 |
| 12FFGN4940 | 12 | 50 | 40 | 14.7 | $8.4x10^3$ | $5.6x10^4$ | 359 | 76.2 | 4.1 |
| 12FFGN4950 | 12 | 63 | 40 | 12.6 | $6.3x10^3$ | $5.4x10^4$ | 359 | 76.2 | 4.1 |
| 12FFGN4963 | | | | | | | 359 | 76.2 | 4.1 |
| 15.5BDGH*6.3 | 15.5 | 6.3 | 20 | 485 | $4.8x10^1$ | $8.5x10^2$ | 359 | 50.8 | 2.1 |
| 15.5BDGH*10 | 15.5 | 10 | 20 | 158 | $7.2x10^1$ | $1.2x10^3$ | 359 | 50.8 | 2.1 |
| 15.5BDGH*16 | 15.5 | 16 | 20 | 99.1 | $7.2x10^1$ | $1.2x10^3$ | 359 | 50.8 | 2.1 |
| 15.5BDGH*20 | 15.5 | 20 | 20 | 74.6 | $1.3x10^2$ | $2.8x10^3$ | 359 | 50.8 | 2.1 |
| 15.5BDGH*25 | 15.5 | 25 | 20 | 54.2 | $2.4x10^2$ | $4.3x10^3$ | 359 | 50.8 | 2.1 |
| 15.5BDGH*31.5 | 15.5 | 31.5 | 20 | 38.2 | $4.9x10^2$ | $7.0x10^3$ | 359 | 50.8 | 2.1 |
| 15.5BDGH*40 | 15.5 | 40 | 20 | 27.2 | $9.6x10^2$ | $1.2x10^4$ | 359 | 50.8 | 2.1 |
| 15.5BFGH*50 | 15.5 | 50 | 20 | 22.2 | $1.6x10^3$ | $3.2x10^4$ | 359 | 76.2 | 4.2 |
| 15.5BFGH*63 | 15.5 | 63 | 20 | 15.5 | $3.2x10^3$ | $4.6x10^4$ | 359 | 76.2 | 4.2 |
| 15.5BFGH*80 | 15.5 | 80 | 20 | 9.73 | $7.2x10^3$ | $1.0x10^5$ | 359 | 76.2 | 4.2 |
| 15.5BFGH*85 | 15.5 | 85 | 20 | 9.45 | $7.2x10^3$ | $1.0x10^5$ | 359 | 76.2 | 4.2 |
| 24ADIHA6.3 | 15.5 | 6.3 | 12 | 520 | $7.9x10^1$ | $8.5x10^2$ | 565 | 50.8 | 3.0 |
| 24ADIHA10 | 15.5 | 10 | 12 | 173 | $7.2x10^1$ | $1.1x10^2$ | 565 | 50.8 | 3.0 |
| 24ADIHA16 | 15.5 | 16 | 12 | 129 | $1.3x10^2$ | $1.7x10^3$ | 565 | 50.8 | 3.0 |
| 24ADIHA20 | 15.5 | 20 | 12 | 104 | $2.0x10^2$ | $2.8x10^3$ | 565 | 50.8 | 3.0 |
| 24ADIHA25 | 15.5 | 25 | 12 | 82.7 | $3.1x10^2$ | $4.1x10^3$ | 565 | 50.8 | 3.0 |
| 24ADIHA31.5 | 15.5 | 31.5 | 12 | 66.2 | $4.9x10^2$ | $6.8x10^3$ | 565 | 50.8 | 3.0 |
| 24AFIHA40 | 24 | 40 | 16 | 46.5 | $1.2x10^3$ | $1.1x10^4$ | 565 | 76.2 | 6.1 |
| 24AFIHA50 | 24 | 50 | 16 | 33.2 | $2.4x10^3$ | $2.2x10^4$ | 565 | 76.2 | 6.1 |
| 24AFIHA63 | 24 | 63 | 16 | 23.5 | $3.2x10^3$ | $5.2x10^4$ | 565 | 76.2 | 6.1 |
| 24AFIHA80 | 24 | 80 | 16 | 17.9 | $5.5x10^3$ | $8.2x10^4$ | 565 | 76.2 | 6.1 |
| 24AFIHA90 | 24 | 90 | 16 | 14.7 | $7.2x10^3$ | $1.0x10^5$ | 565 | 76.2 | 6.1 |
| Fullrange | | | | | | | | | |
| 24FDIHA3.15 | 24 | 3.15 | 35.5 | 893 | $3.1x10^1$ | $9.8x10^1$ | 565 | 50.8 | 3.0 |
| 24FDIHA5 | 24 | 5 | 35.5 | 412 | $5.9x10^1$ | $4.5x10^2$ | 565 | 50.8 | 3.0 |
| 24FDIHA6.3 | 24 | 6.3 | 35.5 | 412 | $5.9x10^1$ | $4.5x10^2$ | 565 | 50.8 | 3.0 |
| 24FDIHA10 | 24 | 10 | 35.5 | 205 | $2.7x10^2$ | $2.1x10^3$ | 565 | 50.8 | 3.0 |
| 24FDIHA16 | 24 | 16 | 35.5 | 103 | $1.1x10^3$ | $8.3x10^3$ | 565 | 50.8 | 3.0 |
| 24FDIHA20 | 24 | 20 | 35.5 | 88.2 | $1.3x10^3$ | $4.8x10^3$ | 565 | 50.8 | 3.0 |
| 24FDIHA31.5 | 24 | 31.5 | 35.5 | 56.0 | $5.3x10^3$ | $2.0x10^4$ | 565 | 50.8 | 3.0 |
| 36ADIHA3.15 | 36 | 3.15 | 16 | 1460 | $2.0x10^1$ | $2.5x10^2$ | 565 | 50.8 | 3.0 |
| 36ADIHA5 | 36 | 5 | 16 | 973 | $4.4x10^1$ | $5.5x10^2$ | 565 | 50.8 | 3.0 |
| 36ADIHA6.3 | 36 | 6.3 | 16 | 781 | $7.1x10^1$ | $8.9x10^2$ | 565 | 50.8 | 3.0 |
| 36ADIHA10 | 36 | 10 | 16 | 378 | $7.2x10^1$ | $1.1x10^3$ | 565 | 50.8 | 3.0 |
| 36ADIHA16 | 36 | 16 | 16 | 190 | $1.1x10^2$ | $1.7x10^3$ | 565 | 50.8 | 3.0 |
| 36ADIHA20 | 36 | 20 | 16 | 142 | $2.0x10^2$ | $2.8x10^3$ | 565 | 50.8 | 3.0 |
| 36ADIHA25 | 36 | 25 | 16 | 115 | $3.1x10^2$ | $4.5x10^3$ | 565 | 50.8 | 3.0 |
| 36ADIHA31.5 | 36 | 31.5 | 16 | 81.5 | $6.1x10^2$ | $8.1x10^3$ | 565 | 50.8 | 3.0 |
| 36AFIHA40 | 36 | 40 | 25 | 61.5 | $1.2x10^3$ | $1.9x10^4$ | 565 | 76.2 | 6.1 |
| 36AFKHA50 | 36 | 50 | 25 | 54.5 | $1.9x10^3$ | $2.8x10^4$ | 914 | 76.2 | 9.7 |
| 36AFKHA63 | 36 | 63 | 25 | 40.6 | $3.5x10^3$ | $5.0x10^4$ | 914 | 76.2 | 9.7 |
| 36AFKHA71 | 36 | 71 | 25 | 32.5 | $5.5x10^3$ | $8.2x10^4$ | 914 | 76.2 | 9.7 |
| 72.5AFKHA3.15 | 72.5 | 3.15 | 12 | 4230 | $1.4x10^1$ | $1.8x10^2$ | 914 | 76.2 | 9.7 |
| 72.5AFKHA5 | 72.5 | 5 | 12 | 1600 | $1.1x10^2$ | $1.4x10^3$ | 914 | 76.2 | 9.7 |
| 72.5AFKHA6.3 | 72.5 | 6.3 | 12 | 1200 | $1.9x10^2$ | $2.5x10^3$ | 914 | 76.2 | 9.7 |
| 72.5AFKHA10 | 72.5 | 10 | 12 | 519 | $7.2x10^1$ | $9.3x10^2$ | 914 | 76.2 | 9.7 |
| 72.5AFKHA16 | 72.5 | 16 | 12 | 389 | $1.3x10^2$ | $1.7x10^3$ | 914 | 76.2 | 9.7 |
| 72.5AFKHA20 | 72.5 | 20 | 12 | 249 | $3.1x10^2$ | $4.0x10^3$ | 914 | 76.2 | 9.7 |
| 72.5AFKHA25 | 72.5 | 25 | 12 | 195 | $5.1x10^2$ | $6.6x10^3$ | 914 | 76.2 | 9.7 |
| 72.5AFKHA31.5 | 72.5 | 31.5 | 12 | 130 | $1.0x10^3$ | $1.3x10^4$ | 914 | 76.2 | 9.7 |
| 72.5AFKHA40 | 72.5 | 40 | 12 | 92.7 | $2.0x10^3$ | $2.6x10^4$ | 914 | 76.2 | 9.7 |

### Notes

**a)** The fifth letter or number of the part reference denotes the end fixing arrangement.

**b)** There are a wide variety of end terminations available, the most popular types, some of which have dimensional references to BS2692: Part 1, are:

**A** No Tags - Ferrule - BS Ref. FA3 - ADIHA / BS Ref. FA4 - AFIHA / BS Ref. FA5 - AFKHA

**B** Offset Tag, single bolt fixing

**C & D** Special Offset Tags, two hole fixings for Brush fuse switch equipment, BS Ref. TA3.

**F & O** Offset Tags two bolt fixing.

**49** Centre Tags, single bolt fixing for use in Fused End Boxes.

**6** Tags to BS2692-1 ref. TA3

## General guide to the selection of Air Fuse Links for use in the primary circuit of three phase transformers

**Transformer Priority Voltage**

| Transformer kVA | 6.6kV | | | 11kV | | | 13.8kV | | |
|---|---|---|---|---|---|---|---|---|---|
| | Fuse Type | Current Rating (A) | Rating kV | Fuse Type | Current Rating (A) | Rating kV | Fuse Type | Current Rating (A) | Rating kV |
| 200 | BDG | 31.5 | 12 | BDG | 20 | 12 | BDG | 20 | 15.5 |
| 250 | BDG | 40 | 12 | BDG | 25 | 12 | BDG | 25 | 15.5 |
| 300/315 | BDG | 50 | 12 | BDG | 31.5 | 12 | BDG | 31.5 | 15.5 |
| 400 | BFG | 63 | 12 | BDG | 40 | 12 | BDG | 40 | 15.5 |
| 500 | BFG | 80 | 12 | BDG | 50 | 12 | BFG | 50 | 15.5 |
| 630 | BFG | 90 | 12 | BFG | 63 | 12 | BFG | 63 | 15.5 |
| 750/800 | BFG | 125 | 7.2 | BFG | 71 | 12 | BFG | 63 | 15.5 |
| 1000 | BFG | 140 | 7.2 | BFG | 90 | 12 | BFG | 85 | 15.5 |
| 1250 | BFG | 160 | 7.2 | AKG | 112 | 12 | BFG | 85[3] | 15.5 |
| 1500 | BFG | 160[3] | 7.2 | AKG | 125[3] | 12 | - | - | - |

### Selection of these fuse links has been based on a compromise between the following:

**1** The fuse links should withstand transformer magnetising inrush currents, taken as 12 times full load current for 0.1 seconds.

**2** The fuse links should discriminate with the highest rating of secondary fuse link.

**3** The fuse links should withstand periodic over-currents of up to 150% of transformer full load current.

**4** The fuse links should operate reasonably quickly in the event of a transformer inter-turn fault or a fault in the secondary terminal zone of the transformer.

### Notes

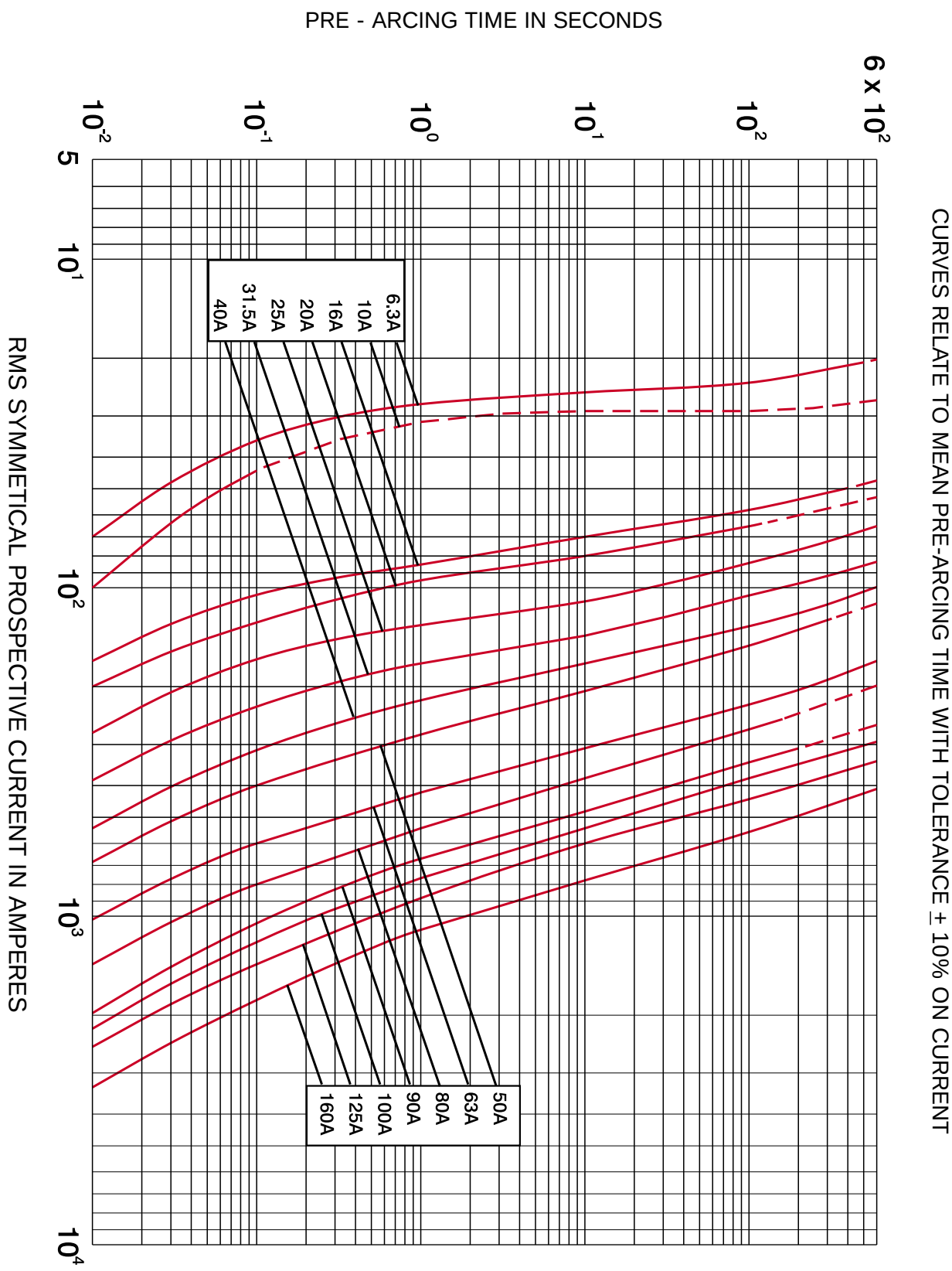
**a)** The above recommendations are not generally applicable to transformers feeding motor circuits with starting currents in excess of the rated current of the fuse. In this event, please consult Bussmann.

**b)** For 6.6kV transformers, 12kV Fuse Links are recommended, where the required current rating is available.

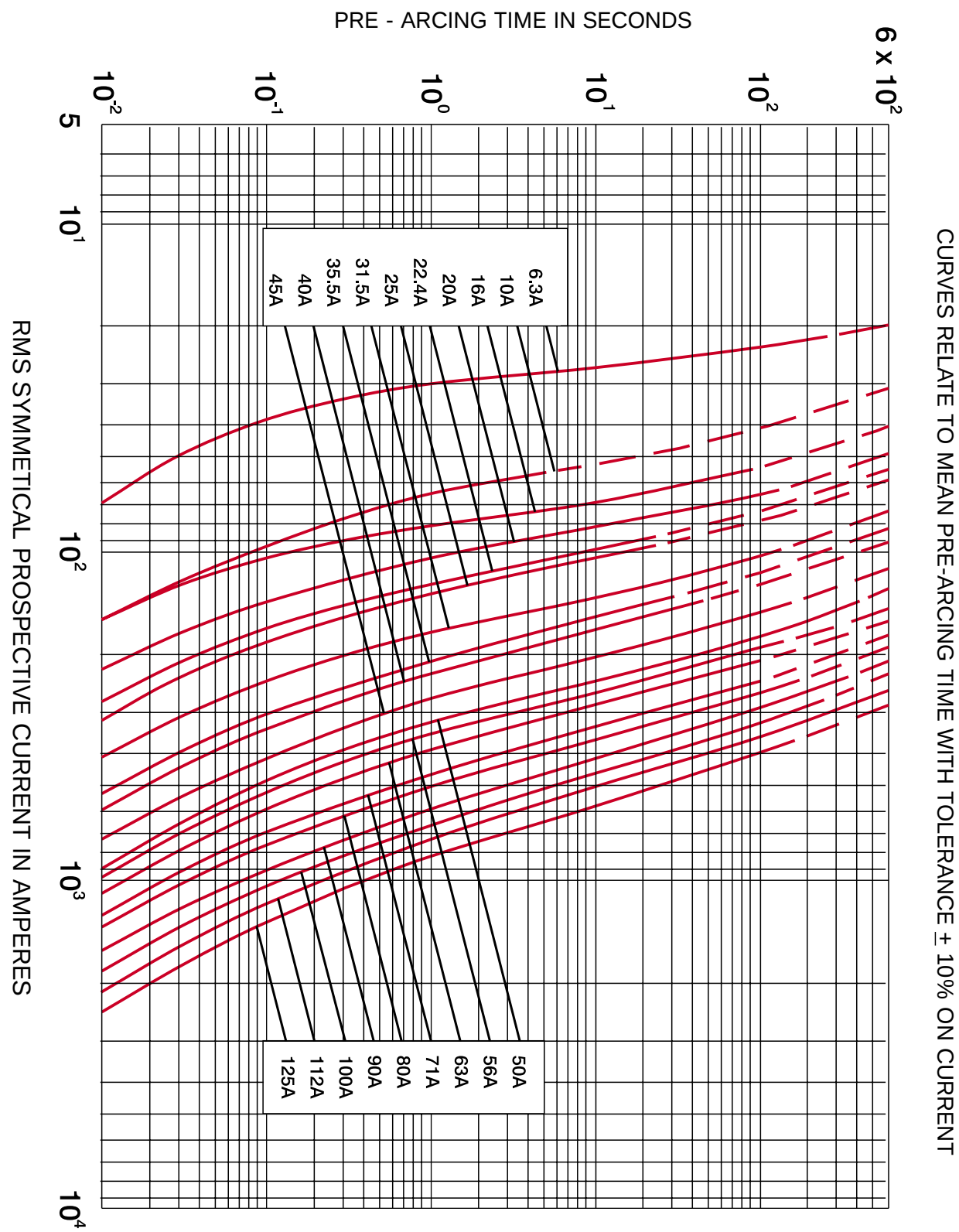
**c)** Where the transformer is not subjected to periodic over-currents, a lower fuse rating may be suitable, fuse ratings marked thus, '3' are only suitable for use with the transformer sizes quoted, where significant over loading does not occur.

**Fuse links for use in transformers with primary voltages of 3.3kV, 22kV and 33kV are available, please consult Bussmann application engineers for further details and a recommendation.**

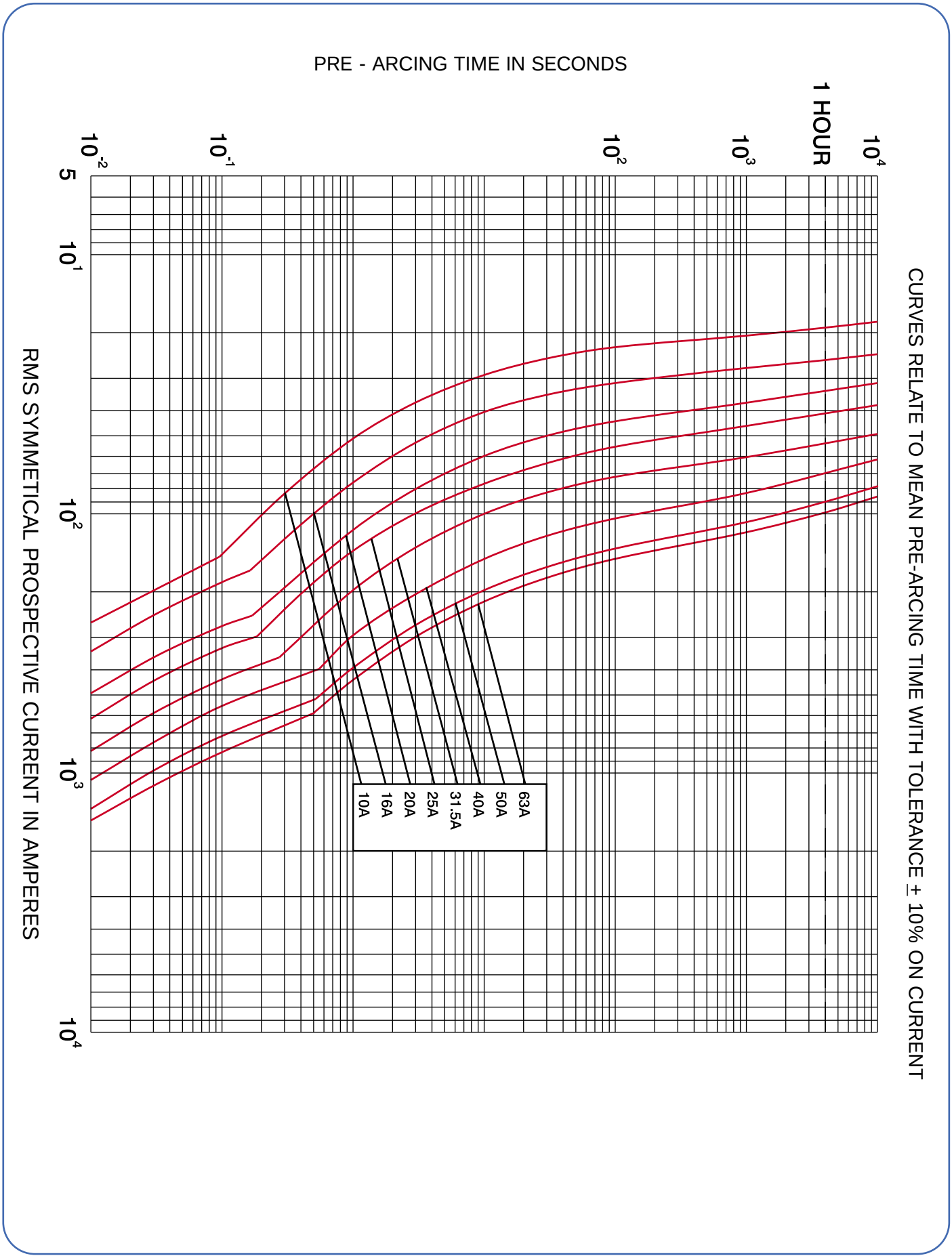
Time current characteristics for 7.2kV Air Fuse Links, fuse types BDG and BFG



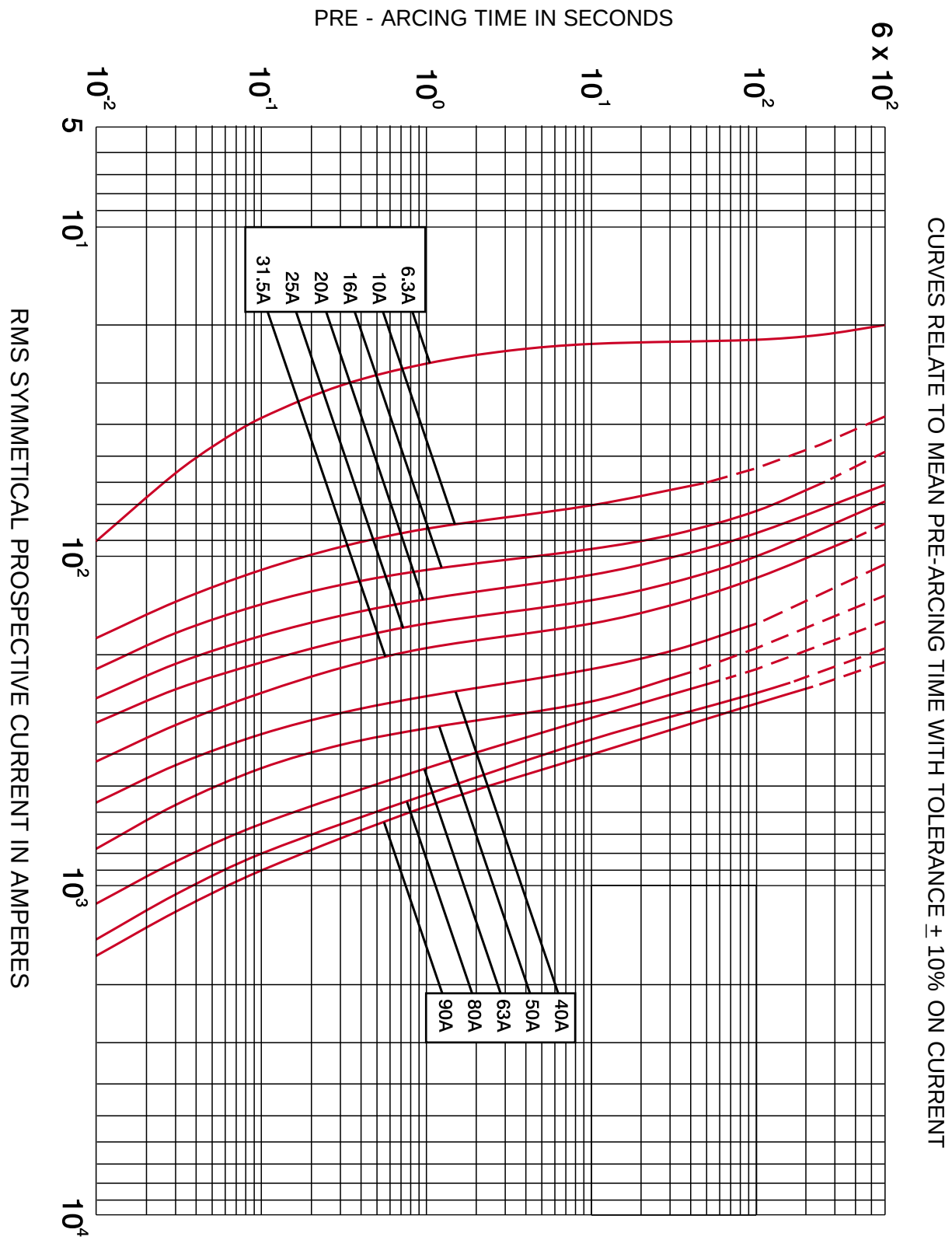
**Time current characteristics for 12kV Air Fuse Links, fuse types BDG, BFG and AKG**



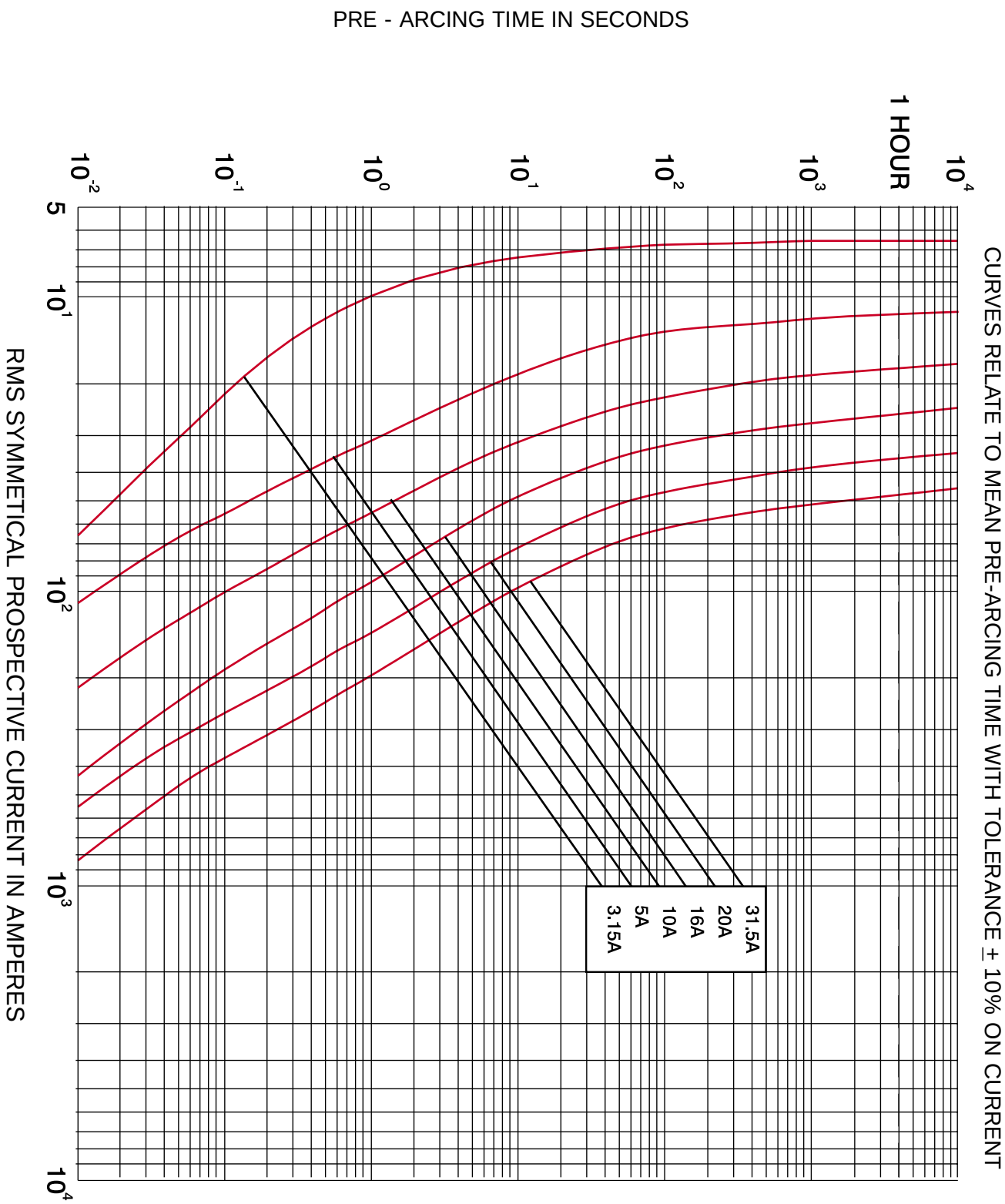
## Time current characteristics for 12kV Air Fuse Links, fuse type FFGN



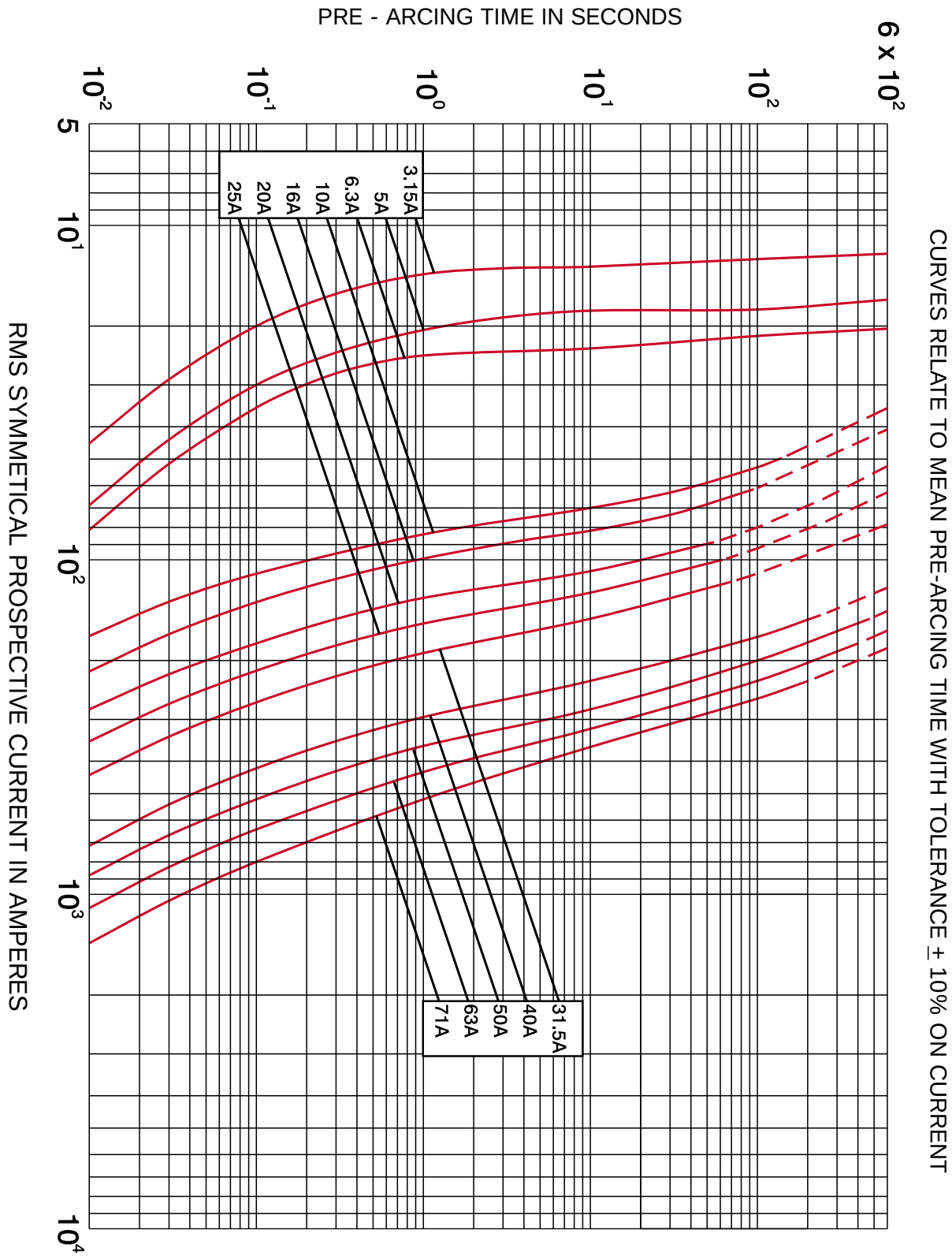
**Time current characteristics for 24kV Air Fuse Links, fuse types ADI and AFI**



## Time current characteristics for 24kV Air Fuse Links, fuse type FDI

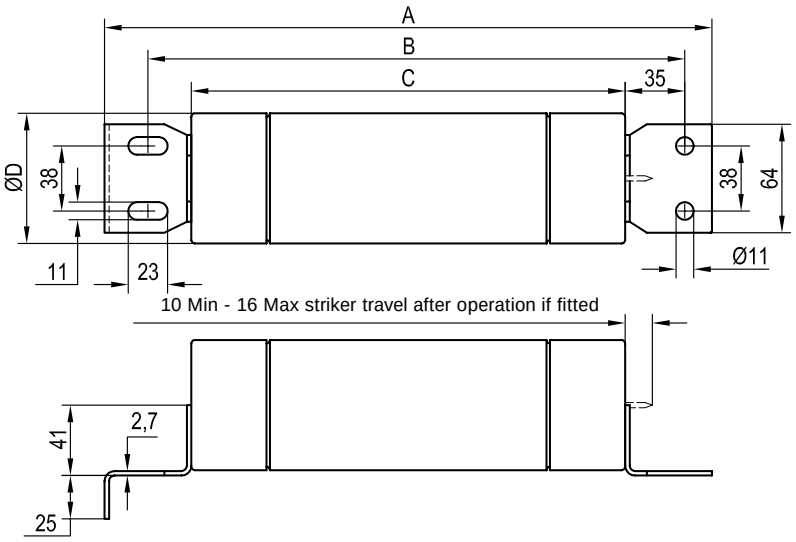


## Time current characteristics for 36kV Air Fuse Links, fuse types ADI, AFI and AFK



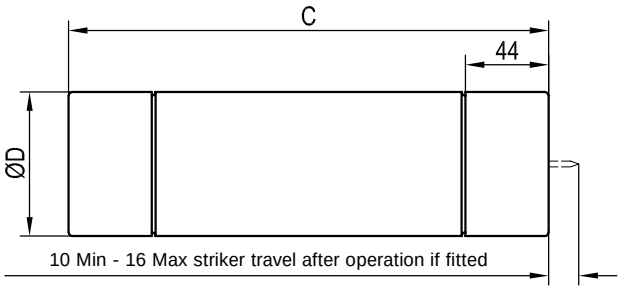
## C & D Tags

| CODE | A | B | C | DØ |
|---|---|---|---|---|
| ADFHC | 356 | 314 | 254 | 51 |
| ADGHC | 461 | 419 | 359 | 51 |
| BDGHC | 461 | 419 | 359 | 51 |
| AFFHD | 356 | 314 | 254 | 76 |
| AKGHD | 461 | 419 | 359 | 76 |
| BFGHD | 461 | 419 | 359 | 76 |



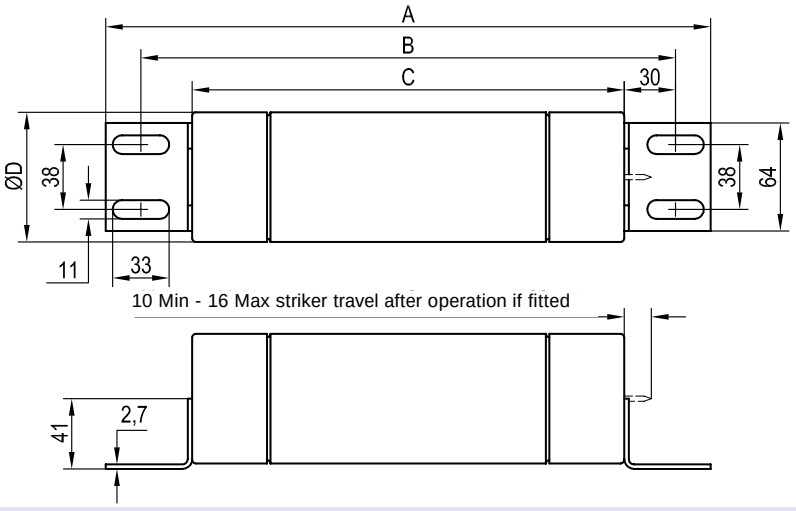

## A Tags (ferrule)

| CODE | A | DØ |
|---|---|---|
| ADGHA | 359 | 51 |
| BDGHA | 359 | 51 |
| ADIHA | 565 | 51 |
| FDIHA | 565 | 51 |
| AKGHA | 359 | 76 |
| BFGHA | 359 | 76 |
| AFIHA | 565 | 76 |
| AKKHA | 914 | 76 |

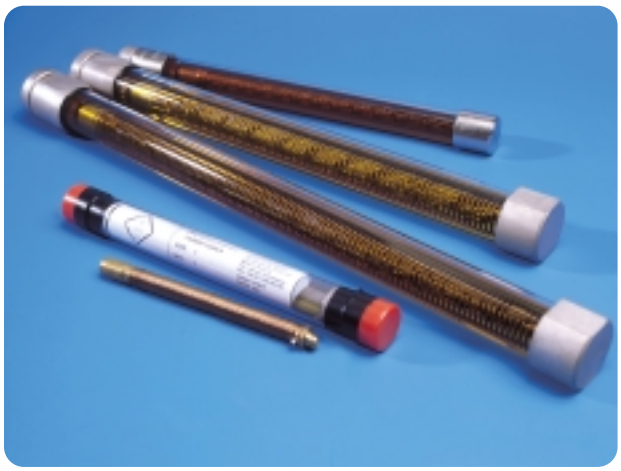



## F Tags

| CODE | A | B | C | DØ |
|---|---|---|---|---|
| ADFHF | 356 | 314 | 254 | 51 |
| ADGHF | 461 | 419 | 359 | 51 |
| BDGHF | 461 | 419 | 359 | 51 |
| ADIHF | 666 | 624 | 565 | 51 |
| FDIHF | 666 | 624 | 565 | 51 |
| AFFHF | 356 | 314 | 254 | 76 |
| AKGHF | 461 | 419 | 359 | 76 |
| BFGHF | 461 | 419 | 359 | 76 |
| AFIHF | 666 | 624 | 565 | 76 |
| AFKHF | 1016 | 974 | 914 | 76 |



- **Replacement liquid fuse links sizes 1, 2 and 3.**
- **Wide range of voltages 6.6kV up to 75kV.**
- **Current ratings from 2 up to 75 amps (including, 'E' rated option).**
- **Standard and slow blow elements available.**
- **Rewiring kits available for sizes 2 and 3.**
- **Size 1 full range cartridge fuse available type FDSH48.**



## Bussmann Liquid Fuse Links

Bussmann manufacture a range of liquid filled fuse links for use outdoors, on pole mounted equipment. They provide a simple yet effective means of protection in distribution applications. However, it should be noted that liquid filled fuse links were first put into service before HV fuse standards were introduced and are therefore not covered by any present standard. They are principally for replacement purposes on existing systems.

**General Description**

The fuse body is of clear toughened glass to allow visual identification of a blown fuse element. Plated contact ferrules are hermetically sealed onto each end of the tube. The replacement fuse element assembly is held under tension within the tube, which is filled with fuse arc quenching liquid. (A data sheet on this product is available, please contact Bussmann for details.) The upper end of the fuse link is sealed by a tin diaphragm. This is designed to rupture during operation, permitting venting of arc products.

The fuse link is sealed against the weather and has an indefinite service life, under normal conditions. The element assembly is enclosed by a fibre sleeve. This assists in the process of arc extinguishing during operation.

**Operation**

When a fuse link operates under fault conditions, the element and connecting strain wire melt, the tension spring then pulls the lower contact and element assembly through the arc quenching liquid to the bottom of the fuse link assembly. A specially shaped liquid director cone, fitted on the assembly, creates a turbulence in the liquid to ensure rapid dispersal of arc products.

**Replacement of the Fuse Element**

Element replacement kits, complete with instructions, are available from Bussmann. We also advise that a minimum of one replacement kit be purchased with each order.

**Note that Size 1 fuse links do not have replaceable elements.**

## Ordering codes

| Symbol | | | | | Meaning |
|---|---|---|---|---|---|
| Rating Voltage | Liquid Fuse Designation | SIze | Characteristic | Current | |
| 33 | - | - | - | - | Fuse is rated at 33kV for use on 33kV systems |
| - | L | - | - | - | Denotes a Liquid fuse link |
| - | - | 3 | - | - | Indicates size |
| - | - | - | S | - | Indicates characteristics (F = standard; S = slow blow) |
| - | - | - | - | 25 | Current rating of the fuse link in Amps |

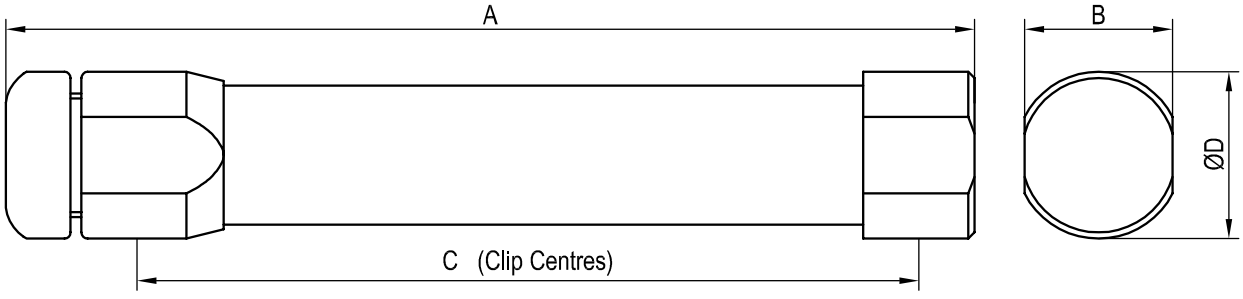
The part number would be 33L3S25 meaning a fuse with a rated voltage of 33kV; L denoting a Liquid type fuse; 3 denoting size; S denoting slow blow and 25 indicating rated current in Amps.

## Selection Table

| Table of Ratings | | |
|---|---|---|
| Size | Type | Current Rating (Amps) |
| 1 | Standard | 2E 3E 5E 7E 10E 20E |
| 2 | Standard | 3 5 10 15 20 25 |
| 2 | Slow | 5 10 15 20 25 |
| 3 | Standard | 3 5 10 15 20 25 30 40 50 60 75 |
| 3 | Slow | 5 10 15 20 25 30 40 50 60 75 |

## Dimensions

| kV | Size | A | B | C | ØD |
|---|---|---|---|---|---|
| 6.6 | 3 | 249 | 38.1 | 203 | 42.8 |
| 7.5 | 1 | 238 | - | 203 | 23.9 |
| 11/12 | 2 | 338 | - | 292 | 30.2 |
| | 3 | 338 | 38.1 | 292 | 42.8 |
| 15/23 | 1 | 327 | - | 292 | 23.9 |
| 33 | 2 | 427 | - | 381 | 30.2 |
| | 3 | 427 | 38.1 | 381 | 42.8 |
| 44 | 3 | 503 | 38.1 | 457 | 42.8 |
| 66 | 3 | 655 | 38.1 | 609 | 42.8 |



- **VT Fuse Clips for 25.4mm diameter.**
- **DIN Standard Clips for ‘F’ and, ‘S’ range fuse links.**
- **BS Mounting Clips suitable for 50.8mm and 76.2mm Oil, Air and Motor Fuse Links up to 200A.**

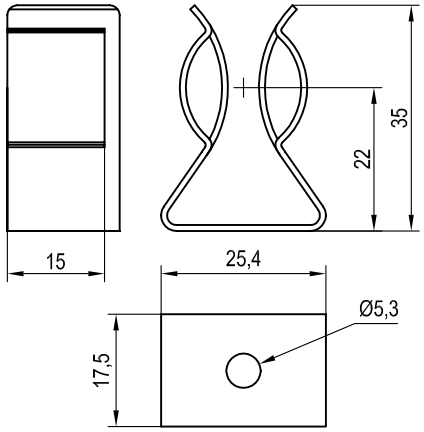
## Bussmann Fuse Clips

To complement the range of tag fixings offered by Bussmann, a range of fuse clips. These are suitable for use with British Standard, DIN dimensioned and VT ferrule style fuse links. The BS and DIN clips are rated up to 200 Amps. They are designed to be fitted onto insulated studs or directly onto a busbar.

## Selection Table

| Fuse Type | Clip Reference |
|---|---|
| DIN fuse links to 43 625 | 270303 or A3354745 |
| Voltage transformer and auxiliary type fuse links | A3354705 |
| British standard fuse links | |
| 50.8mm (2”) dia | A3354710 |
| 63.5mm (2.5”) dia | A3354720 |
| 76.2mm (3”) dia | A3354730 |

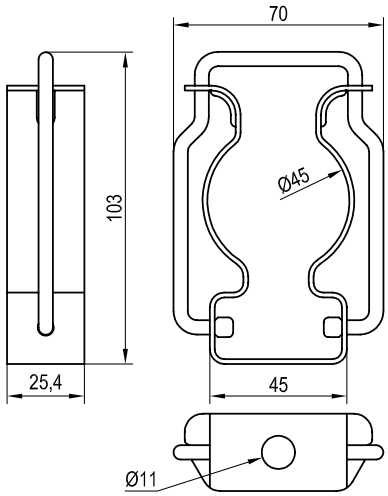
## Clips for 25.4mm VT fuse links




Material: Nickel silver alloy
Order as part number: **A3354705**

**Dimensions (mm)**

## Clips for DIN fuse links

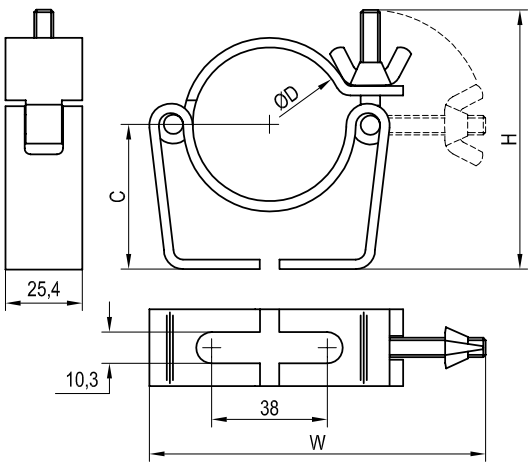



Material: Nickel plated copper
Order as part number: **270303**

**Dimensions (mm)**

Suitable for use with all Bussmann DIN fuse links. Also suitable for use with other Bussmann fuse links having type, 'J' end tags, to DIN 43 625, with maximum current rating of 200 amps.

## Clips for British Standard and DIN style fuse links




Material: Nickel plated copper
Order as part number:

**A3354745 for 45mm dia.**
**A3354710 for 50.8mm dia.**
**A3354720 for 63.5 mm dia.**
**A3354730 for 76.2 mm dia.**

### Dimensions (mm)

| Fuse dia. (D) | H | W | C |
|---|---|---|---|
| 45 | 86 | 112 | 48 |
| 50.8 | 86 | 112 | 48 |
| 63.5 | 95 | 124 | 54 |
| 76.2 | 100 | 140 | 58 |

## Introduction

Bussmann employ a common referencing system for all their current limiting HV powder fuses. **Liquid Fuse Links, CAV fuse links, and fuse clips** have their own reference. Please refer to the appropriate section for the applicable code reference.

### Part referencing system for current limiting fuse links

| kV | 1st Letter General Type | 2nd Letter Barrel Diameter (mm) | 3rd Letter Barrel Length (mm) | 4th Letter Striker (mm) | 5th/6th letter and or digit - termination or fixing | Amps A |
|---|---|---|---|---|---|---|
| | A / B / D / N • fuse links for use in air<br>V or W • fuse links primarily for use in motor circuits<br>F • fuse links with Full Range characteristics<br>O • fuse links sealed for use in oil switches<br>S • DIN Range<br>T • DIN Outdoor Range | M = 20,6<br>B = 25,4<br>D = 50,8<br>E, H, L = 63,5<br>F, I, K = 76,2<br>X = 88 | U = 86<br>W = 142<br>O = 192<br>C = 195<br>D = 203<br>F = 254<br>L = 292<br>G = 359<br>N = 403<br>M = 442<br>Q = 537<br>I = 565<br>K = 914 | S = Striker to DIN43625, form C, 50N<br>E= Striker to DIN43625, 80N<br>H or M = Striker to BS2692-1<br>N = None fitted | A = No Tags. Ferrule diameter as the 2nd letter<br>B = Offset tag, single bolt fixing<br>C and D = Tags to BS2692-1<br>F = Offset tag, double bolt fixing<br>J = Ferrule to DIN 43625<br>O = Tags to BS2692-1<br>6 = Tags to BS2692-1<br>22 = 5/16-BSW stud one end only<br>02/03 double and triple barrel fuse link<br>F2/F3 double and triple barrel varients | |

Note:
Most of these fuse types are suitable for outdoor use, refer to Bussmann application engineers for further information.
A variety of alternative tag arrangements are also available, details on request from Bussmann application engineers.

**This reference number should be quoted in all correspondence. For example, when ordering or progressing an order or when making a technical enquiry.**

## Ordering Key

| Ordering code information | Type designation | | | | | | |
|---|---|---|---|---|---|---|---|
| Rated voltage of the fuse link | 12 | · | · | · | · | · | · |
| Type of fuse link | · | B | · | · | · | · | · |
| Body diameter | · | · | D | · | · | · | · |
| Body length | · | · | · | G | · | · | · |
| Type of striker | · | · | · | · | H | · | · |
| Type of tag | · | · | · | · | · | C | · |
| Current rating | · | · | · | · | · | · | 50 |
| Complete Part Number | 12 | B | D | G | H | C | 50 |

Part number **12BDGHC50** represents a fuse rated at **12 kV** for use in **Air (B)**, with a body diameter of **50.8mm (D)**, a barrel length of **359mm (G)**, a striker to **BS2692-1 (H)**, a tag arrangement to **BS2692-1 (C)** and an Amp rating of **50A**

| Symbol | | | | | | | Meaning |
|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | |
| X | | | | | | | Rated voltage of the fuse in kV |
| | X | | | | | | The type of fuse link given by a single letter |
| | | X | | | | | Diameter of the fuse link barrel in mm denoted by a letter |
| | | | X | | | | Length of the fuse link barrel denoted by a letter |
| | | | | X | | | Striker information: type of striker (if fitted) denoted by a letter* |
| | | | | | X | | Tag information: type, if fitted, denoted by a letter |
| | | | | | | X | Current rating of the fuse link given in Amperes |

**1** > Voltage
**2** > Type designation letter
**3** > Barrel diameter
**4** > Barrel length
**5** > Striker information*
**6** > Tag information
**7** > Rated current

* H or M = Pyrotechnic striker
S = Spring striker 50N
E = Spring striker 80N
N = No striker fitted

| Code | ReferenceDescription | Page No. |
|---|---|---|
| FFMSJ | DIN 'F' Range (Full range fuse) | 3 |
| NBUN* | Voltage and Auxiliary Transformer fuse link | 29 |
| OBCN* | Voltage and Auxiliary Transformer fuse link | 29 |
| OBFN* | Voltage and Auxiliary Transformer fuse link | 29 |
| OBGN* | Voltage and Auxiliary Transformer fuse link | 29 |
| OBWN* | Voltage and Auxiliary Transformer fuse link | 29 |
| OEFMA | Current Limiting fuse link for use in oil switchgear | 36 |
| OEGMA | Current Limiting fuse link for use in oil switchgear | 36 |
| OHFMA | Current Limiting fuse link for use in oil switchgear | 36 |
| OHGMA | Current Limiting fuse link for use in oil switchgear | 36 |
| OLGMA | Current Limiting fuse link for use in oil switchgear | 36 |
| SDLSJ | DIN 'S' Range | 3 |
| SDMSJ | DIN 'S' Range | 3 |
| SDOSJ | DIN 'S' Range | 3 |
| SFLSJ | DIN 'S' Range | 3 |
| SFMSJ | DIN 'S' Range | 3 |
| SFQSJ | DIN 'S' Range | 3 |
| SKLSJ | DIN 'S' Range | 3 |
| SKMSJ | DIN 'S' Range | 3 |
| VFNHA | Motor fuse link - USA dimensions | 17 |
| VKNHA | Motor fuse link - USA dimensions | 17 |
| VKNHK | Motor fuse link - USA dimensions | 17 |
| WDFHO | Motor fuse link - British dimensions | 17 |
| WDLSJ | Motor fuse link - DIN Dimensions | 17 |
| WDOH6 | Motor fuse link - British dimensions | 17 |
| WDOSJ | Motor fuse link - DIN Dimensions | 17 |
| WFFHO | Motor fuse link - British dimensions | 17 |
| WFGHO | Motor fuse link - British dimensions | 17 |
| WFLSJ | Motor fuse link - DIN Dimensions | 17 |
| WFMSJ | Motor fuse link - DIN Dimensions | 17 |
| WFNHO | Motor fuse link - British dimensions | 17 |
| WFOH6 | Motor fuse link - British dimensions | 17 |
| WFOSJ | Motor fuse link - DIN Dimensions | 17 |
| WJON6 | Motor fuse link - British dimensions | 17 |
| WKFHO | Motor fuse link - British dimensions | 17 |
| WKGHO | Motor fuse link - British dimensions | 17 |
| WKLSJ | Motor fuse link - DIN Dimensions | 17 |

* Tag Variations

| | | |
|---|---|---|
| WKMSJ | Motor fuse link - DIN Dimensions | 17 |
| WKNHO | Motor fuse link - British dimensions | 17 |
| 2703 | Fuse clip for DIN dimension fuse links | 59 |
| CAV | Voltage and Auxiliary Transformer fuse link | 35 |
| CAVH | Voltage and Auxiliary Transformer fuse link | 35 |
| L1, L2, L3, LF | Liquid fuse link (standard blow) | 57 |
| L1, L2, L3, LS | Liquid fuse link (slow blow) | 57 |
| A3354705 | Fuse clip for VT fuse links | 59 |
| A3354710 | Fuse clip for British Standard and DIN 50.8mm dia | 59 |
| A3354720 | Fuse clip for British Standard and DIN 63.5mm dia | 59 |
| A3354730 | Fuse clip for British Standard and DIN 76.2mm | 59 |
| A3354745 | Fuse clip for British Standard and DIN 45mm dia | 59 |
| ABCNA | Voltage and Auxiliary Transformer fuse link, plain ferrule | 28 |
| ABCN22 | Voltage and Auxiliary Transformer fuse link, BSW 5/18" thread | 28 |
| ABFNA | Voltage and Auxiliary Transformer fuse link, plain ferrule | 28 |
| ABGNA | Voltage and Auxiliary Transformer fuse link, plain ferrule | 28 |
| ABWNA | Voltage and Auxiliary Transformer fuse link, plain ferrule | 28 |
| ABWN22 | Voltage and Auxiliary Transformer fuse link, BSW 5/18" thread | 28 |
| ABWNA | Voltage and Auxiliary Transformer fuse link, US standard | 28 |
| ADFH* | Current limiting fuse link for use in air | 46 |
| ADGH* | Current limiting fuse link for use in air | 46 |
| ADIH* | Current limiting fuse link for use in air | 46 |
| ADLSJ | DIN 'A' range | 3 |
| ADOSJ | DIN 'A' range | 3 |
| AFFH* | Current limiting fuse link for use in air | 46 |
| AFIH* | Current limiting fuse link for use in air | 46 |
| AFKH* | Current limiting fuse link for use in air | 46 |
| AILSJ | DIN 'A' range, with striker | 3 |
| AIMSJ | DIN 'A' range, with striker | 3 |
| AKGH* | Current limiting fuse link for use in air | 46 |
| AMWNA | Voltage and Auxiliary Transformer fuse link, US standard | 46 |
| BDGH* | Currrent limiting fuse link for use in air | 46 |
| BFGH* | Current limiting fuse link for use in air | 46 |
| FDIH* | Current limiting fuse link for use in air (full range) | 46 |
| FDLSJ | DIN 'F' Range (Full range fuse) | 3 |
| FDMSJ | DIN 'F' Range (Full range fuse) | 3 |
| FFGN49 | Current limiting fuse link for use in air (full range) | 46 |
| FFLSJ | DIN 'F' Range (Full range fuse) | 3 |
| FXLSJ | DIN 'F' Range (Full range fuse) | 3 |

* Tag Variations

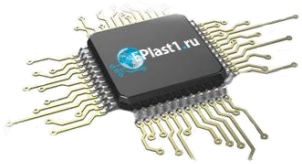
Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits,General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.




**Как с нами связаться**

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