

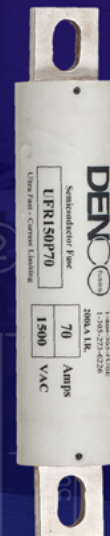
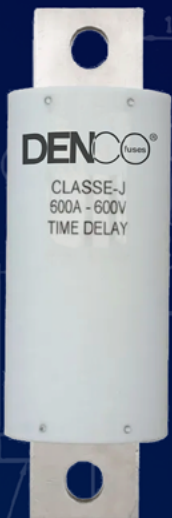


YOUR SPECS • OUR FUSES • BEST PRICES

EXCELLENCE IN MANUFACTURING QUALITY FUSES FOR OVER 30 YEARS

DENCOFUSES.COM

1.305.273.6226





Distributors

DENCO Fuses has been manufacturing for the last thirty years with state-of-the-art German technology. Our factory rigidly conforms to the internationally recognized standard for quality **ISO 9001:2015**, and **DENCO Fuses** complies with all of the accepted international standards, such as VDE, DIN, CSA, UL, NEMA, IEEE, ANSI and ISO.

DENCO Fuses does not limit you with exclusivity contracts as do many of the major competitors. We simply want your business by offering better quality at considerable savings to your bottom line.

We can cross-reference all major manufacturers.

If your business is looking to maximize profit margins on the fuse lines you carry, consider using our high quality OEM, and generic type fuses. **Send us the approximate quantities of the highest turnover fuses your company keeps in stock and I, the owner, will personally get back to you with our substantially lower prices for those quantities and items.**

For your convenience, we are currently in the process of establishing a floor planning program dedicated to our customers to facilitate your inventory stocking needs at a 0% interest rate.

We feel certain that you will want to add **DENCO Fuses** to your current product line. To obtain your application for distribution, or for catalogs, or samples, please call (305) 273-6226 or fax us at (305) 273-4335. If you are outside of Florida, call us toll free at 1 (800) 305-FUSE (3873).

We look forward to your inquiries.

Sincerely,

A handwritten signature in black ink, appearing to read "D. Okuniewicz", with a stylized flourish at the end.

Dennis Okuniewicz
President



Line Card

MEDIUM/HIGH VOLTAGE, DISTRIBUTION FUSES

E-Rated For DIN Dimensions	For (PT) Potential Transformer Protection, Transformer Fuses. EC Fuses for Transformer Protection, DIN 43625 / IEC 60282-1 / VDE 0670
R-Rated British IEC	Medium Voltage Motor Protection, Motor Starter Fuses, Motor Controllers Motor Circuit Protection, Motor Starter Fuses, DIN 43625 / IEC 60282-1 / BS 2692
C-Rated	Capacitor Protection Fuses, Current-Limiting Overload Protection for indoor and underground cable distribution systems.
LCI Fuses	Load Commutated Inverter Fuses, offers protection in the Start-Up procedure of Gas Turbines. Capable of withstanding Harmonic Currents. 6000VAC, comes in 350A, 700A, 1050A, and 1400A designs. IEC 60644, IEC 60787, VDE 0670, EN 60644
LCI Fuses	Load Commutated Inverter Fuses, offers protection in the Start-Up procedure of Gas Turbines. Capable of withstanding Harmonic Currents. 6000VAC, comes in 350A, 700A, 1050A, and 1400A designs. IEC 60644, IEC 60787, VDE 0670, EN 60644

EURO-FUSES

BS88	British Standard Fuses, IEC 269. For UK or British manufactured equipment, also used in North American UPS applications.
Type NH	Square-Body IEC 60269 (Sizes 000-4), End fittings for: DIN 43620 / DIN 43653 / Flush-End (Metric/US) / French-Blade / American Standard. Used in DC common Bus, DC Drives, Power converters/rectifiers and reduced voltage starters.
Type HH	German Fuse (Current-Limiting) DIN 43625 / IEC 60282-1 / VDE 0670, Used in High-Voltage Distribution networks and Transformers.

OIL-IMMERSABLE FUSES

Type Back-Up Fuse	(High efficiency) Oil-immersable, Current Limiting, Back-Up fuses designed in ANSI/IEEE Standard C37.41-2016. These fuses are used for protection of distribution equipment (transformers, capacitors, switchgear, etc.)
--------------------------	--

Type CLF / ELSP

Replacement for CLF & ELSP. Our DCLF is a Oil-immersable, Current Limiting, Backup fuse for Distribution Transformer Protection. This DCLF line is primarily used in series with low current primary protection devices which are defined in ANSI/IEEE standard C37.41-2016. This fuse can be substituted for GE CLF and Cooper ELSP designs.

Type CBUC / HTSS / 9F59CCF

Replacement for CBUC, HTSS & 9F59CCF. Our DEFTH fuse is a Oil-immersable, Current Limiting, Backup fuse for Distribution Transformer Protection. This fuse can be substituted for Cooper CBUC., Hi-Tech HTSS., and Mersen 9F59CCF. designs.

ULTRA-RAPID FUSES

Type UFR Form 101

Semiconductor Fuse (Ultra-Fast Acting 200kA I.R, Current Limiting, High Interrupting Capacity). American standard (cylindrical design) and German standards (square-body design)

Cartridge/ Midget

Ferrule Semiconductor Protection Fuses. High breaking capacity, low power dissipation, silver plated contacts, low switching voltage. 10x38, 14x51, 20x51, 22x58, 20x127, 25x146, 14x67, 27x60 (millimeters)

SPECIAL PURPOSE FUSES

Type DCP

Cable Protectors. Fittings for: Cable to Cable, Cable to offset bus, Mole to Cable, Mole to offset bus. For cables of Copper or Aluminum materials. 200kA Interrupting rating. Used for isolating faults quickly, increasing reliability of service entrance & distribution runs.

Solar / Photo- voltaic

gPV Photovoltaic fuses used in DC Solar applications. From 600V to 1500V DC. Conforms to Norms. IEC 60269-1 & IEC 60269-6, DIN VDE 0636-2.

DC Metro/ Transit

DC Fuses, designed for Direct Current operations. Current Limiting, used primarily in Metro and Transit applications.

EV Fuses

Electric Vehicle DC Fuses, from 500V, 700V, 1000V, and 1500V DC, 50A to 400A compact designs, 20kA I.R. Max DC & 200% Min DC.

Special Design

Discontinued / Specialty fuses. Custom made to your specs and dimensions to fit your application.

Table Of Content

DISTRIBUTORS	2
PRODUCT LINE CARD.....	3
ABOUT US	5-8
INTRODUCTION	9-20
FUSE TRIP INDICATOR TYPES	21
NORTH AMERICAN POWER FUSES	22
Class L	23
Class J	24
Class RK1, RK5 & K5	25
MEDIUM / HIGH VOLTAGE DISTRIBUTION FUSES	26
E-Rated	27-31
<i>(PT) Transformer/Potential Transformer Protection</i>	
Expulsion Fuse Type	32-33
<i>Pole Mounted Dropout Fuse</i>	
R-Rated	34-39
<i>Motor Protection / Soft Starter Protection</i>	
C-Rated	40-54
<i>Capacitor Protection Types DMNX, EJ-5 /EJO-5, & Types 1-9 Mountin</i>	
Loadbreak Elbow Fuses	55-56
Oil-Submersible Backup Fuses	57-58
INTERNATIONAL FUSES	59
BS88	60
<i>British Standard Fuses</i>	
NH Square Body Fuses	61-64
<i>For General Purpose, Mining Protection, Transformer Protection, Motor Circuit Protection</i>	
NH Fuse Bases	65
Type HH.....	66-67
<i>Medium/High Voltage HRC Fuse-Links</i>	
ULTRA-RAPID SEMICONDUCTOR FUSES	68
Form 101 / Cylindrical Type	69-70
<i>Ultra Fast Acting, Current Limiting, High Interrupting Capacity</i>	
NH Square Body Type	71-101
<i>Sizes 000 to 4. American, French, & German Standards</i>	
Cartridge / Midget	102
<i>Ferrule Semiconductor Fuses, aR Class, Sizes 10X38, 14X51, 22X58</i>	
SPECIAL PURPOSE FUSES	103
Cable Protectors (CP)	104
<i>Underground Cable Protectors, Type Limitron</i>	
Underground Distribution Network Fuses	105-106
<i>Protection of Circuit Breakers in Underground Distribution Networks</i>	
EV Fuses	107
<i>Electric Vehicle Fuses</i>	
PHOTOVOLTAIC - WORKING SCHEMATIC WITH PV FUSES	108
Photovoltaic Fuses & Fuse Bases	109-110
<i>Category gPV - IEC 60269-1 & IEC 60269-2, DIN VDE 0636-2</i>	



Welcome

DENCO Fuses has been manufacturing high quality fuses for over thirty years now using state-of-the-art German technology. Our fuse manufacturing facility rigidly conforms to all the Internationally recognized standards, such as VDE, DIN, CSA, CE, UL, NBR, NEMA, IEEE, NEC and ANSI as well. Besides these standards which we find to be equally important in our ability to build custom fuses.

Please take your time to review our catalog and see how we can truly help you keep your machines, systems and power grid running efficiently and safely while providing you a more cost effective electrical fuse solution to your bottom line. In fact, email or call us for even quicker response. We can cross-reference all major manufacturers fuses, just provide us with their fuse part numbers or send us your specs and we'll find the right fuse suitable to your requirements.

DENCOFUSES.COM

[1.800.305.FUSE](tel:1800305FUSE)



Who We Are

DENCO Fuses, Inc. is a family owned and operated manufacturer of high quality, hand-made Electrical/ Industrial Fuses. Our company's journey began in the electrical fuse industry as DenMar Transit Engineering, inc being incorporated in the state of Florida in 1988.

From there, working together with Metro Transit systems, we began designing and manufacturing DC fuses for their rail cars and also substations.

Not soon after Den Mar Transit Engineering began doing business as DenMar Fuses, Inc. since the expansion of our electrical fuse manufacturing which soon took on all aspects of circuit protection utilizing electrical fuses AC and DC.

Our company name changed once more in 2007 to DENCO Fuses, Inc. which is who we are today; manufacturing, supplying and distribution of almost all industrial electrical fuses utilized for circuit protection specifically in the medium to high voltage fuse ranges.

Our electrical and industrial fuse manufacturing continues to grow and includes:

American U.L. Class types, German DIN Standards, Latin American Fuses, European Fuses, and other International fuses.

Our line of fuse products include:

Current limiting, Primary fuses, Back-up fuses and Full range fuses; Class J, Class L and RK5; Cable Protectors for underground line distribution; R-rated motor / soft starter fuses; DC fuses for direct current applications, Metro Transit & locomotive fuses, PV Photovoltaic Solar fuses, EV Electric Vehicle fuses; PT fuses, Transformer Protection fuses; Capacitor fuses; Semiconductor fuses and Rectifier fuses; British Standard BS88, as well as, OEM fuses, specialty fuses, discontinued fuses or custom made one-off fuses our clients request.

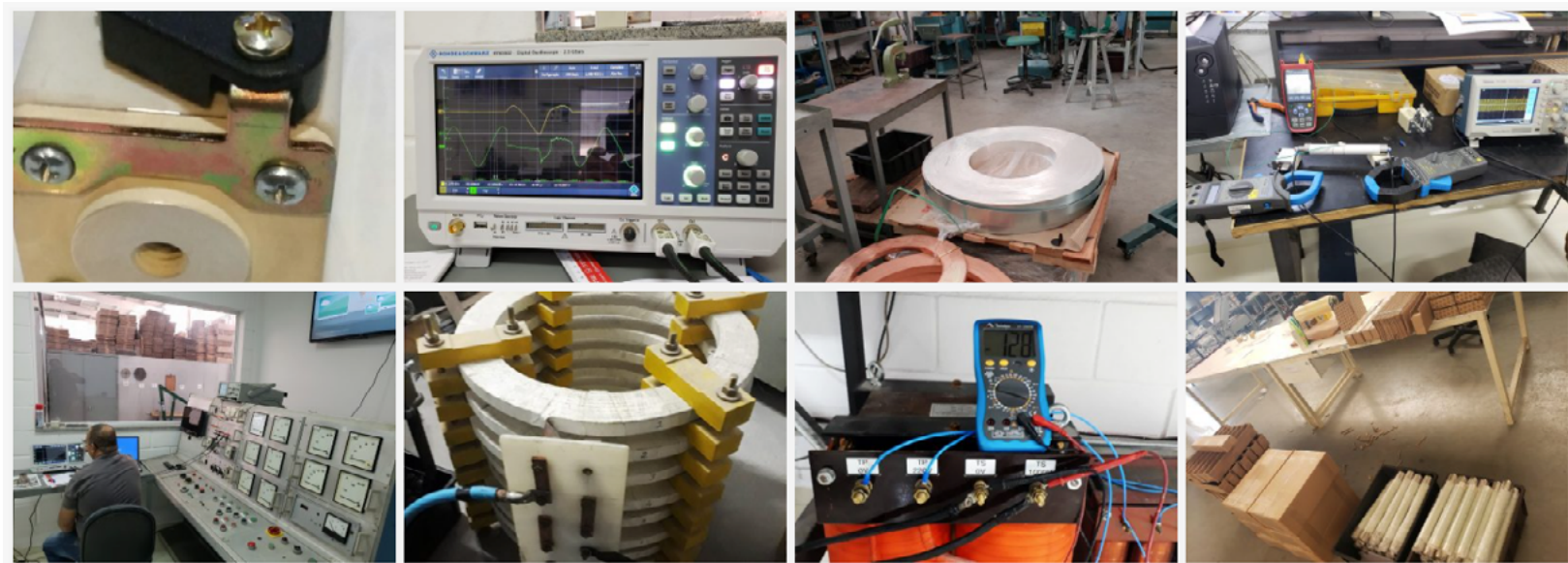
Our inventory and capabilities will continue to expand and evolve with the needs of our clients.

Here at DENCO Fuses we strive on our commitment to offering you high quality electrical fuse products and lower pricing by buying direct from the manufacturer.

With our customer loyalty program, we continue to decrease delivery times while increasing customer satisfaction.

While most of our products are built to order, DENCO Fuses also stocks quantities of inventory upon request to offer our clients a shorter lead time and a shorter down time to their end users. In this industry, you and I both know you needed these fuses yesterday.

We're not looking to be the biggest, but we are striving to be the best. With Your Specs, Our Fuses, and Best Prices.



Our Factory & Testing Lab

To grow with the needs of our clients, we have recently expanded with the addition of a second manufacturing facility.

Built from the ground up, it has been in full operation since January 2019. Both of our factories utilize state-of-the-art German technology and our engineers have over 80 years of combined experience manufacturing electrical fuses for circuit protection.

Our company has made strategic investments in new technologies to enhance its business model to make sure your fuse selection, purchasing, and customer experience is truly exceptional.

These initiatives include focused management with extensive knowledge in the field of circuit protection, enhanced customer service operations, larger warehousing space for holding client requested stock, superior sourcing strategies of which only the highest quality of raw materials are utilized in our electrical fuse products, and special customer loyalty pricing programs.

Our customer loyalty program includes stocking fuse products for free for our repeat clients so that they are readily available to them. This eliminates manufacturing lead times in getting our fuse products out to our clients location or we can drop ship straight to their jobsite.

Because so much electrical power depends on our products, we take quality and safety seriously. We do third party testing at IPH Berlin (one of the world's leading & largest electrical testing facilities to date) when our clients request such testing.

We also do our own in-house testing at our factory lab to ensure all our electrical fuse products perform to the specs given. This gives our clients piece of mind that our fuse products will perform safely and flawlessly as intended. Our factory lab is capable of several testing types, including:

- Electrical resistance measurements (ohms)
- Temperature-rise at rated current measurements (Body & Terminal)
- Power dissipation measurements (watts loss)

- I/T Curve verification (Time/Current Rise)
- Melting & Non Melting Current
- Sand Compactness & Insulation Test
- Dimension and visual verification

By having our own in-house testing lab, we are able to maintain quality control during every phase of the manufacturing process, proving our high quality fuse products and manufacturing lead times to be the best in the industry.

While many fuse manufacturers take up to 90 days at minimum for manufacturing, DENCO Fuses turnaround times are 30 days on average. These consistent on site quality checks we do ensure our clients receive our characteristically high caliber fuses, faster.

If you are searching for a circuit protection solution for your electrical systems or have a fuse requirement to protect your electrical applications and electrical grid, contact DENCO fuses today.

You can call us at [305.273.6226](tel:305.273.6226). We want to help you get the right fuses and we are always willing to answer your questions.

Our Focused Markets

DENCO FUSES • PRODUCTS TO SERVE MARKET NEEDS



Public Transportation

Whether it be Heavy Rail, Light Rail, Metro Transit Systems, Locomotives, Trolley Rail, Trolley Bus, Substations, Mining vehicles or any other DC Rail applications. DENCO Fuses has been designing and manufacturing DC fuses suitable for all your circuit protection requirements since 1988.



Utility/Power Companies

DENCO Fuses understands that power companies don't just run to their local hardware store to pick up the materials they require to build their plants and power grid. That is why DENCO Fuses offers custom design and manufacturing of one-off fuses for our clientele specifically designed for their applications. We offer this along with all the standard fuses manufactured and utilized today for circuit protection of power generation facilities.



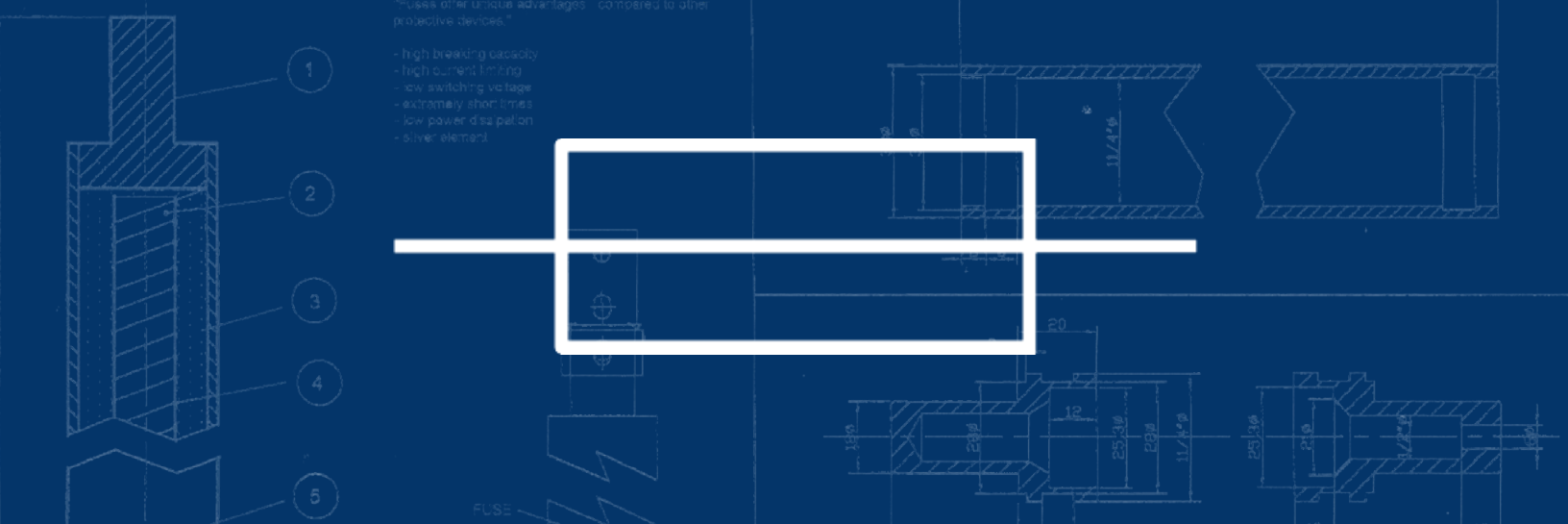
OMS/Specialty Custom Design

We follow all Internationally recognized standards and specs to design when developing one-of-a-kind fuses for our clients. The main focus is to protect their applications and systems from short circuits and spikes with our current-limiting fuses. From Primary Fuses, Backup Fuses, and Full Range fuses, we can safely design a fuse product suitable to your application utilizing your specs given.



Electrical Contractors

Take a look at what we have to offer for your electrical fuse, circuit protection requirements. DENCO Fuses manufactures and covers key elements in protective fuse devices suitable to your job site requirements. From underground line distribution fuses and protection of commercial and residential buildings. Let us know how we can help keep your assets operating safely with our current limiting, circuit protection fuse products.



1. Introduction

Fuses for protection as semiconductors, as the name shows, are dimensioned especially for the protection of semiconductor component, similar to the fuses protection of handies, engines, transforming etc.

The fuses for protection as semiconductors had been also developed in accordance to the respective exigencies that had appeared after the introduction in the market of the first diodes of power in 1950, when became visible that these possessed only a very reduced capacity of thermic conduction and overloads and short circuit. This fact and the high price of the semiconductors of power component with the manufacturers of fuses developed special fuses that still reacted with bigger sensitivity to the overload and to the short circuit than the old conventional types of fuses are called extreme-rapid fuses.

In view of the growth on demand of the extreme rapid fuses the first patents for fuses with special sizing had been required in the middle of the 50's destined to the protection of semiconductor component.

After the development of the Thyristor (1956) and with the expansion of the industry of the electronic of power, greater was the advance in the direction to improve the protection of semiconductor fuses. Currently are manufactured semiconductor component of power and respective extreme rapid fuses for nominal current of 4 kA and nominal tensions until 6 kV.

Despite the perfection of the semiconductors the current continue to possess a capacity of overload extremely reduced in a way that remains the protection through out extreme-rapid fuses extremely quick.

This technical information describes through out multiples cases of applications in which this protection could be assured.

2. Construction and way of action of the extreme rapid fuse.

Protection of typical semiconductors fuse consists of one or more elements on fusing linked in parallel inlaid in quartz sand and lodged in a ceramic body in agreement to FIG. 1.

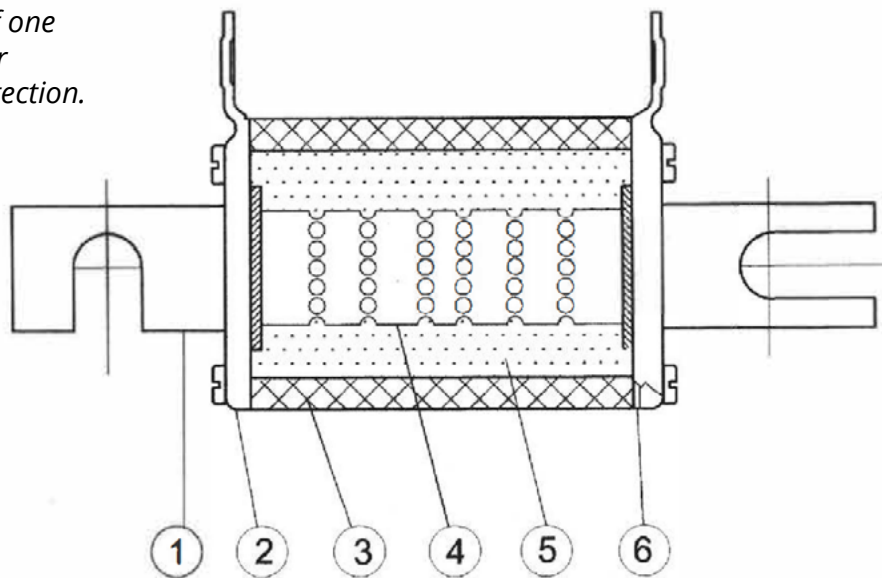
The fusing elements, with narrow passages made of pure silver lamina (99,9%) are welded in the internal terminal of fuse.

The terminals are manufactured in copper or tinned copper or silver plated league. The format of the external terminal orients the respective

method of setting the fuse. In this way, the terminals can be composed by bolt borders angular central offices or what it makes possible the assembly on slide bars. Fuse for low nominal current ($I_n < 60A$) are manufactured in the same form of the conventional industrial fuses in a way that can be incased as fuse cartridges in bases to the conventional keys. As body fuse is used ceramic (steatite) of high quality, due to good property of electric isolation, the high mechanical robustness and the capacity of resistance against thermic shocks during the disconnection of fuse.

Figure 1: Example of one extrem rapid fuse for semiconductors protection.

- 1 - Fuse Terminals
- 2 - Cover
- 3 - Ceramic body
- 4 - Silver element
- 5 - Quartz Sand
- 6 - Blocking



The silver elements are printed of such a form that in relation to the length of the element results a definitive amount of narrow passages. The remaining transversal section of the narrow passages depends on the current while the number of narrow passages depends on the operational tension.

In case there are various elements linked in parallel, these will have to be total identical so that a distribution is gotten uniform of the current, guaranteeing the perfect functioning in short circuit. In the case of operation of fuses under currents until the nominal current, the temperature of the element raises due the

resistance specifies. Temperatures of the element until 2500 C are not uncommon, occurring a strong heating of the ceramics body as well as of the terminals. The thermic energy is lead to the environment through the terminals and the ceramic body.

In the case of operation under the nominal current an equilibrium situation predominates. In the operational current case above of the nominal current the equilibrium situation the heat generation enters and the Capacity of wasting it is compromised, occurring the rise of the temperature of the fuse element.

Once the current density is bigger in the narrow passages, occurs a bigger heating in this place. Now the first phase of current limitation. From a certain temperature occurs the fusing of the silver element and the liquid silver binds to the sand grains that involves the elements what it takes to the formation of not conducting fulgurate. Another part of the liquid silver evaporates and it is condensed in the sockets between the sand grains. At the moment of the evaporation of the silver an increase of the tension of the element occurs in consequence of the voltaic arc that is formed during the interruption. In this case the commutation tension (tension of arc) can accept a value above of the operational tension. This tension remains until the definitive interruption of the current. An increase extremely quick of the tension of the voltaic arc leads to a fast process of disconnection, being thus limited

Linking of fuses in series, with higher tensions, must be prevented. If it will not be possible to prevent such linking, the fuse will be able only to disconnect current of short circuit with fusing time max. B.m.s. If this condition is not observed, exists the danger of the tension to divide in a different way and one of the fuses to lose its functioning. In all cases, only fuses from the same manufacture, resistance of the same type and with the same current, can be on in series. The parallel fuse linking, can be carried through without problems, but in this case must also they be used, fuses of the same type and with the same nominal tension, and chosen teams with a ohm resistance, more or less than 1 %.

With the burning of fuse, as much in the series linking or parallel, all the fuses need to be changed (In agreement IEC 282-1), exactly when a measurement of resistance samples that other fuse probably are unbroken.

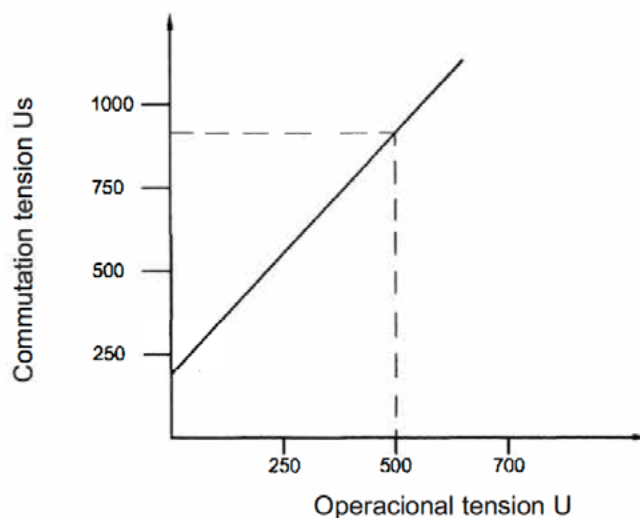
Through of a pointer, the state of fuse becomes visible. The tension for functioning is of min. 6V. Pointers that must indicate the state of a unique fuse burned, while the other fuses and the diodes continue unbroken (linking in parallel), must function with breaking strength of 0,4V to 0,6V. A fuse control, can be manipulated, or through of micro-switch. These possess contacts to turn on alarms when the equipment is disconnected.

to the peak current as also the integral (12 t) of total disconnection.

The amplitude of the voltaic arc tension depends on the amount of narrow passages. For example an element fuse possess for operational tension of 440 Veff. typically four narrow passages, while a fuse element for an operational tension of 220 Veff. possess only two narrow passages. The manufacturer indicates the value of the tension of commutation in function of the operational tension in the form of a curve to the diagram. (Figure 2)

Must be pointed out that such diagrams are based on data that are gotten in a circuit of test with a factor of Power of 15% to induce high commutation tensions during the fusing of the fuse elements.

Figure 2: Characteristic of commutation tension of one fuse of 200A, 500 V.



Time Curve / Current

The time curve / current and the fusing time or time of disconnection as function of the current under determined conditions. The fusing time and period enter the beginning of a current, whose intensity is enough to provoke an interruption in the element(s) and the moment of the interruption of a voltaic arc (Fig. 3) The position of the inflection

point in this case indicates the height of the current passage and the duration of the fusing time.

The branch of the decreasing curve (ts until t1) is called arcing time. The addition melting time with arcing time results in clearing time.

Figure 3: Representation of the current as function of the clearing time.

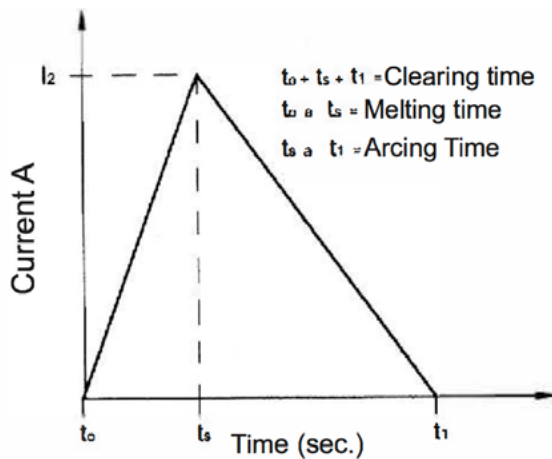
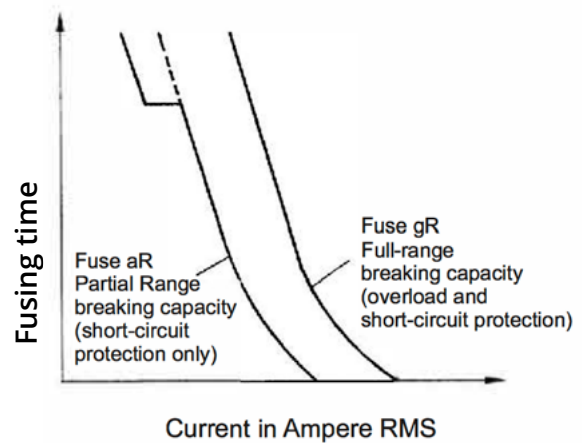


Figure 4: Time Curves / Current



While the melting time depends on the current imperfection and its passage, the Influence values of the Circuit on the arc time are multiples. Thus being, the duration of the arc time is influenced on the current of imperfection and operational tension, sand compacting, frequencies, power factor, quartz sand granulation and other factors. In the case of alternating tension as operational tension, the behavior of the arc time is benefited through of the ticket of the current for the zero. In the case of multiples 60 Hz of frequencies, the arc

time diminishes. Therefore inversely proportional of the frequencies. However, in the case of very high frequencies is not always forced an arc extinguishing for the occasion of the first time through zero. In the case of continue tension, as operational tension the absence of the current passage is forced an extinguishing due to the zero does not occur of any kind. For continues tension, the time curve / current for time > 15 in/sec. The time / current for alternating tension is identical.

Classes of Fuses

Full-range breaking capacity with fuse "gR" exists, when fuse protects the semiconductor in its total functioning of time / current, of the nominal current until the short circuit. In this in case the fusing curve of fuse must pass before, in relation to the time of the semiconductor curve. Partial-range breaking capacity with fuse "aR" many times becomes economic to execute the overload protection with fusing time >10 second by means of rele

overloaded (with band of regulation 1, 1 until 2 nominal current of fuse). In this way fuse is only used for protection against short circuits. Electronics limitors, of current, protect the rectifiers, with sufficient security. Fuse with characteristics aR cannot operate overload.

Integral of melting and clearing time (I^2t)

Important in the fusing of the fuse element is not the current of imperfection in itself but it is its thermic effect. This is characterized by the integral of Joule:

$$\int_0^t i^2 dt$$

The current interruption of the short circuit is faster when silver is used as fusing element. The Ruedenberg professor, determined these values by experience, and in part theoretically, in accordance with these research the amount of

heat to evaporate the silver is only 60 % in relation to copper, considering the same geometrical dimensions. The integral of disconnection results of the addition of the integral of fusing and the extinguishing.

t_0 = Beginning of the short circuit current

t_a = End of the clearing time

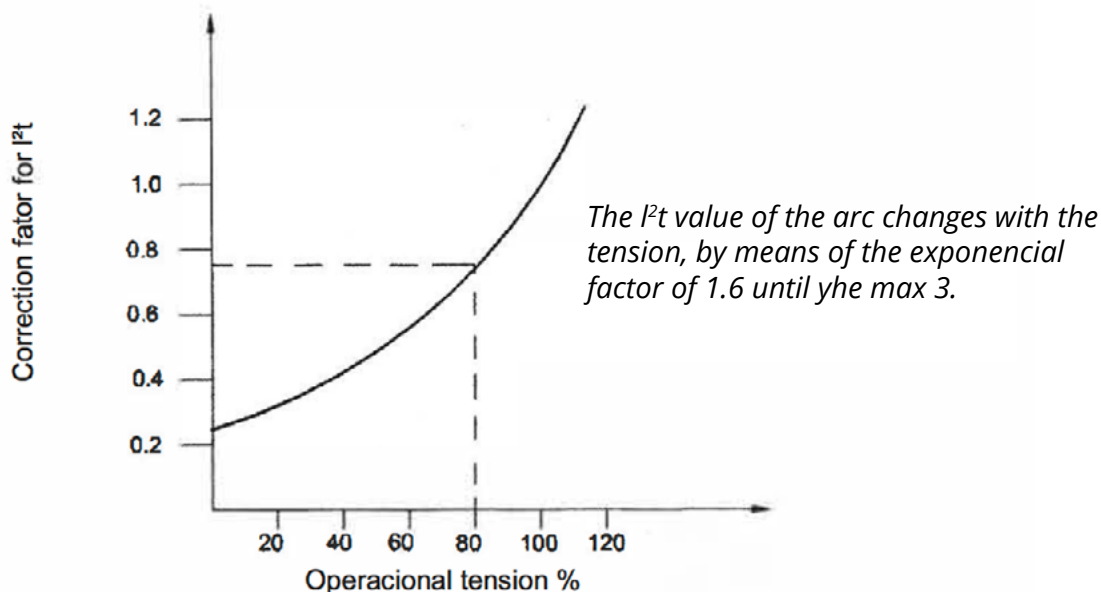
t_s = End of the melting time

$$\int_{t_0}^{t_a} i^2 dt = \int_{t_0}^{t_s} i^2 dt + \int_{t_s}^{t_a} i^2 dt$$

Once the integral of total interruption depends on the level of operational tension (bigger clearing time) at data tables is indicated the value of the integral of clearing for many operational tensions.

For the fuse adequacy to the semiconductor is important that the integral total of fuse disconnection has either lesser than the integral of load limited of the semiconductor component.

Figure 5: The curve shows the variation of the I^2t value in function of the operational tension



Parameters that influences the current in fuses.

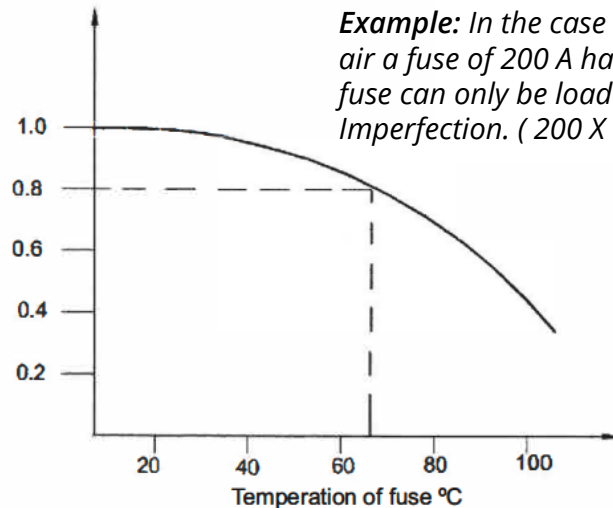
The nominal current of one fuse is influenced by: a) Change of temperature, b) Forced Refrigeration, c) Modification of the area of the connection line cable

Item a) Ambient temperature

The characteristics of fuse are mentioned, in the case they are not indicated in a different way,

to an ambient temperature of 250 C. In the case fuse is operated to ambient temperatures superior to 25° C, this factor must be taken in consideration through a reduction of the nominal current.

Figure 6: Reduction of the maximal current in dependence of the ambient temperature



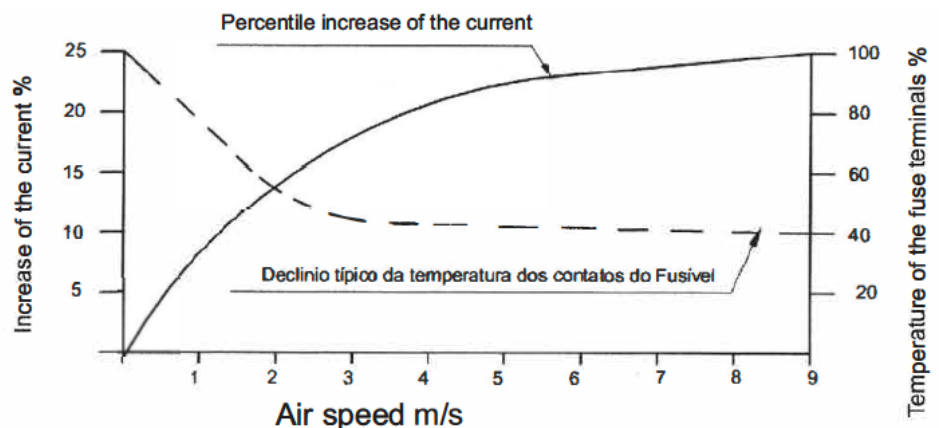
Example: In the case the temperature of motionless air a fuse of 200 A has a temperature of 65° C the fuse can only be loaded With 160 A to prevent an Imperfection. ($200 \times 0.8 = 160 \text{ A}$)

Item b) Forced refrigeration

Similar to get a maximal capacity of the semiconductors component, these can be equipped with forced ventilation. The assembly

of fuse in the same airflow is justified since that, according to the Case, a fuse can be used with a lesser current. (less $I^2 t$)

Figure 7: Influences of the forced refrigeration and the temperature of fuse terminals



However, if fuse will be displayed to airflow with a current speed of for example 4,5 mis the fuse can suffer a current of 220A.

Important in the assembly of the fuses is the area and the length of the linking conductors. The area of The same ones in normal conditions must be defined in agreement to IEC 269-1.

Item c) Modification of the area of the connection line

Using areas of lesser linkings, the nominal current must be reduced (Fig 8). The work temperature of extreme rapid fuse (as the type, can vary until 25000), for semiconductors, is higher, due to

the high current intensity, in the passages of the fuse elements in relation to the normal fuse (gl). It must be considered the temperatures of the isolating material, around or close to the fuses. Beyond of this must exist a good shunting line of temperature. The heating gets excited in relation to the Current due to the factor exponential 2 to 3

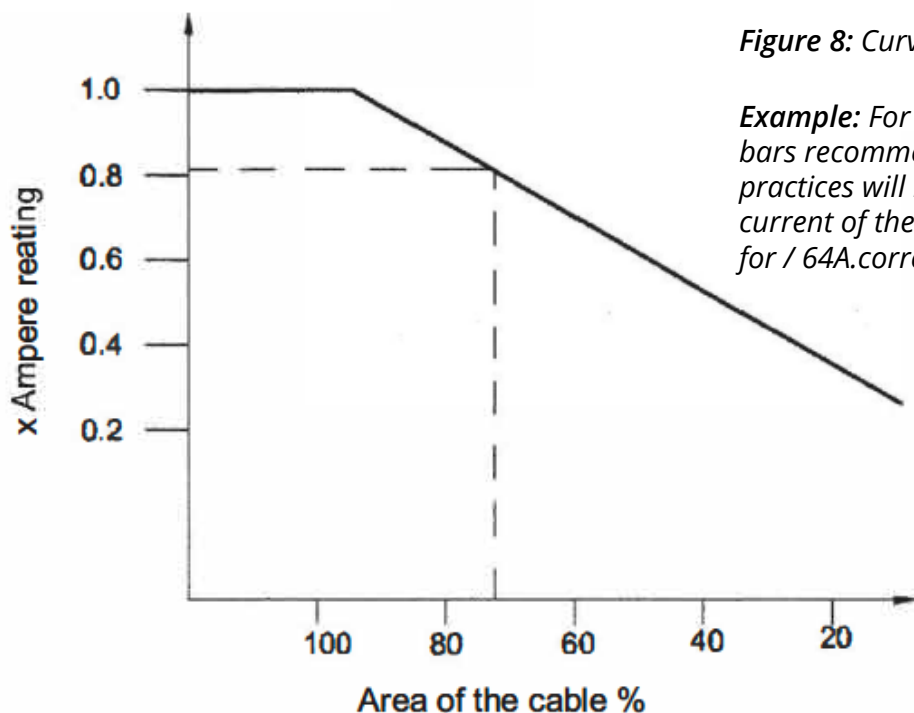


Figure 8: Curve of current correction

Example: For one fuse of 200A, the area of the slide bars recommended is of (25.4x6.36) mm. But, if in practices will be used an area of (12.7x9.5) mm, the current of the fuse of 200A, therefore it is Reduced for / 64A.correction

With the verification of these data can be visualized the multiplication factor of the maximal capacity of fuse current under this condition.

Extreme Rapid Fuses in alternating current and continues current (in agreement to VDE 0636)

Fuse in alternating current.

A short circuit inside of an alternated current net, provokes a continues current component, which varies as power factor and angle of the short circuit (maximum I_{cc} in angle zero voltage). The continues current component adds the maximum

value to it, in the first cycles with power factor low of 0.1 until 0.3. Fuse limits and disconnect these currents of short, before the current achieves dangerous values. The peak of the fusing current is being mentioned always in crest value.

Fuse in continue current.

Some fuses manufacturers produce special fuses for continue current, it's more common to adapt the data of conventional fuses for applications in continue tension. The way the fuse work in

the case of high continue current of short circuit fort <10 m/s is similar to the way in alternating current. In the case of extreme low current, the voltaic arc extinguishing in the continues current circuit will be able, however, to cause problems once that does not exist a Natural passage of the chain for the "zero".

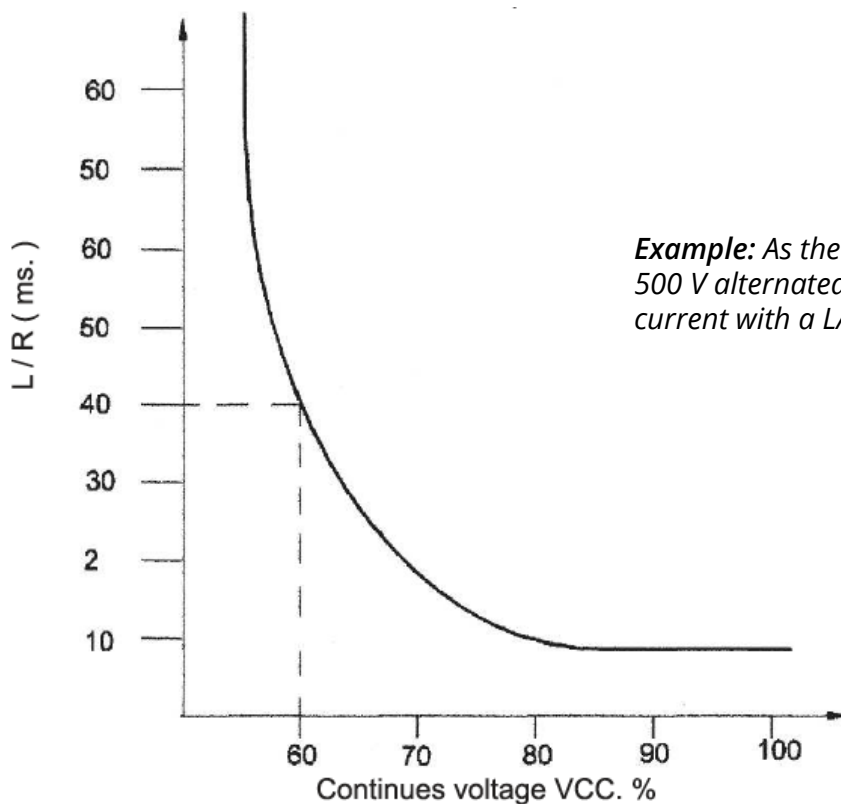
A great influence in the behavior of the fuse disconnection is shown by the relation:

$$\frac{\text{inductivity of the circuit}}{\text{Resistance of the circuit}} = \frac{L}{R} = \text{Time Constant}$$

High constants of time L/R allow that the short circuit current can increase slowly and gradually, thus benefiting to the thermal passage of the fusing element the quartz sand. The rising temperature of the silver element is delayed, resulting in the prolongation of the fusing time and, therefore, in the increase of the integral of fusing (I^2t). Since the current passage by zero is absent in the case of continuous current the time of drawn out arc extinguishing, resulting therefore in the increase of the arc integral (I^2t). In consequence the total integral of disconnection in the case of continuous current can assume essentially bigger values than in the

alternating current case. Due to the components of the inductive circuit of linking it is a relatively high induction tension during the operation of the fuses that are guided in order to support the operational tension for the maintenance of the current flow. The reduction of the operational tension, for example, of 660 VCC for 380 VCC, in the case of the use of fuses in a continuous current circuit, extremely benefits the behavior of fuse disconnection. The maximum value permissively of the continuous current in the case of diverse constant of time is indicated by the fuses manufacturers for each series of fuses in form of a reference line (Fig. 9).

Figure 9: Reduction of the continuous tension in dependence of the time constants (L/R)



Example: As the curve of an extreme rapid fuse of 500 V alternated current can use in 300 V continues current with a L/R of 40 ms.

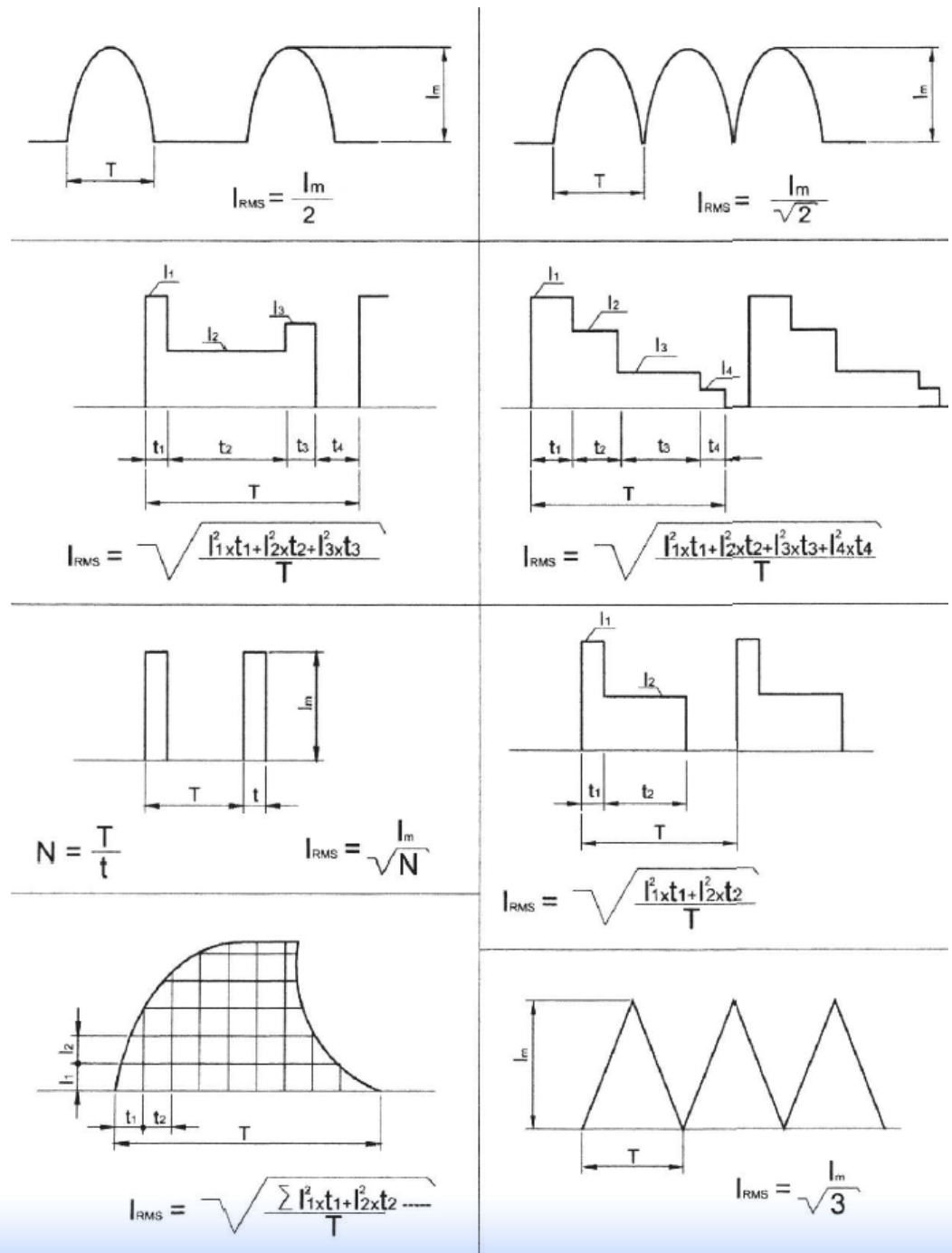
Cyclical load in extreme rapid fuses

The cyclical load in one fuse until the nominal current does not provoke any permanent alteration in the fuses elements. However, if the nominal current is exceeded repeatedly, it can happen an intermittent overload which as the dimension and Interval of lime leads the fusing of the elements and with this the permanent alterations of the material structure. This mechanic stress of the silver elements can lead to a

involuntary and precocious Detonation of the fuse (aging of fuse).

The experience demonstrates that an involuntary detonation of the fuse can be prevented when the fuse is designed to an intermittent overload is dimensioned in such a way that its fusing current corresponds approximately to the double of the value of the overload current for that duration.

Example: To divide cyclical current we can calculate the efficient current (RMS) with the following formula:

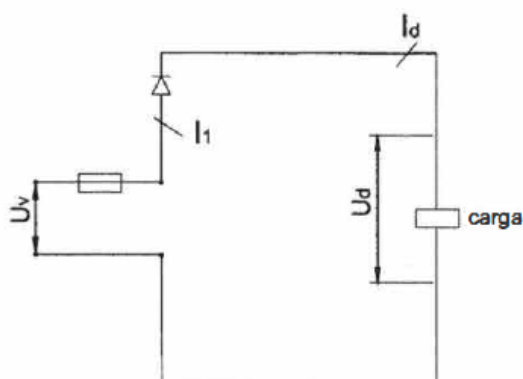


3. Extreme rapid fuses in circuit with rectifiers

In commutation of current rectifiers can be used extreme rapid fuses in different positions in the circuit. As the application position results on another nominal current for fuse.

I_1 = Effective continues current
 I_2 = Effective alternating current
 I_d = DC continues current

U_r = Inverse peak tension through the semiconductor
 U_v = Effective tension between phases AC
 U_d = DC continues tension

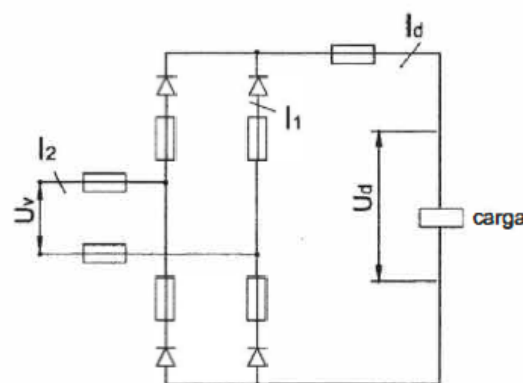


Single Phase, Half Wave

$$I_1 = \frac{\pi}{2} I_d = 1.57 \times I_d$$

$$U_r = \pi \times U_d = 3.14 \times U_d$$

$$U_v = \frac{\pi}{\sqrt{2}} U_d = 2.22 \times U_d$$



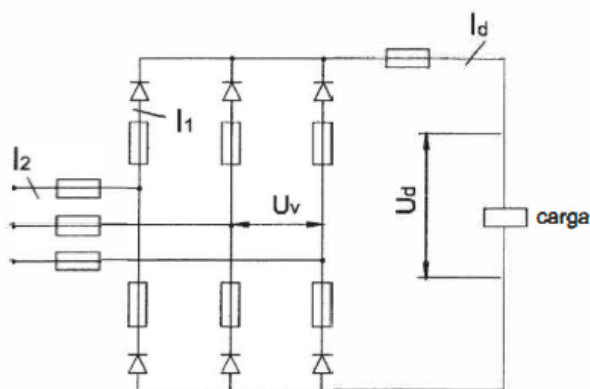
Single Phase, Bridge

$$I_1 = \frac{\pi}{4} I_d = 0.78 \times I_d$$

$$I_2 = \frac{\pi}{2\sqrt{2}} I_d = 1.11 \times I_d$$

$$U_r = \frac{\pi}{2} U_d = 1.57 \times U_d$$

$$U_v = \frac{\pi}{2\sqrt{2}} U_d = 1.11 \times U_d$$



Three-Phase, Bridge

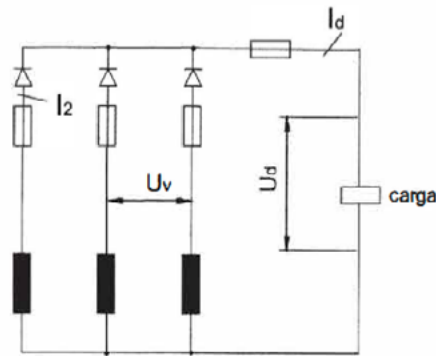
$$I_1 = \frac{I_d}{\sqrt{3}} = 0.57 \times I_d$$

$$I_2 = \sqrt{0.66} \times I_d = 0.81 \times I_d$$

$$U_r = \frac{\pi}{3} U_d = 1.05 \times U_d$$

$$U_v = \frac{\pi}{3\sqrt{2}} U_d = 0.74 \times U_d$$

Extreme rapid fuses in circuit with rectifiers

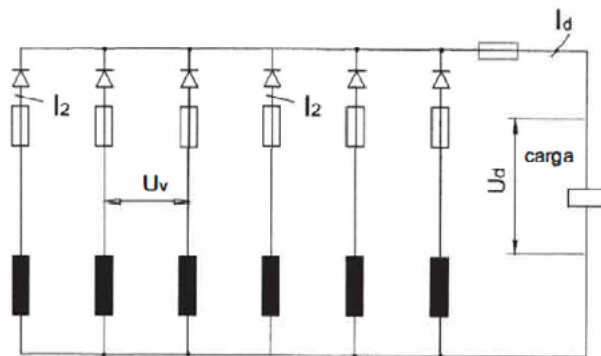


Three-Phase, Wyw

$$I_2 = \frac{\pi}{3\sqrt{3}} I_d = 0.60 \times I_d$$

$$U_r = \frac{2\pi}{3} U_d = 2.10 \times U_d$$

$$U_v = \frac{\pi}{3\sqrt{2}} U_d = 1.48 \times U_d$$



Six-Phase, Star

$$I_2 = \frac{1}{6} I_d = 0.40 \times I_d$$

$$U_r = \frac{2\pi}{3} U_d = 2.10 \times U_d$$

$$U_v = \frac{\pi}{\sqrt{2}} U_d = 1.48 \times U_d$$

The indicated factors are also valid when the diodes in the current rectifiers can be substituted for example, thyristors. Although all the fuses positions in the rectifiers of current above

represented can be applied in practice, each one presents its advantages and disadvantages specify.

a) Fuse in the circuit of the load

Advantages: Low cost

Disadvantage: It does not select imperfections in the diodes (internal error) it must be dimensioned for high continues current (cost). Bigger value of the integral of disconnection more than (b) e (c).

b) Fuse in series with rectifiers: (diodos)

Advantages: As many internal imperfections are raised as external imperfections Also (for example short circuit in the load part). The fuses will have to be dimensioned for a lesser current, (advantage of cost!) The behavior of work and protection of fuse in this in case is more favourable.

Disadvantage: Bigger cost.

c) Fuse in the entrance

Advantages: it selects as many internal imperfections as external imperfections.

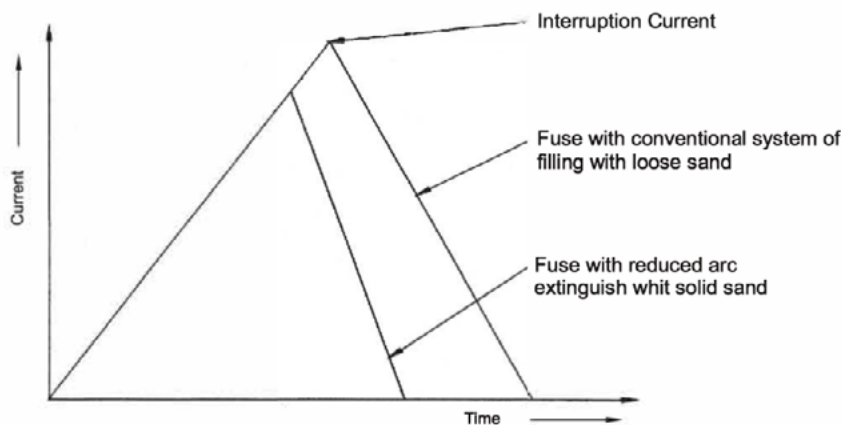
Disadvantage: bigger nominal current of fuse (bigger I_2t)

4. Development tendencies of extremely acting fuses

Modern Tiristores, diodes and transistors are dimensioned for higher voltages and currents than a few years ago.

New materials combination and modern assembly procedures allowed the increase of the flow potential by cm² of active area of semiconductor. Once the thermic detour of capacity of the power semiconductors components continues low, the modern components react with bigger sensibility and overloads and higher short-circuits than old generations of semiconductors.

THS followed this development and developed



fuses even faster (super-extremely-rapid).

In this way it can reach a strong reduction of the integral fusion (I^2t) in the case of high currents through the fuse elements project and the elements length. (narrow passages)

A new reduction on the integral value is acquired through the increase of packing density of quartz sand. In this case the sand is connect through an inorganic bond resulting in a fuse cavity filled up more complete and compact.

This makes the integral of extinguish arc to be extremely reduced. The reason for this efficacy is that the gas pressure formed during the elements evaporation can not diffuse itself in the cavities now closed between the sand grains, forcing the voltaic arc to extinguish quickly. Through the technic mentioned above it can be reduced, thus the value of the turn off integral (I^2t) in proximally 60 %, comparing with the conventional system of filling with loose sand.

Figure 10: Reduction of I^2t of super-extremely-rapid fuses with solid sand.

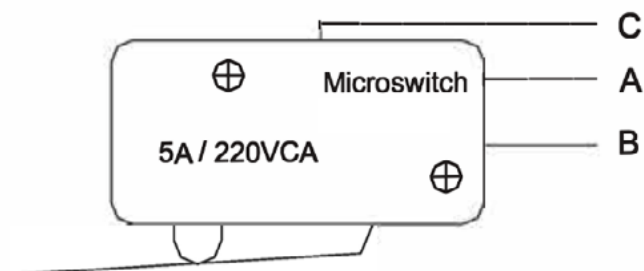
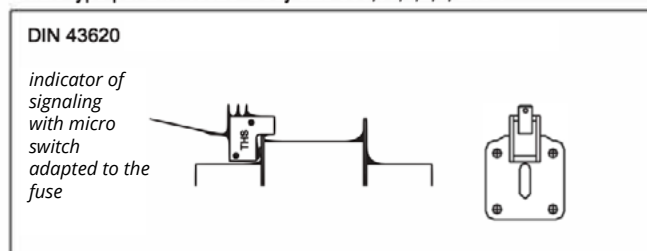
Super extremely rapid fuse selection resume:

- The rupture capacity of the fuse must be bigger than the current failure maximum as possible in the case of a short circuit.
 - The nominal fuse tension chosen must be equal or bigger than the operational tension.
 - In the case of the fuse used in continues current circuit, the fuse tension is reduced as shown in chapter 2.5
 - The I^2t value, indicated to the semiconductors 10 ms as for the "cold" state (25° C) as well to the maximum temperature (125° C). As the I^2t fuse values, with temperature elevation, reduces faster than the semiconductors, following this comparison: cold semiconductor - cold fuse.
 - For the fuse nominal current selection this is under a condition variety, being in the first place the operation nominal current value. Must observe the parameters that influence the fuse nominal current.
 - Temperature (chapter 2.4)
 - Connection section area (chapter 2.4)
 - Forced Refrigeration (chapter 2.4)
 - Cyclical charge (Chapter 2.6)
- With the fuse burned in parallel connection, all the fuses must be replaced, even when a resistance check shows that other fuses are probably intact.

Blown Fuse Trip Indicator Types

Type NA *Type NA, Fuse with Microswitch Mounted*

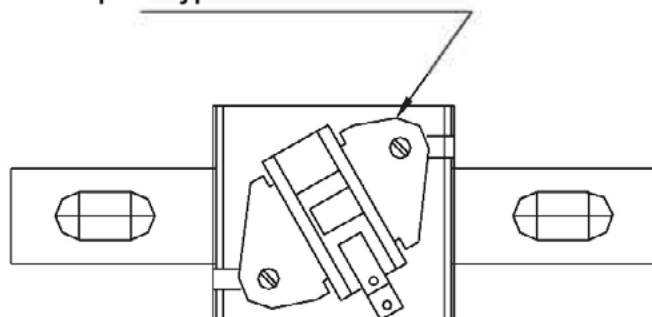
Knife type per DIN 43620 Body size 000,00,1,2,3, and 4



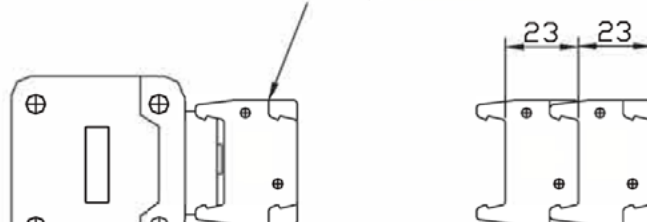
The micro-switch unit is slipped on the gripping lugs of the NH - fuse-link. The breaking capacity of the micro - switch amounts to SA I 220VAC, Connection of micro - switch: Flat plug in contact 6.35 x 0.8 mm.

Type NA *Type THS - F, Adapter for Microswitch for Square Body Fuses. In according to DIN 43653, DIN 43620.*

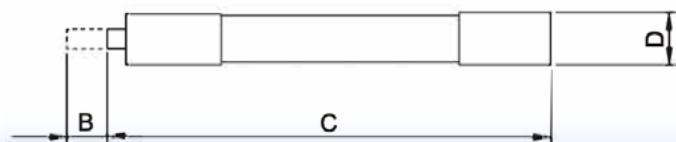
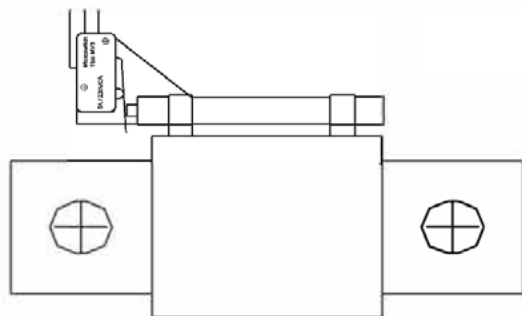
Adapter Type "F" for micro-switch.



Micro - switch Type F



Type NF *Strickers operate parallel to fuse. Strickers are no fuse, meaning they have to be used in combination with fuses.*



Nr.	Amp.	B	C	D
D1	0.5	6	46	7.5
D2	0.5	6	60	7.5
D3	0.5	6	120	7.5
D4	0.5	7	40	11
D5	0.5	10	65	11

Our Fuses

North American Power Fuses

Not only do we manufacture the normal standard electrical fuses, we also work with utility companies, transformer manufacturers, private companies and manufacturers, as well as transportation companies to protect their circuit grid.

Because of the high-quality materials and craftsmanship in our fuse products, our Class L, Class J, Class RK1 Fuses, RK5, and K5 fuses run longer, cooler, and safer than other options.

For all of your electric fuse needs, DENCO Fuses provides durable products and honest, helpful service.



Class L Fuses

- Voltage: 600VAC, 300VDC
- AC Amperages: 400A to 6000A
- DC Amperages: 400A to 2500A
- Interrupting Rating: 200kA AC, 100kA DC
- Fast Acting & Time Delay

Applications:

High Interrupting Rating, Current Limiting Fuse for Busbar Mounting Protection. Ideally suited for protecting Mains,

Feeders, Circuit Breakers, Load Centers, Panelboards, Metering Centers, Switchboards and general circuits. Our Time Delay fuses are ideal for large motors and any other loads with high inrush. UL / CSA Standard protection against short circuit.



Class J Fuses

- Voltage: 600VAC, 300VDC
- AC Amperages: 1A to 600A
- DC Amperages: 1A to 600A
- Interrupting Rating: 200kA AC, 100kA DC
- Fast Acting & Time Delay

Applications:

Class J fuses are designed with special dimensions to prevent the substitution of other fuses with lower voltage ratings,

interruption ratings, or current limiting capability. High Current Limiting for low peak let-thru current. Designed for Capacitors, Load Centers, Panelboards, Switchboards, Bus Duct, Feeder Circuits, Circuit Breakers, Lighting, Heating, and General Loads. UL / CSA Standard protection against short circuit.



Class RK1 Fuses, RK5, & K5 Fuses

- Voltage: 250VAC & 600VAC
- Amperages: 1A to 600A
- Interrupting Rating: 200kA
- Fast Acting & Time Delay

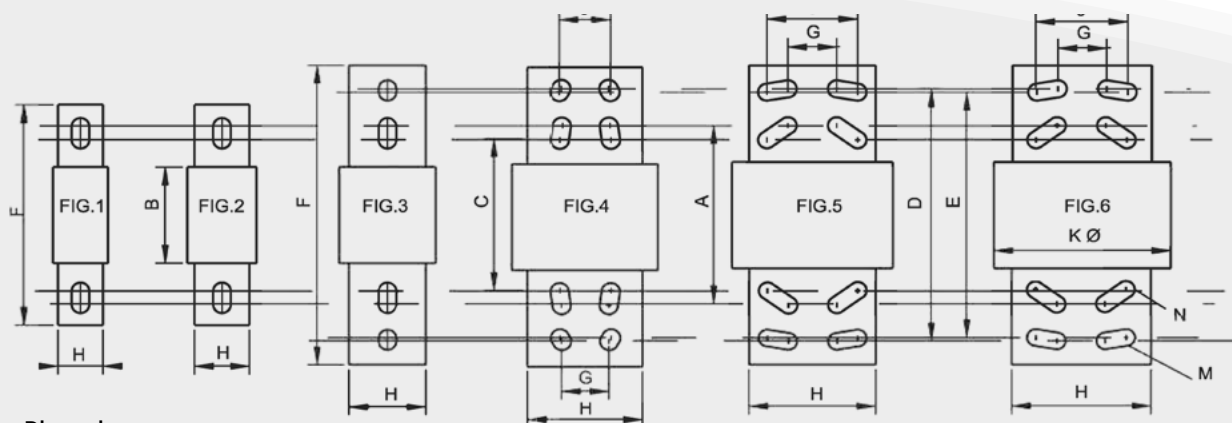
Applications:

Class RK1, RK5, and K5 Fuses, available in Fast Acting and Time Delay. High Interruption Rating, Current Limiting Fuse. Popular for Motor Circuit Protection.

Current limiting time delay fuses are designed and engineered for over-current protection of motors and transformers, service entrance equipment, feeder, branch circuits, and general purpose protection. They also safely handle all harmless starting currents and inrush currents associated with motors and transformers. UL / CSA Standard protection against short circuit.

Form 480 Class L Fuses 400 - 6000 A/ 600 VAC

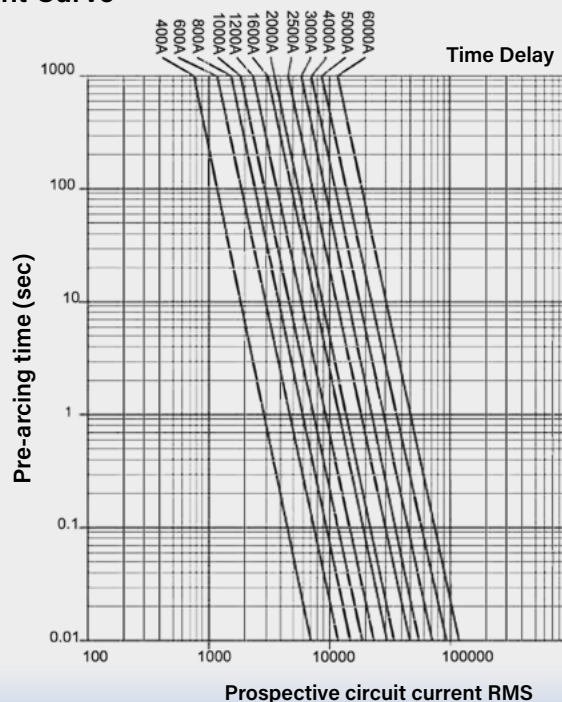
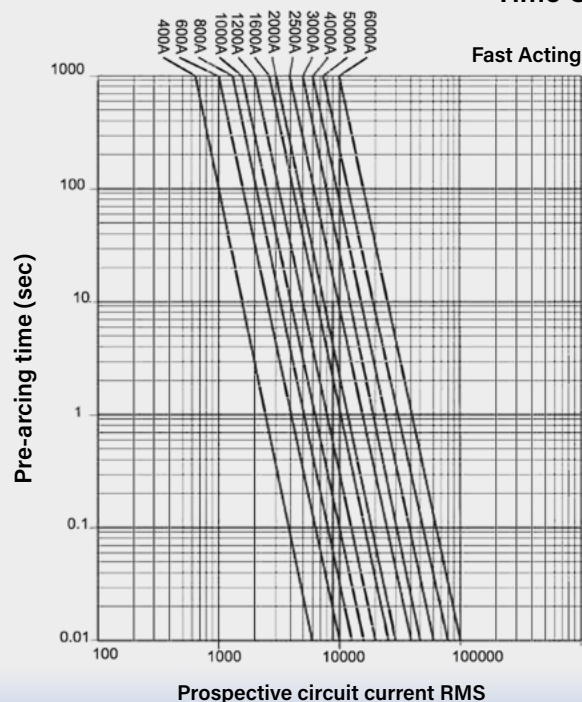
HV HRC fuse-links in accordance with VDE 0670,
UL/ CSA- Class Interrupting rating 200kA



Dimensions

AMP.	FIG	A	B	C	D	E	F	G	H	J	K	M	N
400 a 600	FIG. 1	63/4"	33/4"	53/4"	----	----	85/8"	----	2" X 5/16"	----	2"	5/8" X 11/8"	----
601 a 800	FIG. 2	63/4"	33/4"	53/4"	----	----	85/8"	----	2" X 3/8"	----	2 1/2"	5/8" X 11/8"	----
801 a 1200	FIG. 3	63/4"	33/4"	53/4"	9 1/2"	9 1/4"	103/4"	----	2" X 3/8"	----	2 1/2"	5/8" X 3/4"	5/8" X 11/8"
1201 a 1600	FIG. 3	63/4"	33/4"	53/4"	9 1/2"	9 1/4"	103/4"	----	2 3/8" X 7/16"	----	3"	5/8" X 3/4"	5/8" X 11/8"
1601 a 2000	FIG. 3	63/4"	33/4"	53/4"	9 1/2"	9 1/4"	103/4"	----	2 3/4" X 1/2"	----	3 1/2"	5/8" X 3/4"	5/8" X 11/8"
2001 a 2500	FIG. 4	63/4"	4"	53/4"	9 1/2"	9 1/4"	103/4"	15/8"	3 1/2" X 3/4"	13/4"	5"	5/8" X 3/4"	5/8" X 11/8"
2501 a 3000	FIG. 4	63/4"	4"	53/4"	9 1/2"	9 1/4"	103/4"	15/8"	4" X 3/4"	13/4"	5"	5/8" X 3/4"	5/8" X 11/8"
3001 a 4000	FIG. 5	63/4"	4"	53/4"	9 1/2"	9 1/4"	103/4"	13/4"	4 3/4" X 3/4"	3 1/4"	5 3/4"	5/8" X 13/8"	5/8" X 13/8"
4001 a 5000	FIG. 6	63/4"	4"	53/4"	9 1/2"	9 1/4"	103/4"	13/4"	5 1/4" X 1"	3 1/4"	6 1/4"	5/8" X 13/8"	5/8" X 13/8"
5001 a 6000	FIG. 6	63/4"	4"	53/4"	9 1/2"	9 1/4"	103/4"	13/4"	5 3/4" X 1"	3 1/4"	7 1/8"	5/8" X 13/8"	5/8" X 13/8"

Time Current Curve



Class J Fuses 600 A/ 600 VAC

UL/ CSA- Class Interrupting rating 200KA

- High breaking capacity
- Low power dissipation
- High current limiting
- Silver plated contacts
- Low switching voltage
- Silver element

Fig. 2

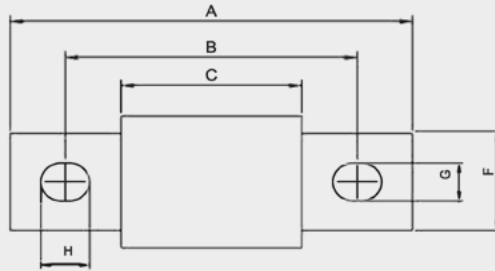
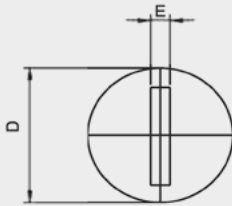
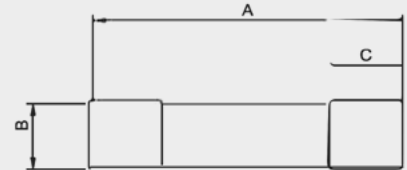


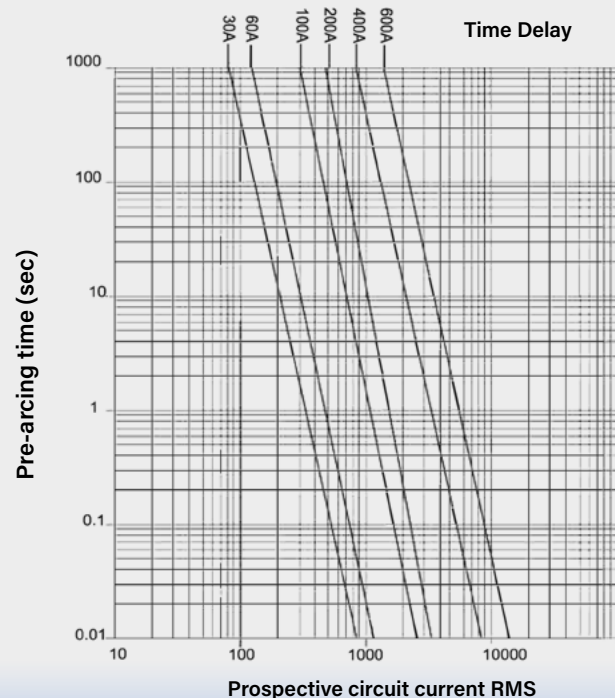
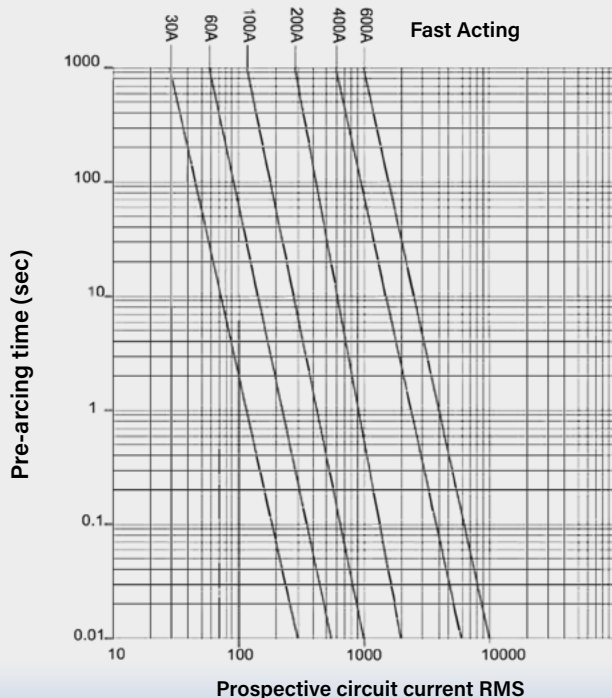
Fig. 1



Dimensions (mm in parentheses)

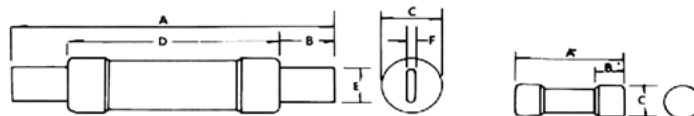
AMP.	FIG	A	B	C	D	E	F	G	H
1 - 30	1	2-1/4" (57.2)	19/32" (15.1)	19/32" (15.1)	----	----	----	----	----
35 - 60	1	2-3/8" (60.3)	21/32" (16.6)	21/32" (16.6)	----	----	----	----	----
70 - 100	2	4-5/8" (117.5)	3-5/8" (92.1)	2-5/8" (66.7)	1" (25.4)	1/8" (3.2)	3/4" (19.1)	9/32" (7.1)	3/16" (4.8)
110 - 200	2	5 -3/4" (146.1)	5 -3/4" (111.1)	3" (76.2)	1-1/2" (38.1)	3/16" (4.8)	1-1/8" (28.6)	9/32" (7.1)	3/16" (4.8)
225 - 400	2	7-1/8" (181.0)	7-1/8" (133.3)	3-3/8" (85.7)	2" (50.8)	1/4" (6.4)	1-5/8" (41.3)	13/32" (10.3)	1/4" (6.3)
450 - 600	2	8" (203.2)	6" (152.4)	3-3/4" (95.3)	2-1/2" (63.5)	3/8" (9.5)	2 " (50.8)	17/32 " (13.5)	5/16 " (7.9)

Time Current Curve



Class K-5 Fuses 250 or 600V /600A 50,000 Amps. RMS Interrupting Rating

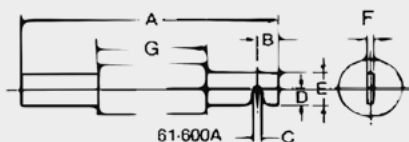
- Fast Acting and Time Delay versions
- One - Time (non-renewable)
- UL Class K-5
- CSA - Certified
- Current Limiting
- For mounting in UL and CSA Listed blocks
- Suitable for general circuits
with possible short-circuit currents up to 50.000A



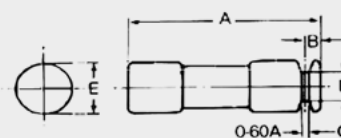
Nr.	A	Volts	A	B	C	D	E	F
8037	0-30	250	2	1/2	9/16			
		600	5	5/8	13/16			
8038	31-60	250	3	5/8	13/16			
		600	5 1/2	1	1-1/16			
8039	61-100	250	5 7/8	1	1-1/16	3 7/8	23/32	1/8
		600	7 7/8	1	1-1/16	5 7/8	23/32	1/8
8040	101-200	250	7 1/8	1 3/8	1-19/32	4 3/8	1 1/8	3/16
		600	9 5/8	1 3/8	1-19/32	6 7/8	1 1/8	3/16
8041	201-400	250	8 5/8	1 7/8	2-3/32	4 7/8	1 5/8	1/4
		600	11 5/8	1 7/8	2-3/32	7 7/8	1 5/8	1/4
8042	401-600	250	10 3/8	2 1/4	2-19/32	5 7/8	2	1/4
		600	13 3/8	2-17/32	2-19/32	8-8/16	2	1/4

Class RK1 Fuses 250 or 600 V / 600 A High Interrupting capacity current Limiting Fuses

- Fast Acting and Time Delay versions
- UL - Class RK1
- CSA Standard HRC-I
- Fiberglass -Tube
- Silver element design
- Current Limiting
- Silver plated contacts
- Excellent for protection of motors circuits



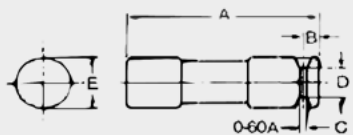
Nr.	Amperes	A	B	C	D	E	F	G
8043	0-30	5	3/16	3/32	5/8	13/16		
	31-60	5 1/2	1/4	3/32	7/8	1 1/16		
	61-100	7 7/8	1/2	9/32	23/64	3/4	1/8	2 5/8
	101-200	9 5/8	11/16	9/32	35/64	1 1/8	3/16	3
	201-400	11 5/8	15/16	13/32	51/64	1 5/8	1/4	3 3/8
	401-600	13 3/8	1 1/8	17/32	63/64	2	1/4	3 3/4



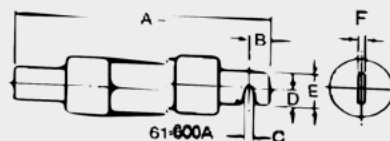
Nr.	Amperes	A	B	C	D	E	F
8044	0-30	2	5/32	5/64	3/8	9/16	
	31-60	3	3/16	3/32	5/8	13/16	
	61-100	5 7/8	1/2	9/32	23/64	3/4	1/8
	101-200	7 1/8	11/16	9/32	35/64	1 1/8	3/16
	201-400	8 5/8	15/16	13/32	51/64	1 5/8	1/4
	401-600	10 3/8	1 1/8	17/32	63/64	2	1/4

Class RK 5 Fuses 250 or 600 V / 600 A 200,000 Amps. RMS Symmetrical Interrupting Rating

- Fast Acting and Time Delay versions
- UL - Class RK5
- CSA Standard HRC-I
- Fiberglass - Tube
- Silver element design
- Current Limiting
- Silver plated contacts
- Excellent for protection of motors circuits



Nr.	Amperes	A	B	C	D	E	F
8044	0-30	2	5/32	5/64	3/8	9/16	
	31-60	3	3/16	3/32	5/8	13/16	
	61-100	5 7/8	1/2	9/32	23/64	3/4	1/8
	101-200	7 1/8	11/16	9/32	35/64	1 1/8	3/16
	201-400	8 5/8	15/16	13/32	51/64	1 5/8	1/4
	401-600	10 3/8	1 1/8	17/32	63/64	2	1/4



Nr.	Amperes	A	B	C	D	E	F
8045	0-30	5	3/16	5/64	3/8	9/16	
	31-60	5 1/2	1/4	3/32	7/8	13/16	
	61-100	7 7/8	1/2	9/32	23/64	3/4	1/8
	101-200	9 5/8	11/16	9/32	35/64	1 1/8	3/16
	201-400	11 5/8	15/16	13/32	51/64	1 5/8	1/4
	401-600	13 3/8	1 1/8	17/32	63/64	2	1/4

Medium / High Voltage Distribution Fuses

We produce all standard medium and high voltage fuses, along with custom designs and production of one-of-a-kind fuses for our client's specific needs and requirements.

Our manufacturing lead times are unmatched. Industry standard turnaround is 90 days, but we can fabricate our products within 30 days. We know that when it comes to electrical circuits, short lead times and quality products make all the

difference. We guarantee our fuse products and perform in-house testing at our factory lab. Our testing makes sure that your medium voltage or high voltage fuses function efficiently and safely.



E-Rated (PT) Transformer / Potential Transformer Protection Distribution Fuses

- AC Voltages: 625V, 1500V, 2.75kV, 5.5kV, 8.25kV, 12kV, 15.5kV, 24kV, 25.8kV & 36kV
- Amperages: 0.5E to 400E, 0.5A to 400A
- Interrupting Ratings: 31kA, 38kA, 50kA, 60kA, 63kA, 80kA, 82kA, 100kA & 120kA
- With or Without Visual Trip Indicator or Microswitch
- Clip-on Style Mounting or End Bracket Design

Applications:

General Purpose Main & Back-up Protection Designs Suitable for Indoor or Outdoor in an Enclosure. Types 9F60 Series EJ-1 EJO-1 & Standard. E-Rated fuses used for transformer protection or distribution systems. PT fuses offer high interruption rating current limiting for primary winding protection of potential transformers.



R-Rated Motor Starter / Soft Starter Protection Distribution Fuses

- AC Voltage: 2.5kV 4.8kV & 7.2kV
- Amperages: 1R 2R 3R 4R 5R 6R 9R 12R 18R 24R & 36R
- Interrupting Rating: RMS Sym 63kA & 65kA RMS Asym 100kA
- 2.5KV 1R to 36R (35A-650Amp) Fuses
- 4.8KV 2R to 36R (70A-650Amp) Fuses

• 7.2kV 2R to 24R (70A-450Amp) Fuses

Note: R-Rated fuses will melt in the range of 15 to 35 seconds at a value of current equal to 100 times the "R" rating.

Applications:

R-Rated Current Limiting High Interruption Rating Fuses Intended for Short-Circuit Protection. Types 9F60 Series EJ-2 & Standard. Medium Voltage Motor Protection Motor Starter Fuses Motor Controllers Motor Circuit Protection. DIN 43625 / IEC 282-1 / BS 2692. Single Double and Triple Barrel Configurations.



C-Rated Capacitor Protection Distribution Fuses

- AC Voltage: 1000V 1.5kV 2.5kV 3kV 4.3kV 5.5kV 8.3kV 15.5kV 23kV 27kV & 38kV
 - Amperages: 1C to 200C 1A to 200A
 - Interrupting Rating: 40kA 50kA 60kA 65kA & 80kA
 - With or Without Blown Fuse Indicator.
 - Designed to ANSI C37-41 Specs.
- Various Mounting Configurations offering manufacturers and clients a wide selection of cost and space saving solutions.

Note: The Fuse will melt in 1000 seconds at a current value between 1.7 and 2.4 times the "C" rating.

Applications:

High Interrupting Rating Current Limiting Silent Operation with No Discharge. Suitable Indoor or Outdoor in an Enclosure. Type DM NX 9F60 Series EJ-5 EJO-5 and Standard. Designed to protect against capacitor case rupture or dielectric failure within the capacitor. Our capacitor fuses provide short-circuit and overload protection. Suitable for Capacitor protection Power Factor Correction Equipment Harmonic Filtering Equipment Induction Heating Systems High Power Drive & Welders.



Loadbreak Elbow Fuses

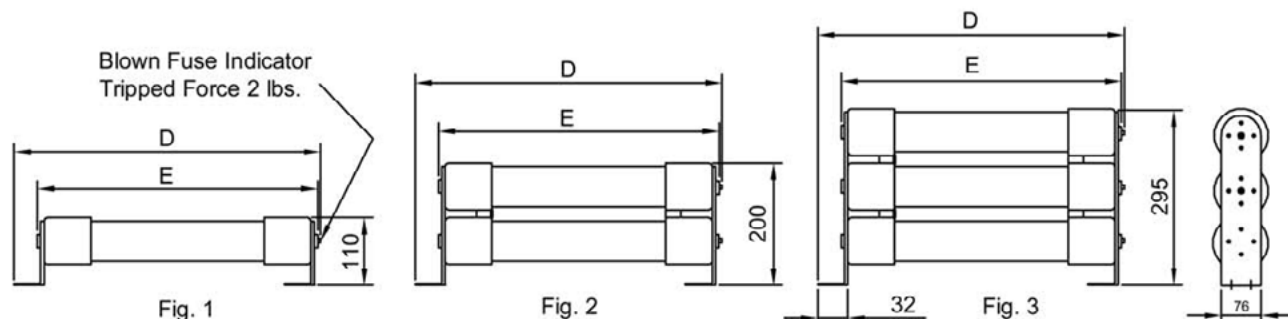
- AC Voltage: 8.3kV, 15.5kV & 24kV
- Amperages: 3A to 80A
- Interrupting Rating: 30KA & 50KA
- Designed to ANSI C37-40, 41, 47 Specs.

Applications:

Our hermetically sealed Full-Range, Current Limiting, Loadbreak Elbow Fuses provide overload and fault current protection for distribution equipment by limiting the let-through fault current while dramatically reducing stress on the equipment. Used for underground distribution systems, and suitable for single-phase load protection in vault, subsurface, or pad-mount installations. They're also great for radial taps, junctions, transformers and other equipment.

Medium Voltage Fuses Type - E-Rated

UL / CSA - Standard 4160 / 13800VAC



Dimensions 15.5KV / 5.5KV Clip-Lock Mounted

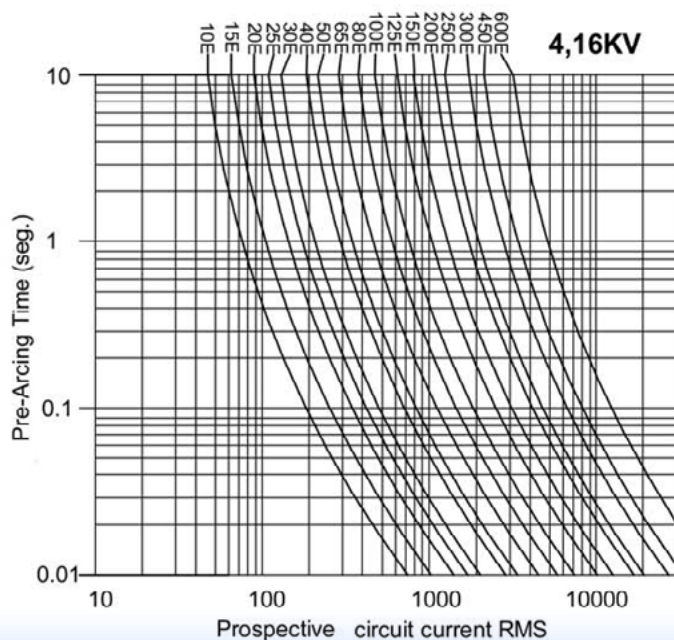
(mm in parentheses)

Fig.	Voltage	- D -	- E -	Current	Clip Centers	Cap. Rup. I. R.	Nr. Ref. Number
Fig. 1	4,16KV	16-3/4" (426)	16-1/8" (410mm)	10 - 150E	15-1/4" (387)	63 KA	76X410
Fig. 2	4,16KV	22-3/4" (580)	22-1/8" (562mm)	200 - 400E	21-1/4" (540)	63 KA	76X562
Fig. 3	4,16KV	22-3/4" (580)	22-1/8" (562mm)	450 - 600E	21-1/4" (540)	63 KA	76X562
Fig. 1	13,8KV	19-3/4" (504)	19-1/8" (486mm)	10 - 50E	18-1/4" (484)	40 KA	76X486
Fig. 1	13,8KV	22-3/4" (580)	22-1/8" (562mm)	65 - 100E	21-1/4" (540)	40 KA	76X562
Fig. 2	13,8KV	22-3/4" (580)	22-1/8" (562mm)	110 - 125E	21-1/4" (540)	40 KA	76X562
Fig. 3	13,8KV	22-3/4" (580)	22-1/8" (562mm)	200 - 400E	21-1/4" (540)	40 KA	76X562

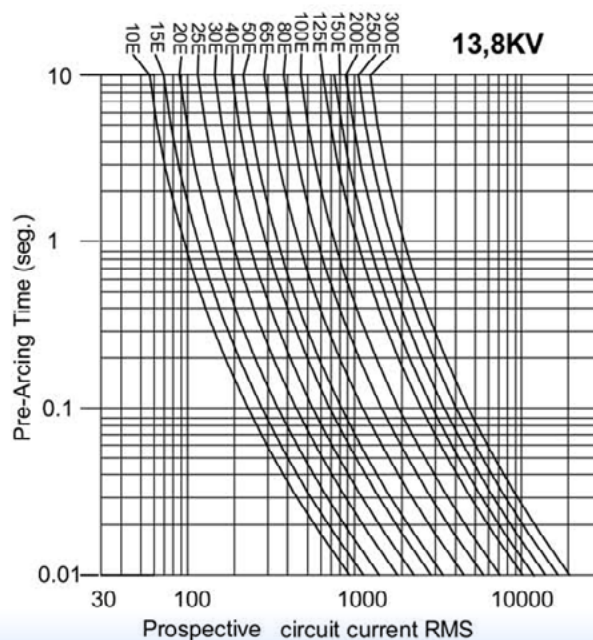
APPLICATION: Protection for transformers or distribution systems

MEDIUM VOLTAGE FUSES / E-RATED

Clearing Time - Curve



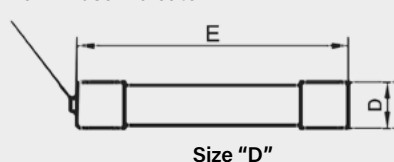
Clearing Time - Curve



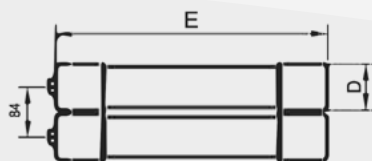
Medium Voltage Fuses Type "EJ"

American Standard

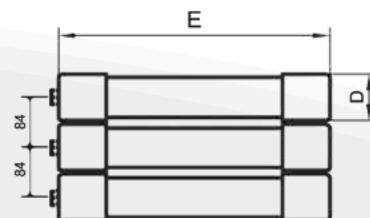
Blown Fuse Indicator



Size "D"



Size "DD"



Size "DDD"

Dimensions

Size	Voltage	D	E	Current	Code	Ref. Number
D	2400V	76	272	2 - 12R	EJ - 2	76X272
DD	2400V	76	272	18 - 24R	EJ - 2	76X272
DDD	2400V	76	272	30 - 36R	EJ - 2	76X272
D	4800V	76	400	2 - 12R	EJ - 2	76X400
DD	4800V	76	400	18 - 24R	EJ - 2	76X400
DDD	4800V	76	400	30 - 36R	EJ - 2	76X400
DD	15500V	76	478	65 - 100E	EJ - 1	76X478
DD	5500V	76	404	125 - 450E	EJ0 - 1	76X404
D	3600V	41	220	1 - 3A	EJ - 1	40X220
D	5500V	41	187	1 - 3A	EJ - 1	40X187
D	12000V	41	221	0.5 - 10A	EJ - 1	40X221
D	15000V	41	327	0.5 - 7A	EJ - 1	40X327
D	17500V	41	220	0.5 - 10A	EJ - 1	40X206
D	24000V	41	340	0.5 - 4A	EJ - 1	40X340
D	38000V	41	440	1 - 5A	EJ - 1	51X440
D	4800V	51	269	5 - 25E	EJ - 1	51X269
D	2400V	51	218	1 - 25E	EJ0 - 1	51X218
D	4800V	51	269	5 - 25E	EJ0 - 1	51X269
D	7200V	51	345	5 - 15E	EJ0 - 1	51X345
D	15500V	51	433	5 - 30E	EJ0 - 1	51X433
D	23000V	51	573	5 - 10E	EJ0 - 1	51X573
DD	15500V	76	551	125 - 200E	EJ - 1	76X551
D	15500V	76	552	65 - 100E	EJ0 - 1	76X552
D	5500V	76	403	30 - 200E	EJ0 - 1	76X403
D	7200V	76	397	20 - 100E	EJ0 - 1	76X397
D	15500V	76	479	15 - 50E	EJ0 - 1	76X479
D	23000V	76	623	15 - 50E	EJ0 - 1	76X623
D	34500V	76	776	1 - 40E	EJ0 - 1	76X776
D	2 - 24KV	26	358	0.5 - 5A	----	27X358
D	2 - 17.5KV	26	254	0.5 - 5A	----	27X254
D	2 - 17.5KV	26	141	05 - 5A	----	21X141
D	2 - 17.5KV	21	195	0.5 - 5A	----	21X195
D	2 - 7.2KV	21	117	05 - 5A	----	21X117
D	2 - 24KV	21	241	0.5 - 5A	----	21X241
D	2 - 7.2KV	26	143	05 - 5A	----	21X143

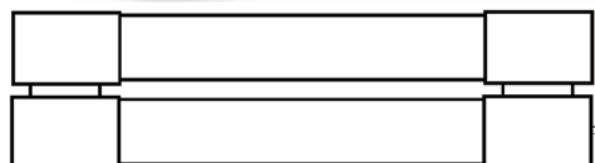
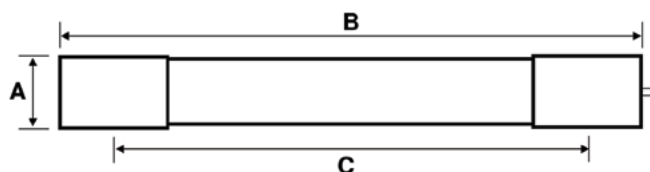
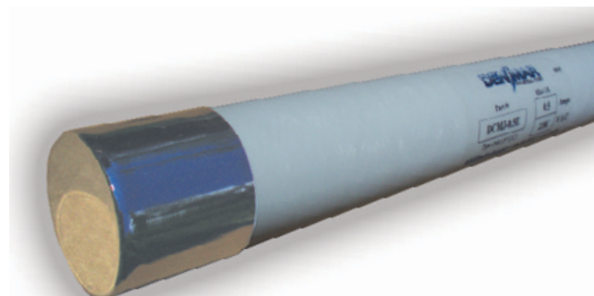
Power Distribution Potential Transformer Fuses

E-Rated, Type EJ-1

- Equivalent to G.E. **9F60** Series
- Suitable for use indoors or in an enclosure
- Open fuse trip indicator (trip length = 0.25")

Voltage Range: 0.625kV to 38kV

Current Range: 0.5E -200E



DenMar Part #	Max KV	Amperages	I/C Sym.	# of Barrels	Dimensions (inches)		
					A (Diameter)	B (Length)	C (Center Clip)
DAAA-(3E, 5E)	0.625	3E, 5E	100 kA	1	0.812	4.625	4.25
DAAB-(1E, 2E)	2.75	1E, 2E	60 kA	1	0.812	4.625	4.25
DBBB-(1E-3E)	2.75	1E, 2E, 3E	60 kA	1	1.625	7.375	6
DBBB-(0.5E-3E)	5.5	0.5E, 1E, 2E, 3E	80 kA	1	1.625	7.375	6
DBDB-(1E-3E)	2.75	1E, 2E, 3E	60 kA	1	1.625	9.5	8.12
DBDD-(0.5E-3E)	5.5	0.5E, 1E, 2E, 3E	80 kA	1	1.625	9.5	8.12
DBDE-(0.5E-10E)	8.25	0.5E, 1E, 2E, 3E, 5E, 10E	80 kA	1	1.625	9.5	8.12
DBDB-(1E-3E)	2.75	1E, 2E, 3E	60 kA	1	1.625	9.5	7
DCCB-(1E-25E)	2.75	1E, 2E, 3E, 5E, 7E, 10E, 15E, 20E, 25E	38 kA	1	2	9.18	7
DDCB-(30E-100E)	2.75	30E, 40E, 50, 65E, 80E, 100E	38 kA	1	3	10.88	7
DCEB-(1E-25E)	2.75	1E, 2E, 3E, 5E, 7E, 10E, 15E, 20E, 25E	38 kA	1	2	11.18	9
DCED-(0.5E-25E)	5.5	0.5E, 1E, 2E, 3E, 5E, 7E, 10E, 15E, 20E, 25E	63 kA	1	2	11.18	9
DBHH-(0.5E-3E)	15.5	0.5E, 1E, 2E, 3E,	120 kA	1	1.625	12.875	11.5
DHDD-(20E-30E)	15.5	20E, 25E, 30E	50 kA	1	2	17.2	15
DDDD-(50E-100E)	15.5	50E, 65E, 80E, 100E	50 kA	1	3	18.88	15
DFDD-(125E-200E)	15.5	125E, 150E, 175E, 200E	50 kA	2	(2) 3	18.88	15
DCJH-(2E-10E)	15.5	2E, 3E, 5E, 7E, 10E	82 kA	1	2	14.18	12
DKLH-125E	1.5	125E	38 kA	2	(2) 4	19.12	14
DKLH-150E	1.5	150E	31 kA	2	(2) 4	19.12	14
DKLH-175E	1.5	175E	31 kA	2	(2) 4	19.12	14
DCMJ-(0.5-2E)	25.8	0.5E, 1E, 2E	82 kA	1	2	17.2	15

Our fuses can also be designed to your specifications.

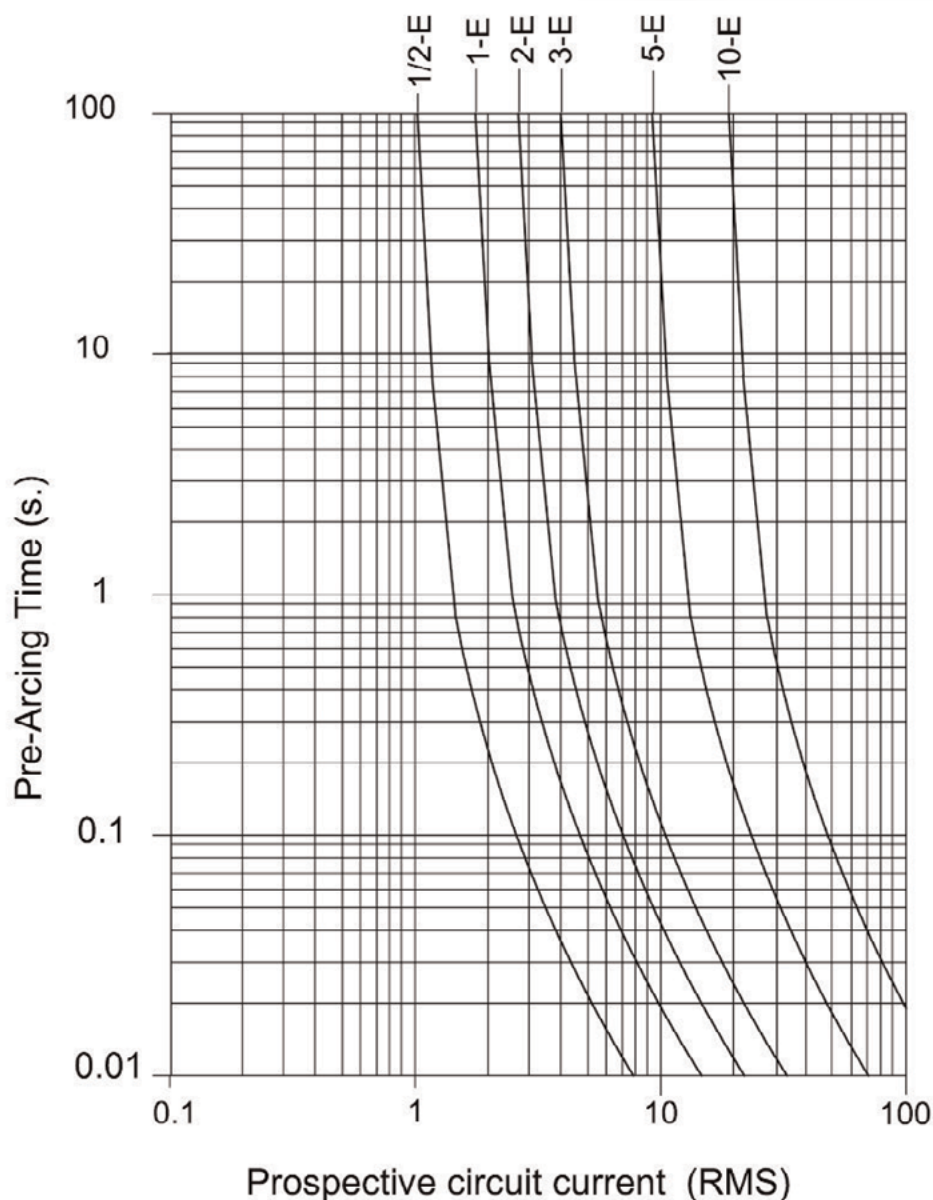
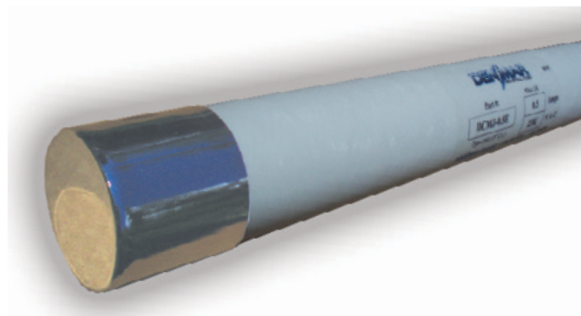
Power Distribution Potential Transformer Fuses

E-Rated, Type EJ-1

- Equivalent to G.E. **9F60** Series
- Suitable for use indoors or in an enclosure
- Open fuse trip indicator (trip length = 0.25")

Voltage Range: 0.625kV to 38kV

Current Range: 0.5E -200E



Our fuses can also be designed to your specifications.

E-Rated PT Fuse

Potential Transformer 3.6 kV - 38 kV Fuses

- Suitable for Circuit Protection for Potential Transformer and Voltage Transformer
- Suitable for Indoor Use or an Enclosure
- Current Limiting
- High Breaking Capacity
- Low Power Dissipation
- Low Switching Voltage
- Silver Plated Contacts
- Silver Element Design

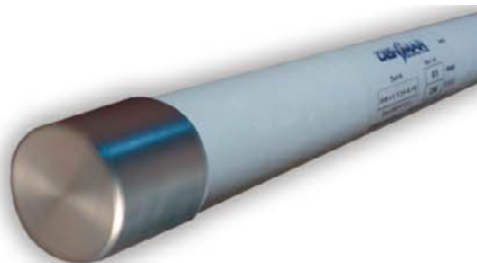
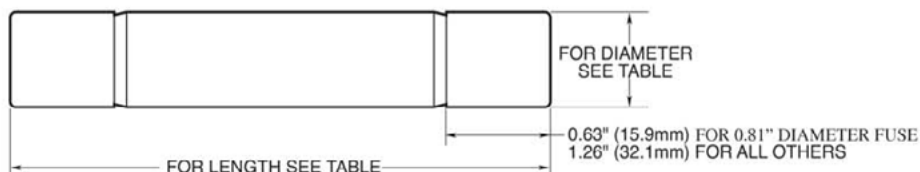


Figure 1



kV	Catalog Number	Ampere Ratings	Dimensions (Figure 1)		IR
			Length	Diameter	
3.6	D3.6AB(amp)	3.15, 6.3	5.6"	1"	50KA
3.6	D3.6ABC(amp)	3.15, 6.3, 10	7.69"	1"	
5.5	D5.5AB(amp)	0.5E, 1.0E, 2.0E, 3.0E, 5.0E	5.6"	1"	
5.5	D5.5ABC(amp)	0.5E, 1.0E, 2.0E, 3.0E, 5.0E	5.6"	.81"	
7.2	D7.2AB(amp)	3.15, 6.3	5.6"	1"	
7.2	D7.2ABC(amp)	3.15, 6.3	7.69"	1"	
12.0	D12AB(amp)	3.15	7.69"	1"	
15.5	D15.5AB(amp)	3.15	10.00"	1"	
17.5	D17.5AB(amp)	3.15	14.13"	1"	
24.0	D24AB(amp)	3.15	14.13"	1"	
36.0	D36AB(amp)	3.15	14.13"	1"	

Figure 2



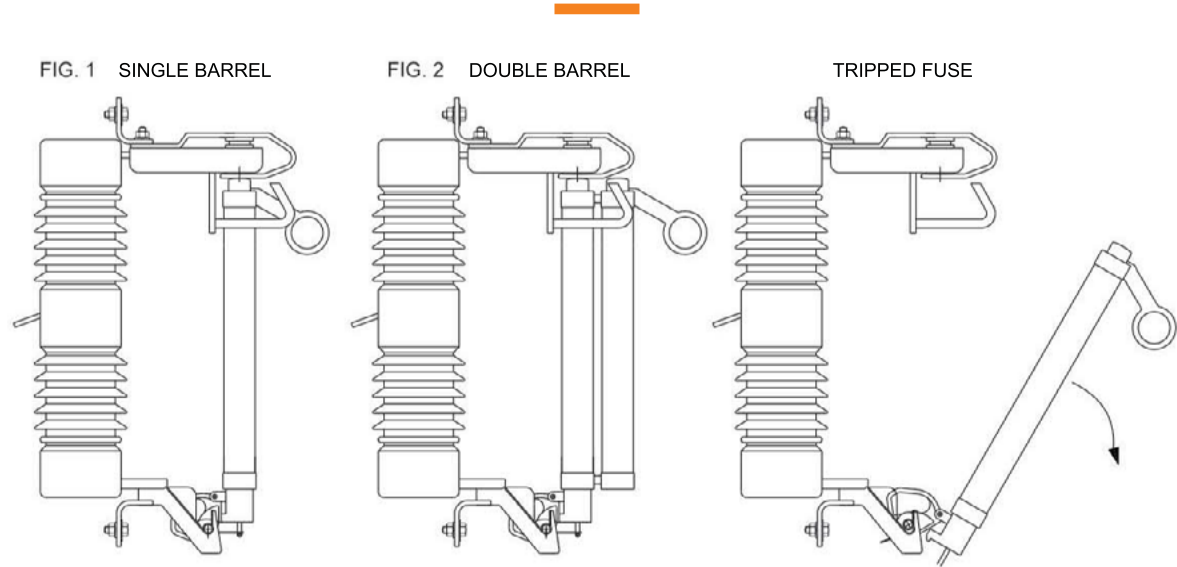
kV	Catalog Number	Ampere Ratings	Dimensions (Figure 2)		IR
			Length	Diameter	
3.6	D3.6CA(amp)	2	8.66"	1.63"	40KA
5.5	D5.5CA(amp)	15E	7.375"		
5.5	D5.5CAH(amp)	0.5E, 1E, 2E	7.375"		
7.2	D7.2CA(amp)	2, 10	8.66"		
12	D12CA(amp)	2	8.66"		
15.5	D15.5CA(amp)	0.5E, 1E, 2E, 3E, 7E	12.87"		
15.5	D15.5CAH(amp)	0.5E, 1E, 2E	12.87"		
17.5	D17.5CA(amp)	2, 4, 6, 10	8.66"		
24	D24CA(amp)	2, 3, 4	13.39"		
36	D36CA(amp)	2, 4	17.32"		
38	D38CA(amp)	4E	17.32"		
38	D38CAH(amp)	0.5E, 1E, 2E	17.32"		

Our fuses can also be designed to your specifications.

DHS & DHHS - Current-Limiting Dropout Fuse

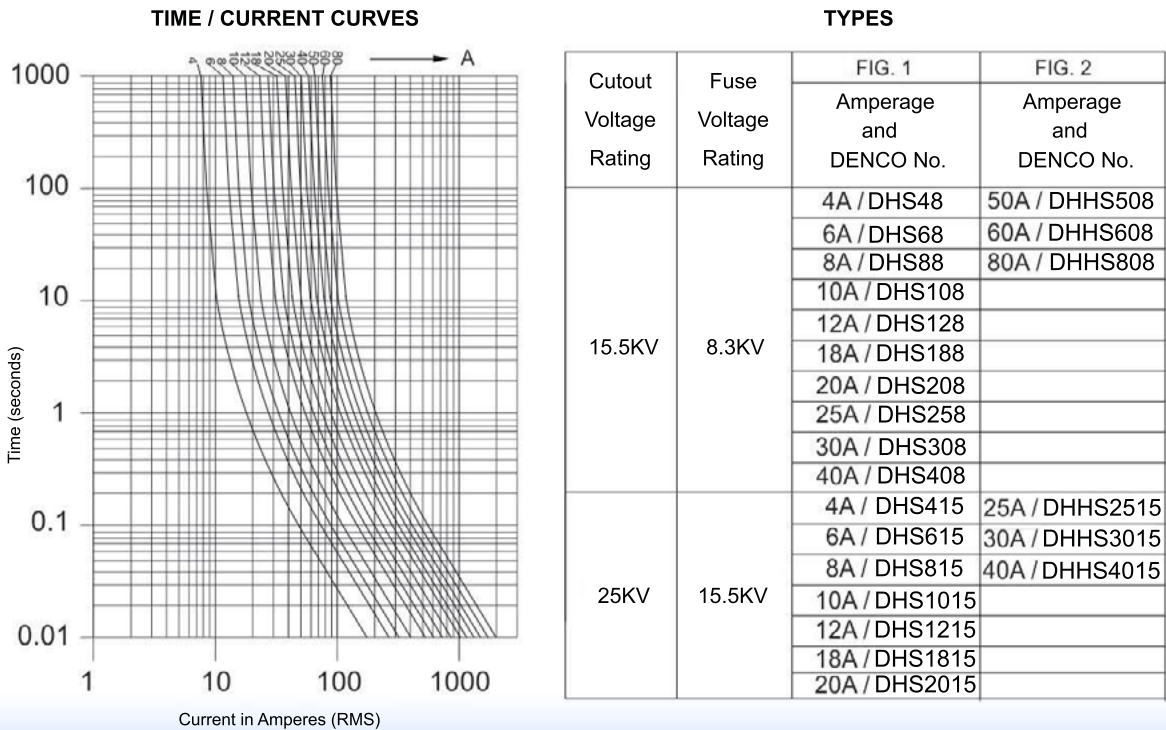
1A to 80A at 15.5kV to 24kV

Switchgear Fuses for Energy Distribution Conforming to NBR 8124, IEC 060282-2, ANSI / ABNT



DENCO Fuses for protection against over current of primary circuits (high voltage) have high rupture capacity and are amply utilized in substation networks and aerial urban and rural distribution power lines.

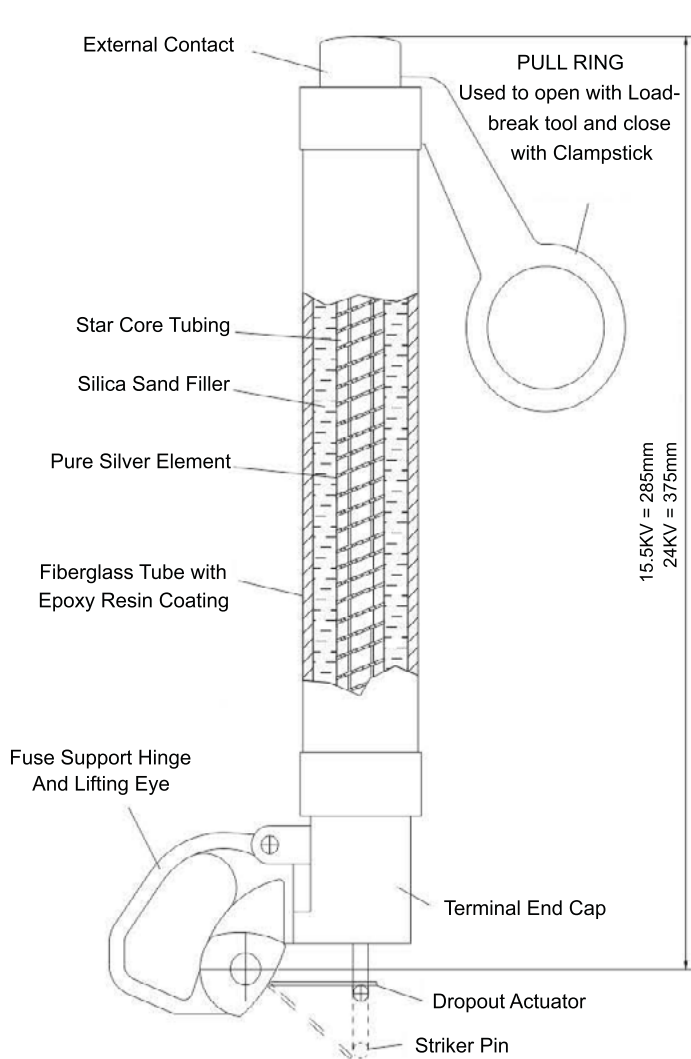
We've created a new system of cut-off that guarantees a rapid extinguished arc, tripping fast and safely without the possibility of explosion, expulse of gasses or molten fragments. Which eliminates the result of sparks and/or fire accidents in an urban or rural area.



DHS & DHHS - Current-Limiting Dropout Fuse

Replacement for Cutout Expulsion Fuse-Links

Does Not Release Hot Gasses Or Molten Fragments During Interruption Of Circuit



Switchgear Fuses for Energy Distribution conforming to NBR 8124, IEC 060282-2, ANSI / ABNT

- No Sparks or Molten Fragments
- No Release of Hot Gasses
- Current Limiting
- High Rupture Capacity
- Low Voltage Arc
- Low Watt Loss
- Pure Silver Element
- Cut off Time U.R.

As per drawing, the fuse element is composed of pure silver. Electric solder points securing it to the end terminal at both extremities. The silver element is protected by fiberglass tubing, epoxy resin coated. The cavity of the fuse is filled with granulated quartz silica sand carefully compacted by a controlled process.

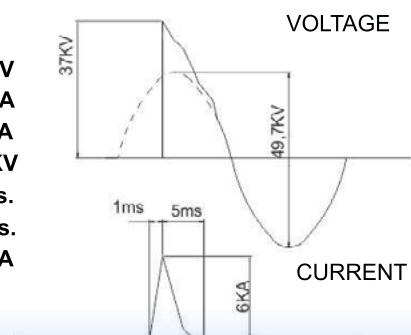
The quality of our fuses originates from a long history of continuous rigid research and control of material throughout the phases of the production process.

THE CURRENT-LIMITER FUSE IN SHORT-CIRCUIT

A short circuit in an alternating current network A/C, provokes a continuous component of current D/C, which varies depending on the power factor and angle of closing at short-circuit. The continuous current D/C component adds to the maximum value during the first cycles with a power factor less than 0.1 to 0.3. DENCO fuses limits and disconnects the short-circuit before the current arrives at dangerous values.

Voltage ----- 17.5KV
Tested Current ----- 50KA
Limited Current ----- 6KA
Voltage Arc ----- 37KV
Cut-off Time ----- 1ms.
Arc Time ----- 5ms.
Cap. or Rupture ----- 50KA

The peak current of the fuse is always shown as peak values..



R-Rated / Motor Protection Fuses

Medium Voltage Fuses 2.5kV

- Short circuit protection of medium voltage motors & motor controllers
- An "R" rated fuse will melt in the range of 15 to 35 seconds at a value of current equal to 100 times the "R" rating
- With thermal striker

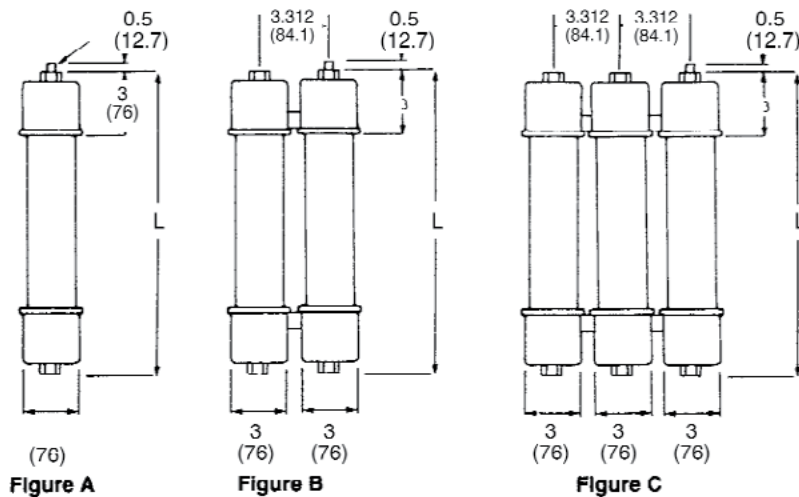
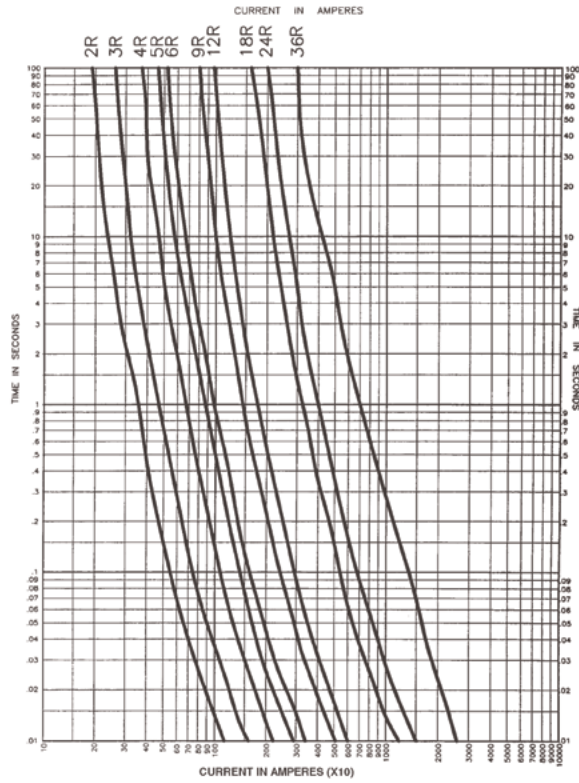


Fig. #	DENCO Order #	Size	AMP Rating	Fuse Length (L)	Minimum Interrupting Rating	1 Phase Interrupting Rating Maximum Tested	
						RMS Asym	RMS Sym
A	RA1-1R35	1R	35A	10-7/8 (276mm)	100	100kA @ 2750V	65kA @ 2750V
	RA1-2R70	2R	70A		170		
	RA1-3R100	3R	100A		250		
	RA1-4R130	4R	130A		340		
	RA1-5R150	5R	150A		420		
	RA1-6R170	6R	170A		500		
	RA2-9R200	9R	200A		760		
	RA2-12R230	12R	230A		1000		
B	RA3-18R390	18R	390A		1500		
	RA3-24R450	24R	450A		2000		
C	RA3-36R650	36R	650A		2900		

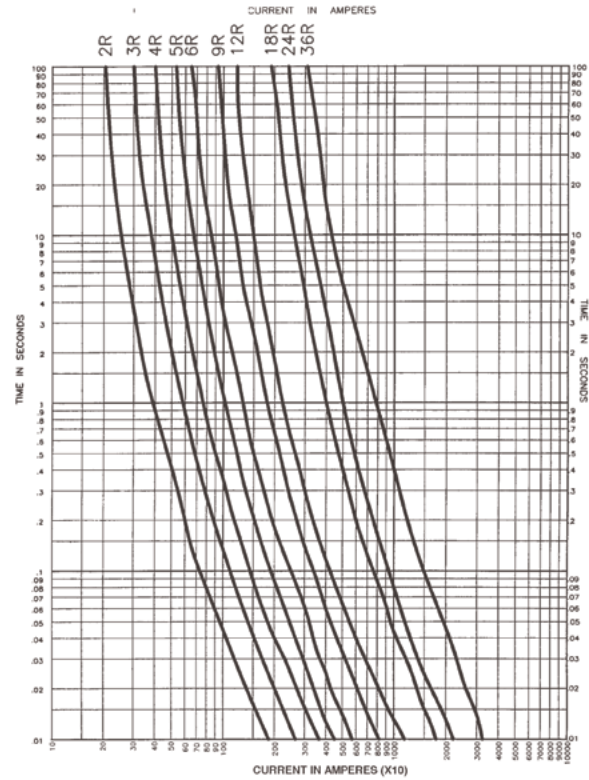
R-Rated / Motor Protection Fuses

Medium Voltage Fuses 2.5kV

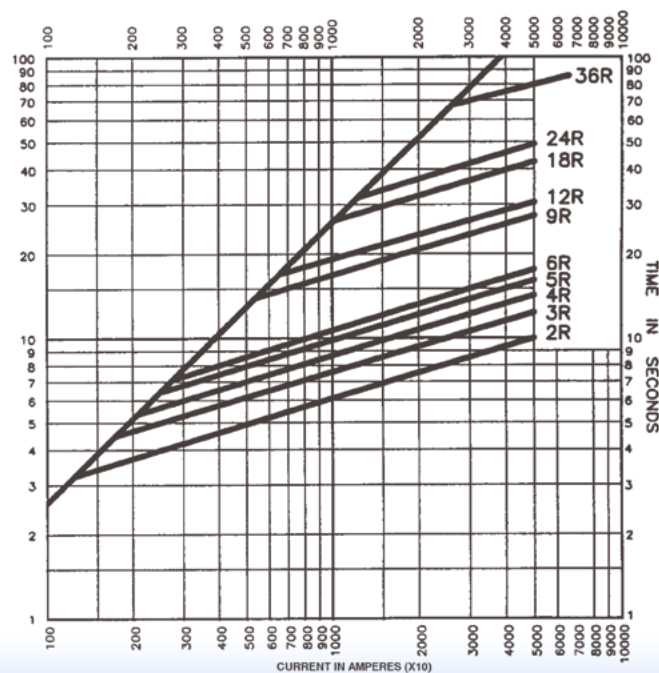
Time-Current Characteristic Curves—Minimum Melt



Total Clearing Curves



Current Limitation Curves



R-Rated / Motor Protection Fuses

Medium Voltage Fuses 4.8kV

- Short circuit protection of medium voltage motors & motor controllers
- An "R" rated fuse will melt in the range of 15 to 35 seconds at a value of current equal to 100 times the "R" rating
- With thermal striker

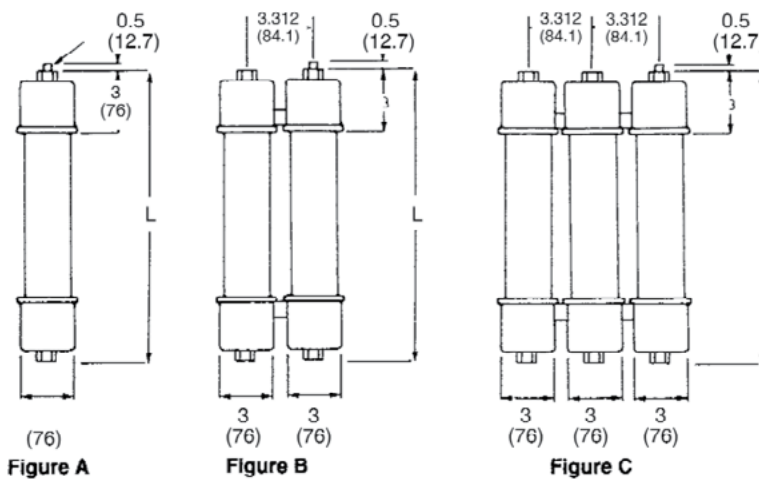


Fig. #	DENMAR Order #	Size	AMP Rating	Fuse Length (L)	Minimum Interrupting Rating	1 Phase Interrupting Rating Maximum Tested	
						RMS Asym	RMS Sym
A	RC1-2R70	2R	70A	15-7/8 (403mm)	190	100kA @ 5500V	65kA @ 5500V
	RC1-3R100	3R	100A		225		
	RC1-4R130	4R	130A		330		
	RC1-5R150	5R	150A		400		
	RC1-6R170	6R	170A		500		
	RC1-9R200	9R	200A		740		
	RC1-12R230	12R	230A		955		
B	RC2-18R390	18R	390A		1440		
	RC2-24R450	24R	450A		1910		
C	RC3-36R650	36R	650A		2810		

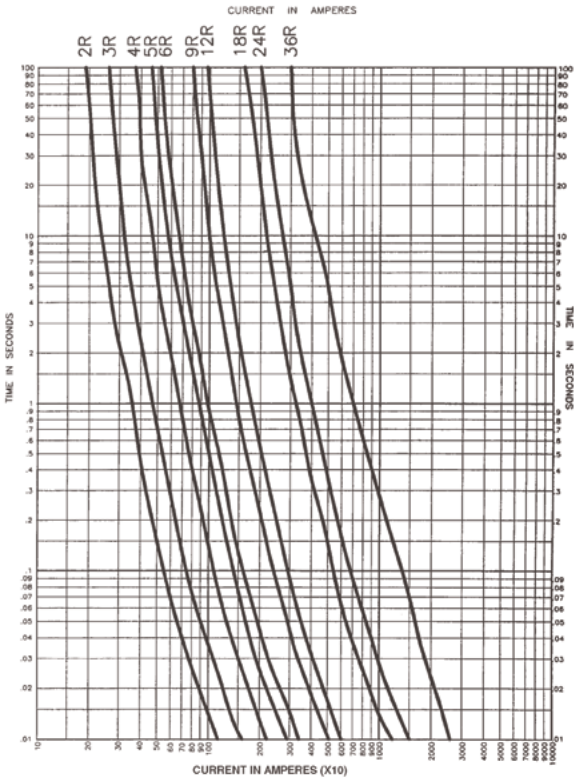
Also available with hookeye

Our fuses can also be designed to your specifications.

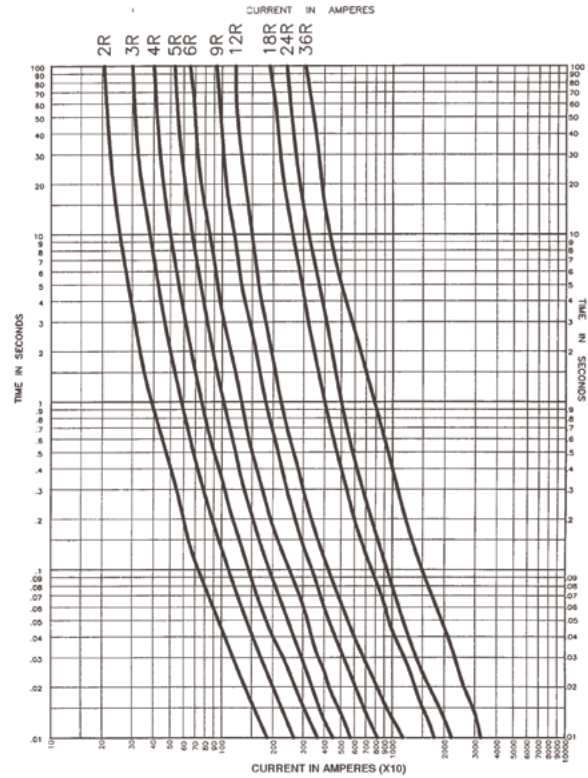
R-Rated / Motor Protection Fuses

Medium Voltage Fuses 4.8kV

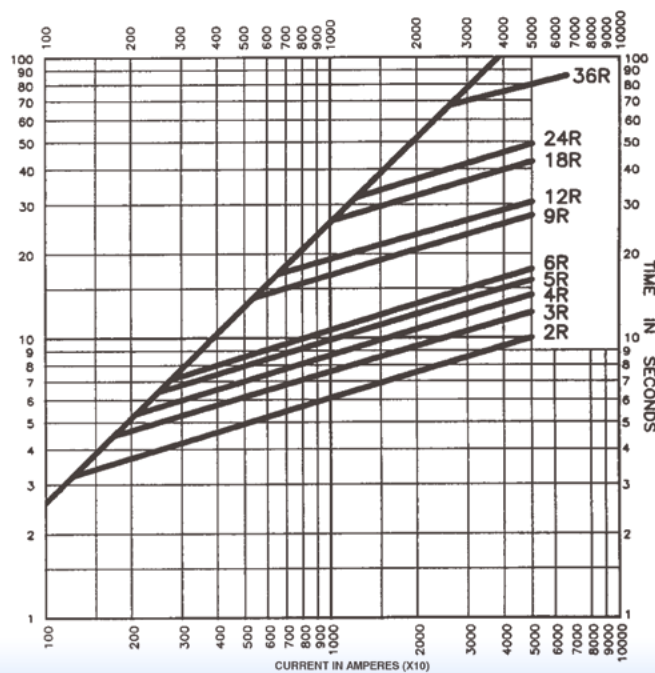
Time-Current Characteristic Curves—Minimum Melt



Total Clearing Curves



Current Limitation Curves



R-Rated / Motor Protection Fuses

Medium Voltage Fuses 7.2kV

- Short circuit protection of medium voltage motors & motor controllers
- An "R" rated fuse will melt in the range of 15 to 35 seconds at a value of current equal to 100 times the "R" rating
- With thermal striker

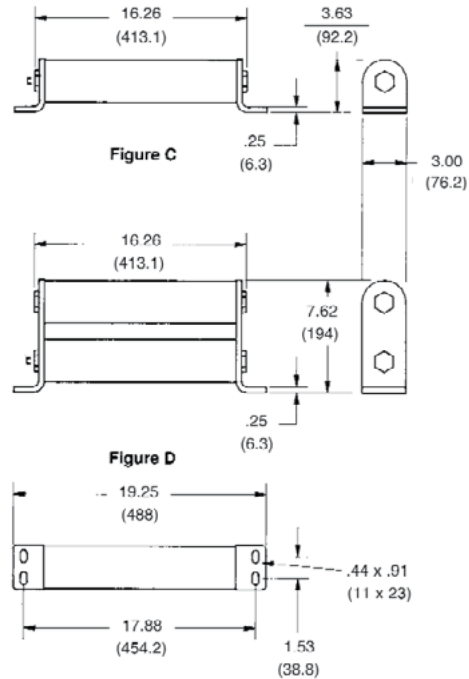
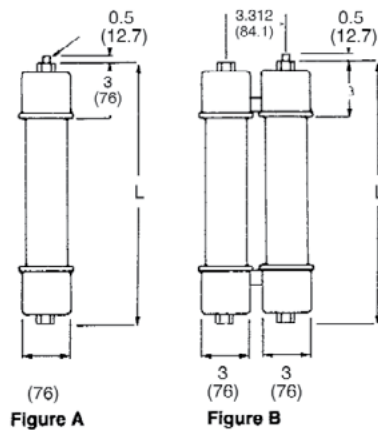


Fig. #	DENMAR Order #	Size	AMP Rating	Fuse Length (L)	Minimum Interrupting Rating	1 Phase Interrupting Rating Maximum Tested	
						RMS Asym	RMS Sym
A	RD1-2R70	2R	70A	15-7/8 (403mm)	190	80kA @ 7200V	50kA @ 7200V
	RD1-3R100	3R	100A		225		
	RD1-4R130	4R	130A		330		
	RD1-5R150	5R	150A		400		
	RD1-6R170	6R	170A		500		
	RD1-9R200	9R	200A		740		
	RD1-12R230	12R	230A		955		
B	RD2-18R390	18R	390A		1440		
	RD2-24R450	24R	450A		1910		

Type: Bolt-On Design

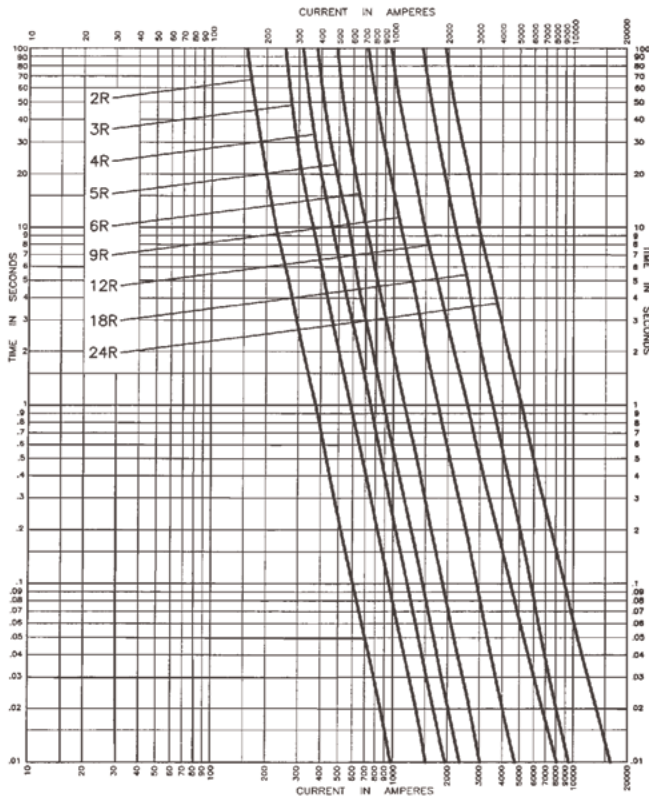
C	RD1-2R70B	2R	70A	15-7/8 (403mm)	190	80kA @ 7200V	50kA @ 7200V
	RD1-3R100B	3R	100A		225		
	RD1-4R130B	4R	130A		330		
	RD1-5R150B	5R	150A		400		
	RD1-6R170B	6R	170A		500		
	RD1-9R200B	9R	200A		740		
	RD1-12R230B	12R	230A		955		
D	RD2-18R390B	18R	390A		1440		
	RD2-24R450B	24R	450A		1910		

Our fuses can also be designed to your specifications.

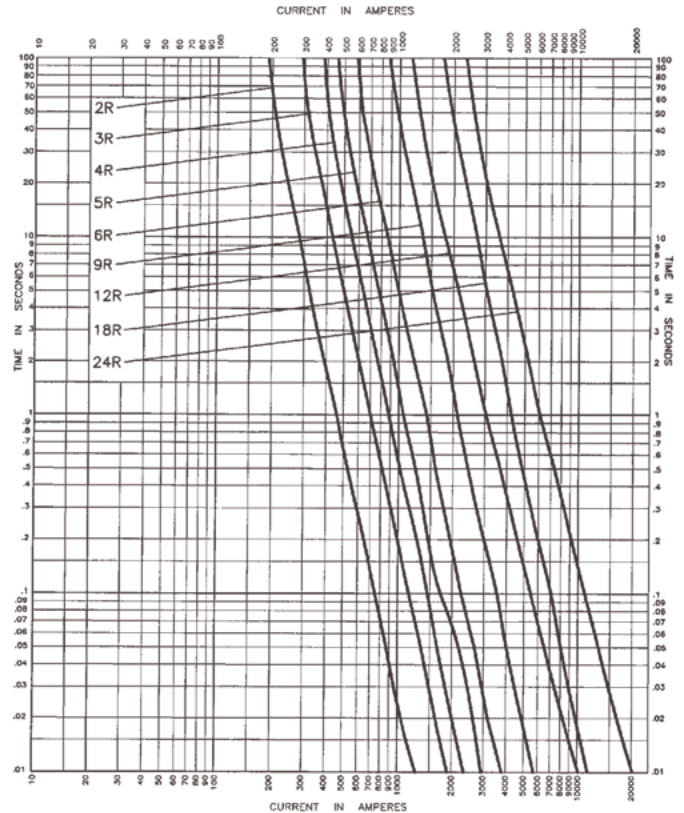
R-Rated / Motor Protection Fuses

Medium Voltage Fuses 7.2kV

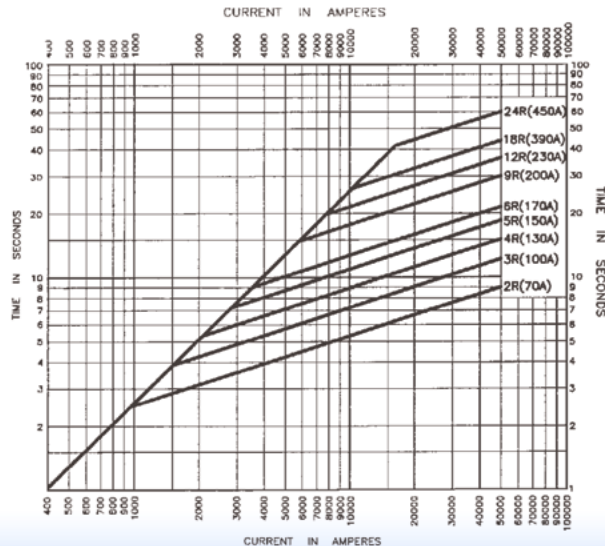
Time-Current Curve: Minimum Melt



Time-Current Curve: Total Clearing



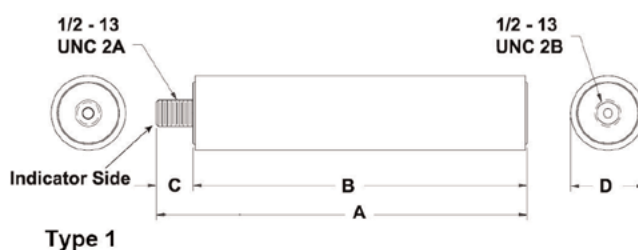
Peak Let-Through Curves



Capacitor Protection Fuses

1.5kV AC Max - Type 1

- 1500V AC, 25 - 200 Amps
- Interrupting Rating 40kA Sym
- High Interrupting Capacity, Current Limiting
- Designed to ANSI C37-41 Specs



DENCO Part #	Amp Rating	Melting I ² t	Max Clearing I ² t	Max Phase Interrupting Rating	Total Length Inches (mm) A	Tube Length Inches (mm) B	Ind. Housing Inches (mm) C	Body Dia. Inches (mm) D
D1.5C1-25	25	4	12	40kA@1500V AC RMS Sym	7.08 (179.8)	6.38 (162.1)	0.70 (17.8)	1.42 (36)
D1.5C1-50	50	16	50					
D1.5C1-60	60	25	70					
D1.5C1-75	75	35	110					
D1.5C1-90	90	50	150					
D1.5C1-100	100	65	200					
D1.5C1-110	110	80	250					
D1.5C1-120	120	100	310					
D1.5C1-125	125	125	330					
D1.5C1-130	130	125	330					
D1.5C1-135	135	130	350					
D1.5C1-140	140	130	350					
D1.5C1-150	150	150	390					
D1.5C1-160	160	185	480					
D1.5C1-165	165	185	480					
D1.5C1-175	175	225	600					
D1.5C1-200	200	300	800					

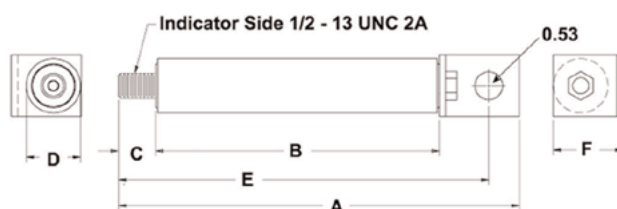
* Type 1 - Inner thread screw

Our fuses can also be designed to your specifications.

Capacitor Protection Fuses

1.5kV AC Max - Type 5

- 1500V AC, 50 - 200 Amps
- Interrupting Rating 40kA Sym
- High Interrupting Capacity, Current Limiting
- Designed to ANSI C37-41 Specs



Type 5

DENCO Part #	Amp Rating	Melting I²t	Max Clearing I²t	Max Phase Interrupting Rating	Total Length Inches (mm) A	Tube Length Inches (mm) B	Ind. Housing Inches (mm) C	Body Dia. Inches (mm) D	Bracket Dimensions Inches (mm) E F	
D1.5C5-50	50	13	27	40kA@1500V AC RMS Sym	8.11 (206)	5.74 (145.8)	0.75 (19.1)	1.10 (27.9)	7.49 (190.2)	1.25 (31.8)
D1.5C5-60	60	18	38							
D1.5C5-75	75	30	60							
D1.5C5-90	90	35	72							
D1.5C5-100	100	52	105							
D1.5C5-110	110	58	120							
D1.5C5-120	120	73	150							
D1.5C5-125	125	82	165							
D1.5C5-130	130	90	190							
D1.5C5-135	135	90	190							
D1.5C5-140	140	105	220							
D1.5C5-150	150	120	240							
D1.5C5-160	160	185	480							
D1.5C5-165	165	185	480							
D1.5C5-175	175	225	600							
D1.5C5-200	200	300	800							
					8.71 (221.1)	6.51 (165.2)	0.70 (17.8)	1.42 (36)	8.08 (205.2)	

* Type 5 - Screw to bolt (L bracket)

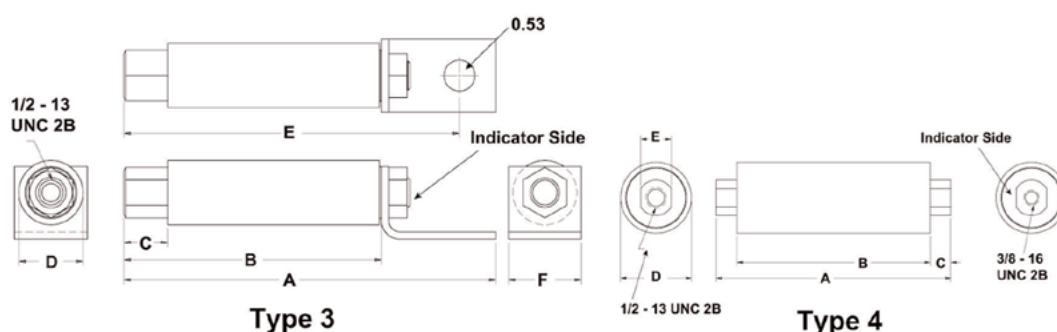
Our fuses can also be designed to your specifications.

Capacitor Protection Fuses

1kV & 1.5kV AC Max - Type 3 & 4

- 1000V - 1500V AC, 25 - 200 Amps
- Interrupting Rating 40kA - 50kA Sym
- High Interrupting Capacity, Current Limiting
- Designed to ANSI C37-41 Specs

1



DENCO Part #	Amp Rating	Melting I ² t	Max Clearing I ² t	Max Phase Interrupting Rating	Total Length Inches (mm) A	Tube Length Inches (mm) B	Ind. Housing Inches (mm) C	Body Dia. Inches (mm) D	Bracket Dimensions Inches (mm)	
									E	F
D1C3-25	25	4	10	50kA@1000V AC RMS Sym	6.38 (162.1)	4.42 (112.3)	0.75 (19.1)	1.10 (27.9)	5.76 (146.2)	1.25 (31.8)
D1C3-50	50	16	40							
D1C3-60	60	25	60							
D1C3-75	75	35	95							
D1C3-90	90	50	130							
D1C3-100	100	65	165							
D1C3-110	110	80	205							
D1C3-125	125	100	250							

* Type 3 - External female to bolt (L bracket)

D1.5C4-100	100	125	140	40kA@1500V AC RMS Sym	6.84 (173.6)	4.78 (121.4)	0.51 (13)	1.75 (27.9)	0.75 (19.1)	1.41 (35.8)
D1.5C4-110	110	125	180							
D1.5C4-125	125	130	230							
D1.5C4-130	130	130	230							
D1.5C4-140	140	150	285							
D1.5C4-150	150	185	315							
D1.5C4-160	160	185	360							
D1.5C4-175	175	225	410							
D1.5C4-200	200	300	560							

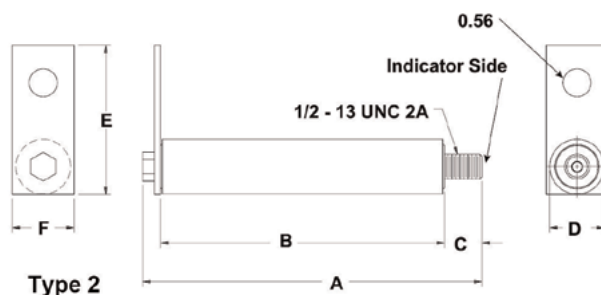
* Type 4 - External female to external female

Our fuses can also be designed to your specifications.

Capacitor Protection Fuses

1.5kV AC Max - Type 2

- 1500V AC, 25 - 200 Amps
- Interrupting Rating 40kA Sym
- High Interrupting Capacity, Current Limiting
- Designed to ANSI C37-41 Specs



DENCO Part #	Amp Rating	Melting I²t	Max Clearing I²t	Max Phase Interrupting Rating	Total Length Inches (mm) A	Tube Length Inches (mm) B	Ind. Housing Inches (mm) C	Body Dia. Inches (mm) D	Bracket Dimensions Inches (mm) E F	
D1.5C2-25	25	3.2	6.5	40kA@1500V AC RMS Sym	6.84 (173.6)	5.73 (145.5)	1.42 (36)	1.10 (27.9)	3 (76.2)	1.25 (31.8)
D1.5C2-50	50	13	27							
D1.5C2-60	60	18	38							
D1.5C2-75	75	30	60							
D1.5C2-90	90	35	72							
D1.5C2-100	100	52	105							
D1.5C2-110	110	58	120							
D1.5C2-120	120	73	150							
D1.5C2-125	125	82	165							
D1.5C2-130	130	90	190							
D1.5C2-135	135	90	190							
D1.5C2-140	140	105	220							
D1.5C2-150	150	120	240							
D1.5C2-160	160	185	480							
D1.5C2-165	165	185	480							
D1.5C2-175	175	225	600							
D1.5C2-200	200	300	800							
					7.48 (189.9)	6.37 (161.8)	0.75 (19.1)	1.42 (36)		

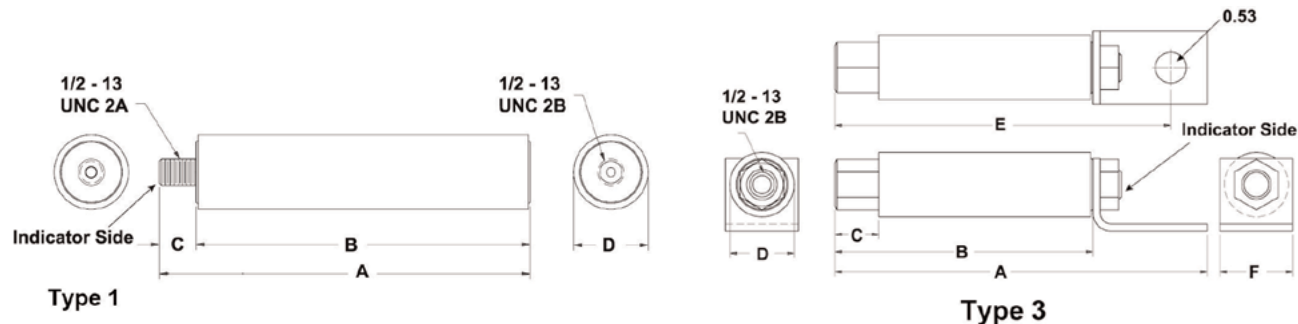
* Type 2 - Screw to bolt (flat bracket)

Our fuses can also be designed to your specifications.

Capacitor Protection Fuses

2.5kV AC Max - Type 1 & 3

- 2500V AC, 25 - 200 Amps
- Interrupting Rating 50kA Sym
- High Interrupting Capacity, Current Limiting
- Designed to ANSI C37-41 Specs



DENCO Part #	Amp Rating	Melting I _t	Max Clearing I _t	Max Phase Interrupting Rating	Total Length Inches (mm) A	Tube Length Inches (mm) B	Ind. Housing Inches (mm) C	Body Dia. Inches (mm) D	Bracket Dimensions Inches (mm) E F	
D2.5C1-25	25	3	9	50kA@2500V AC RMS Sym	7.67 (194.8)	6.92 (175.8)	0.75 (19.1)	1.42 (36)	N/A	N/A
D2.5C1-50	50	12	35							
D2.5C1-65	65	18	60							
D2.5C1-75	75	25	85							
D2.5C1-80	80	25	85							
D2.5C1-100	100	45	150							
D2.5C1-110	110	60	190							
D2.5C1-125	125	75	240							
D2.5C1-135	135	115	395	40kA@2500V AC RMS Sym	7.67 (194.8)	6.92 (175.8)	0.75 (19.1)	1.42 (36)	N/A	N/A
D2.5C1-150	150	130	460							
D2.5C1-165	165	150	350							
D2.5C1-175	175	165	440							
D2.5C1-200	200	225	500							

* Type 1 - Inner thread screw

D2.5C3-25	25	3	9	50kA@2500V AC RMS Sym	9.41 (239)	6.66 (169.2)	0.75 (19.1)	1.10 (27.9)	8.79 (223.2)	1.25 (31.8)
D2.5C3-50	50	12	35							
D2.5C3-65	65	18	60							
D2.5C3-75	75	25	85							
D2.5C3-80	80	25	85							
D2.5C3-100	100	45	150							
D2.5C3-110	110	60	190							
D2.5C3-125	125	75	240							

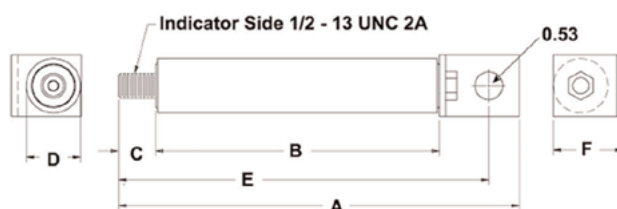
* Type 3 - External Female to Bolt (L Bracket)

Our fuses can also be designed to your specifications.

Capacitor Protection Fuses

2.5kV AC Max - Type 5

- 2500V AC, 25 - 200 Amps
- Interrupting Rating 50kA Sym
- High Interrupting Capacity, Current Limiting
- Designed to ANSI C37-41 Specs



Type 5

DENCO Part #	Amp Rating	Melting I _t	Max Clearing I _t	Max Phase Interrupting Rating	Total Length Inches (mm) A	Tube Length Inches (mm) B	Ind. Housing Inches (mm) C	Body Dia. Inches (mm) D	Bracket Dimensions Inches (mm) E F	
D2.5C5-25	25	3	9	50kA@2500V AC RMS Sym	9.11 (231.4)	6.74 (171.2)	0.75 (19.1)	1.10 (27.9)	8.49 (215.6)	1.25 (31.8)
D2.5C5-50	50	12	35							
D2.5C5-65	65	18	60							
D2.5C5-75	75	25	85							
D2.5C5-80	80	25	85							
D2.5C5-100	100	45	150							
D2.5C5-110	110	60	190							
D2.5C5-125	125	75	240							
D2.5C5-135	135	115	395	40kA@2500V AC RMS Sym	9.29 (236)	6.92 (175.8)		1.42 (36)	8.67 (220.2)	
D2.5C5-150	150	130	460							
D2.5C5-165	165	150	350							
D2.5C5-175	175	165	440							
D2.5C5-200	200	225	500							

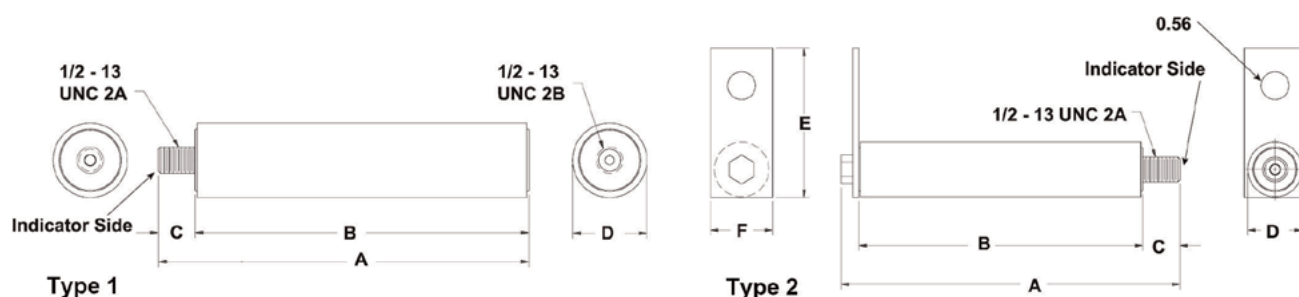
* Type 5 - Screw to bolt (L bracket)

Our fuses can also be designed to your specifications.

Capacitor Protection Fuses

3kV AC Max - Type 1 & 2

- 3000V AC, 50 - 175 Amps
- Interrupting Rating 50kA Sym
- High Interrupting Capacity, Current Limiting
- Designed to ANSI C37-41 Specs



DENCO Part #	Amp Rating	Melting I _t	Max Clearing I _t	Max Phase Interrupting Rating	Total Length Inches (mm) A	Tube Length Inches (mm) B	Ind. Housing Inches (mm) C	Body Dia. Inches (mm) D	Bracket Dimensions Inches (mm) E F	
D3.0C1-50	50	12	35	50kA@3000V AC RMS Sym	10.16 (258.1)	9.33 (237)	0.75 (19.1)	1.10 (27.9)	N/A	N/A
D3.0C1-60	60	18	65							
D3.0C1-75	75	26	80							
D3.0C1-90	90	45	140							
D3.0C1-100	100	45	140					1.42 (36)	N/A	N/A
D3.0C1-115	115	60	200							
D3.0C1-125	125	75	260							
D3.0C1-130	130	75	260							
D3.0C1-150	150	105	350							
D3.0C1-175	175	165	530							

* Type 1 - Inner thread screw

D3.0C2-50	50	12	35	50kA@3000V AC RMS Sym	10.59 (269)	9.33 (237)	0.75 (19.1)	1.42 (36)	3 (76.2)	1.25 (31.8)
D3.0C2-60	60	18	65							
D3.0C2-75	75	26	80							
D3.0C2-95	95	45	140							
D3.0C2-100	100	45	140							
D3.0C2-115	115	60	200							
D3.0C2-125	125	75	260							
D3.0C2-130	130	75	260							
D3.0C2-150	150	105	350							
D3.0C2-175	175	165	530							

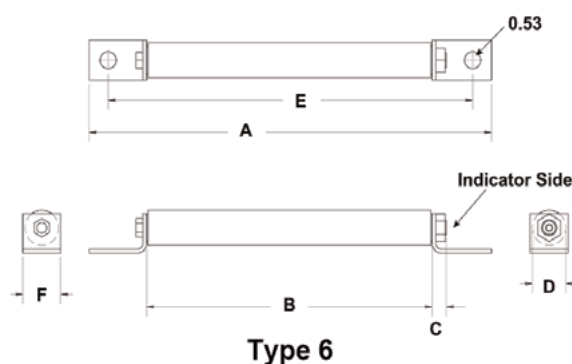
* Type 2 - Screw to Bolt (Flat Bracket)

Our fuses can also be designed to your specifications.

Capacitor Protection Fuses

3kV AC Max - Type 6

- 3000V AC, 50 - 175 Amps
- Interrupting Rating 50kA Sym
- High Interrupting Capacity, Current Limiting
- Designed to ANSI C37-41 Specs



DENCO Part #	Amp Rating	Melting I _t	Max Clearing I _t	Max Phase Interrupting Rating	Total Length Inches (mm) A	Tube Length Inches (mm) B	Ind. Housing Inches (mm) C	Body Dia. Inches (mm) D	Bracket Dimensions Inches (mm) E F	
D3.0C6-50	50	12	35	50kA@3000V AC RMS Sym	13.27 (337.1)	9.41 (239)	0.47 (11.9)	1.42 (36)	12.02 (305.2)	1.25 (31.8)
D3.0C6-60	60	18	65							
D3.0C6-75	75	26	80							
D3.0C6-95	95	45	140							
D3.0C6-100	100	45	140							
D3.0C6-115	115	60	200							
D3.0C6-125	125	75	260							
D3.0C6-130	130	75	260							
D3.0C6-150	150	105	350							
D3.0C6-175	175	165	530							

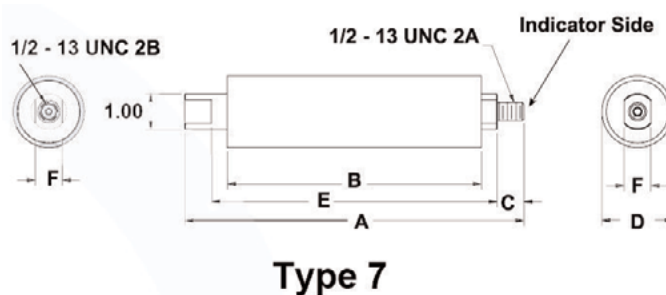
* Type 6 - Bolt (L Bracket) to Bolt (L Bracket)

Our fuses can also be designed to your specifications.

Capacitor Protection Fuses

4.3kV AC Max - Type 7

- 4300V AC, 6 - 100 Amps
- Interrupting Rating 65kA Sym
- High Interrupting Capacity, Current Limiting
- Designed to ANSI C37-41 Specs



DENCO Part #	Amp Rating	Melting I ² t	Max Clearing I ² t	Max Phase Interrupting Rating	Total Length Inches (mm) A	Tube Length Inches (mm) B	Ind. Housing Inches (mm) C	Body Dia. Inches (mm) D	Bracket Dimensions Inches (mm) E F	
D4.3C7-6	6	0.4	2.49	65kA@4300V AC RMS Sym	9.50 (241.3)	7.12 (180.8)	0.75 (19.1)	2 (50.8)	8 (203.2)	0.75 (19.1)
D4.3C7-8	8	0.73	4.31							
D4.3C7-10	10	1.14	6.38							
D4.3C7-12	12	1.6	8.64							
D4.3C7-18	18	3	15							
D4.3C7-20	20	4.5	22.1							
D4.3C7-25	25	6.5	31.2							
D4.3C7-30	30	7.7	36.2							
D4.3C7-35	35	9	41.4							
D4.3C7-45	45	12	54.6							
D4.3C7-50	50	15	68							
D4.3C7-65	65	29	84							
D4.3C7-75	75	36	100							
D4.3C7-80	80	42	120							
D4.3C7-90	90	58	160							
D4.3C7-100	100	66	180							

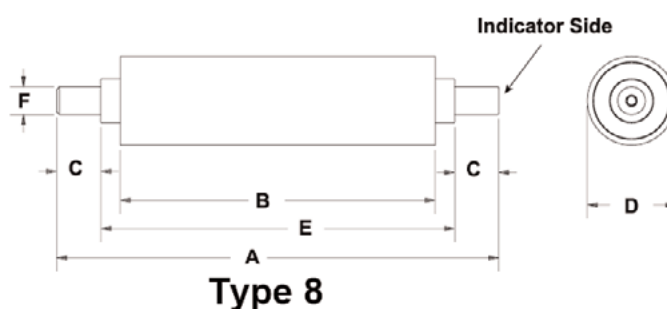
* Type 7 - External Female to Bolt

Our fuses can also be designed to your specifications.

Capacitor Protection Fuses

4.3kV AC Max - Type 8

- 4300V AC, 6 - 100 Amps
- Interrupting Rating 65kA Sym
- High Interrupting Capacity, Current Limiting
- Designed to ANSI C37-41 Specs



DENCO Part #	Amp Rating	Melting I ² t	Max Clearing I ² t	Max Phase Interrupting Rating	Total Length Inches (mm)		Tube Length Inches (mm)		Ind. Housing Inches (mm)		Body Dia. Inches (mm)		Bracket Dimensions Inches (mm)	
					A		B		C		D		E	F
D4.3C8-6	6	0.4	2.49	65kA@4300V AC RMS Sym	10 (254)		7.12 (180.8)		1 (25.4)		2 (50.8)		8 (203.2)	0.63 (15.9)
D4.3C8-8	8	0.73	4.31											
D4.3C8-10	10	1.14	6.38											
D4.3C8-12	12	1.6	8.64											
D4.3C8-18	18	3	15											
D4.3C8-20	20	4.5	22.1											
D4.3C8-25	25	6.5	31.2											
D4.3C8-30	30	7.7	36.2											
D4.3C8-35	35	9	41.4											
D4.3C8-45	45	12	54.6											
D4.3C8-50	50	15	68											
D4.3C8-65	65	29	84											
D4.3C8-75	75	36	100											
D4.3C8-80	80	42	120											
D4.3C8-90	90	58	160											
D4.3C8-100	100	66	180											

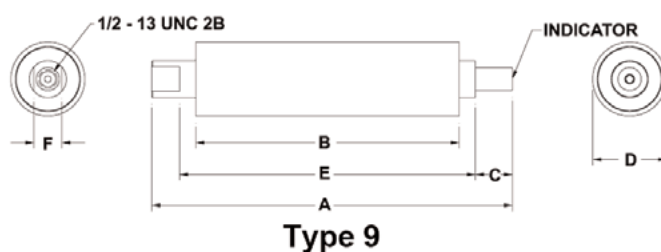
* Type 8 - Tube to Tube

Our fuses can also be designed to your specifications.

Capacitor Protection Fuses

4.3kV AC Max - Type 9

- 4300V AC, 6 - 100 Amps
- Interrupting Rating 65kA Sym
- High Interrupting Capacity, Current Limiting
- Designed to ANSI C37-41 Specs



DENCO Part #	Amp Rating	Melting I²t	Max Clearing I²t	Max Phase Interrupting Rating	Total Length Inches (mm) A	Tube Length Inches (mm) B	Ind. Housing Inches (mm) C	Body Dia. Inches (mm) D	Bracket Dimensions Inches (mm) E F	
D4.3C9-6	6	0.4	2.49	65kA@4300V AC RMS Sym	9.75 (247.7)	7.12 (180.8)	1 (25.4)	2 (50.8)	8 (203.2)	0.63 (15.9)
D4.3C9-8	8	0.73	4.31							
D4.3C9-10	10	1.14	6.38							
D4.3C9-12	12	1.6	8.64							
D4.3C9-18	18	3	15							
D4.3C9-20	20	4.5	22.1							
D4.3C9-25	25	6.5	31.2							
D4.3C9-30	30	7.7	36.2							
D4.3C9-35	35	9	41.4							
D4.3C9-45	45	12	54.6							
D4.3C9-50	50	15	68							
D4.3C9-65	65	29	84							
D4.3C9-75	75	36	100							
D4.3C9-80	80	42	120							
D4.3C9-90	90	58	160							
D4.3C9-100	100	66	180							

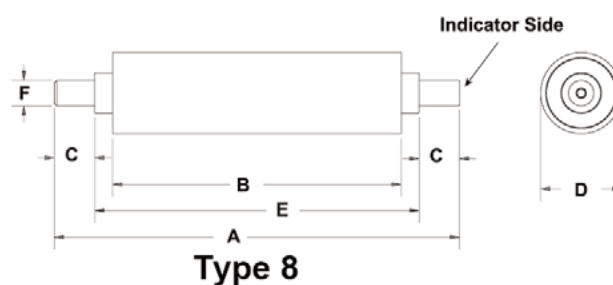
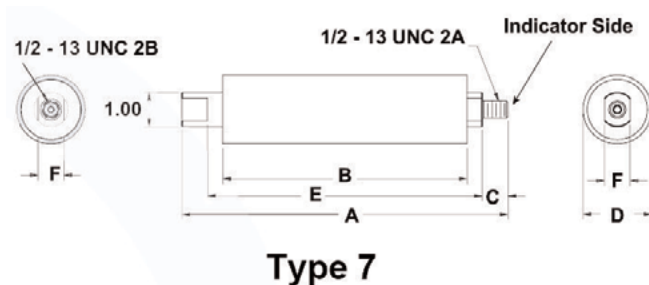
* Type 9 - External Female to Tube

Our fuses can also be designed to your specifications.

Capacitor Protection Fuses

5.5kV AC Max - Type 7 & 8

- 5500V AC, 6 - 75 Amps
- Interrupting Rating 65kA Sym
- High Interrupting Capacity, Current Limiting
- Designed to ANSI C37-41 Specs



DENCO Part #	Amp Rating	Melting I ² t	Max Clearing I ² t	Max Phase Interrupting Rating	Total Length Inches (mm) A	Tube Length Inches (mm) B	Ind. Housing Inches (mm) C	Body Dia. Inches (mm) D	Bracket Dimensions Inches (mm) E F	
D5.5C7-6	6	0.4	2.49	65kA@5500V AC RMS Sym	9.50 (241.3)	7.12 (180.8)	0.75 (19.1)	2 (50.8)	8 (203.2)	0.75 (19.1)
D5.5C7-8	8	0.73	4.31							
D5.5C7-10	10	1.14	6.38							
D5.5C7-12	12	1.6	8.64							
D5.5C7-18	18	3	15							
D5.5C7-20	20	4.5	22.1							
D5.5C7-25	25	6.5	31.2							
D5.5C7-30	30	7.7	36.2							
D5.5C7-35	35	9	41.4	50kA@5500V AC RMS Sym	9.50 (241.3)	7.12 (180.8)	0.75 (19.1)	2 (50.8)	8 (203.2)	0.75 (19.1)
D5.5C7-40	40	12	54.6							
D5.5C7-50	50	15	68							
D5.5C7-65	65	35	156							
D5.5C7-75	75	43	186							

* Type 7 - External Female to Bolt

D5.5C8-6	6	0.4	2.49	65kA@4300V AC RMS Sym	10 (254)	7.12 (180.8)	1 (25.4)	2 (50.8)	8 (203.2)	0.63 (15.9)
D5.5C8-8	8	0.73	4.31							
D5.5C8-10	10	1.14	6.38							
D5.5C8-12	12	1.6	8.64							
D5.5C8-18	18	3	15							
D5.5C8-20	20	4.5	22.1							
D5.5C8-25	25	6.5	31.2							
D5.5C8-30	30	7.7	36.2							
D5.5C8-35	35	9	41.4	50kA@5500V AC RMS Sym	10 (254)	7.12 (180.8)	1 (25.4)	2 (50.8)	8 (203.2)	0.63 (15.9)
D5.5C8-40	40	12	54.6							
D5.5C8-50	50	15	68							
D5.5C8-65	65	35	156							
D5.5C8-75	75	43	186							

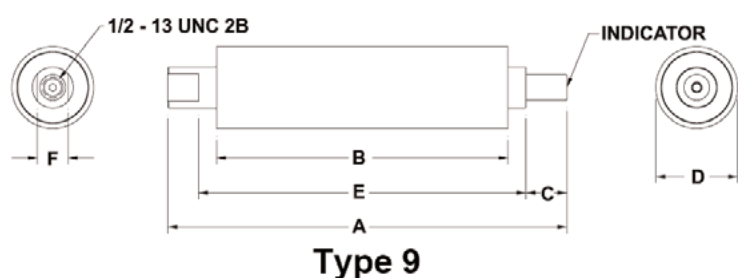
* Type 8 - Tube to Tube

Our fuses can also be designed to your specifications.

Capacitor Protection Fuses

5.5kV AC Max - Type 9

- 5500V AC, 6 - 75 Amps
- Interrupting Rating 65kA Sym
- High Interrupting Capacity, Current Limiting
- Designed to ANSI C37-41 Specs



DENCO Part #	Amp Rating	Melting I ² t	Max Clearing I ² t	Max Phase Interrupting Rating	Total Length Inches (mm) A	Tube Length Inches (mm) B	Ind. Housing Inches (mm) C	Body Dia. Inches (mm) D	Bracket Dimensions Inches (mm) E F	
D5.5C9-6	6	0.4	2.49	65kA@5500V AC RMS Sym	9.75 (247.7)	7.12 (180.8)	1 (2.54)	2 (50.8)	8 (203.2)	0.63 (15.9)
D5.5C9-8	8	0.73	4.31							
D5.5C9-10	10	1.14	6.38							
D5.5C9-12	12	1.6	8.64							
D5.5C9-18	18	3	15							
D5.5C9-20	20	4.5	22.1							
D5.5C9-25	25	6.5	31.2							
D5.5C9-30	30	7.7	36.2							
D5.5C9-35	35	9	41.4							
D5.5C9-40	40	12	54.6	50kA@5500V AC RMS Sym	9.75 (247.7)	7.12 (180.8)	1 (2.54)	2 (50.8)	8 (203.2)	0.63 (15.9)
D5.5C9-50	50	15	68							
D5.5C9-65	65	35	156							
D5.5C9-75	75	43	186							

* Type 9 - External Female to Tube

Our fuses can also be designed to your specifications.

Capacitor Protection Fuses

Type DMNX

DMNX CURRENT LIMITING, CAPACITOR, Clip style

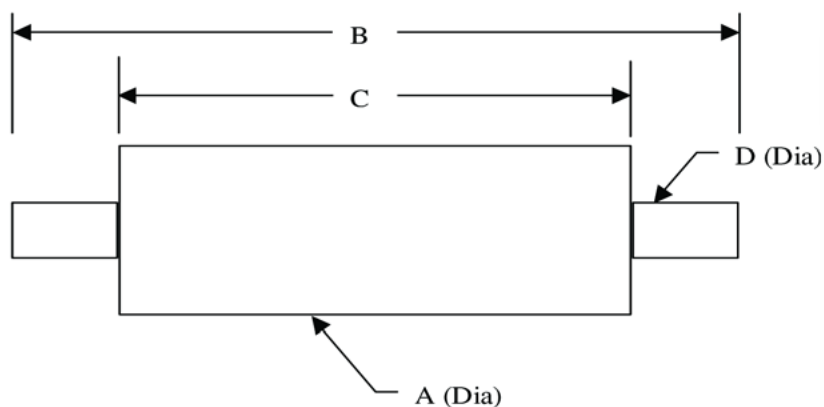
2.8kV to 38kV, 1C to 140C Amps, 50kA I.C.

Voltage (Max)	Current Rms Amps	Int. Rating Asym. Amps	DenMar Cat. #	DIMENSIONS inches(mm)			
				A(Dia.)	B	C	D(Dia.)
2.8kV	1C to 45C	50k	DMNX2-1C - 45C	2.25(57)	10(254)	8(203)	0.625(16)
	50C to 100C		DMNX2-50C - 100C				
4.3kV	18C to 35C		DMNX4-18C - 35C	1.13(28.6)			
	40C to 100C		DMNX4-40C - 100C	2(51)			
5.5kV	6C to 18C		DMNX5-6C - 18C	1.13(28.6)			
	20C to 75C		DMNX5-20C - 75C	2(51)			
8.3kV	1C to 12C		DMNX8-1C - 12C	1.13(28.6)			
	15C to 40C		DMNX8-15C - 40C	2(51)			
	50C to 140C		DMNX8-50C - 140C	3.44(87.3)			
	15.5kV		1C to 4.5C	DMNX15-1C - 4.5C	1.13(28.6)		
6C to 40C			DMNX15-6C - 40C	2(51)			
50C to 140C			DMNX15-50C - 140C	3.44(87.3)			
23kV			3C to 40C	DMNX23-3C - 40C	2(51)		
	50C to 140C		DMNX23-50C - 140C				
27kV	6C to 50C		DMNX27-6C - 50C	3.44(87.3)	27.38(695)	25(635)	
38kV	6C to 50C		DMNX-6C - 50C		35.37(900)		

NOTE: Body diameter dimension listed is maximum.

NOTE: Threaded end studs also available.

NOTE: The fuse will melt in 1000 seconds at some current value between 1.7 and 2.4 times the C number.



Capacitor Protection Fuses

Type EJ-5 / EJO-5

EJ-5 / EJO-5 CURRENT LIMITING, CAPACITOR

4.8kV and 8.3kV, 8C to 80C Amps, 50kA I.C.

Voltage (Nom.)	Current Rms Amps	Int. Rating Asym. Amps	DenMar Cat #	DIMENSIONS inches(mm)				
				Fig.	A(Dia.)	B	C(Clip Ctr)	D(Dia.)
4800	12C to 20C	60k	D4J5-12C to 20C	1	1.56(40)	12.75(324)	11.75(298)	.625(16)
	25C to 80C	80k	D4J5-25C to 80C	2	2(51)	14(356)	12(305)	-
8320	8C	60k	D8J5-8C	1	1.56(40)	13.75(349)	12.75(324)	.625(16)
	15C to 40C	80k	D8J5-15C to 40C	2	2(51)	14(356)	12(305)	-

NOTE: Body diameter dimension listed is maximum.

NOTE: The fuse will melt in 1000 seconds at some current value between 1.7 and 2.4 times the C number.

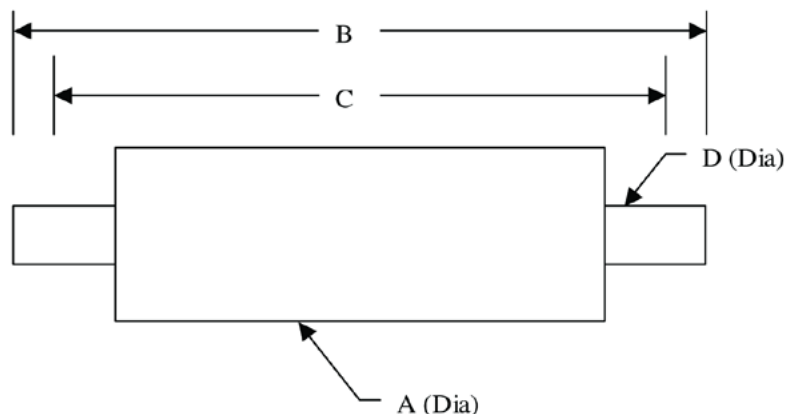
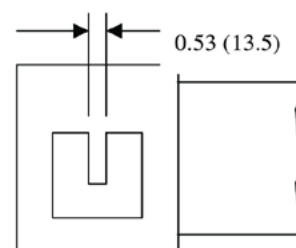
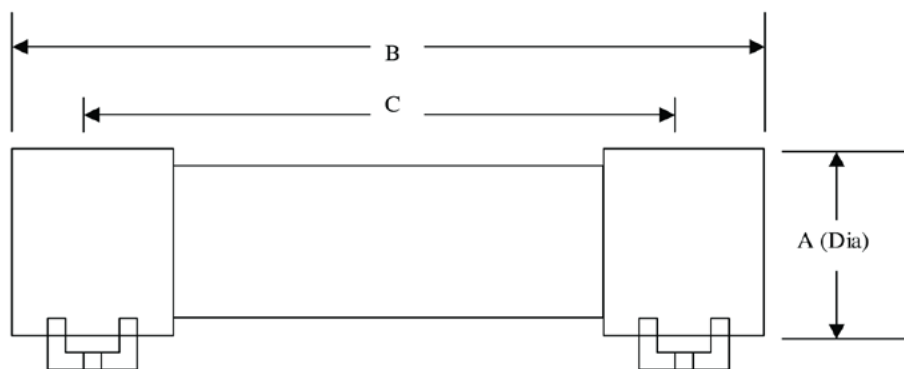


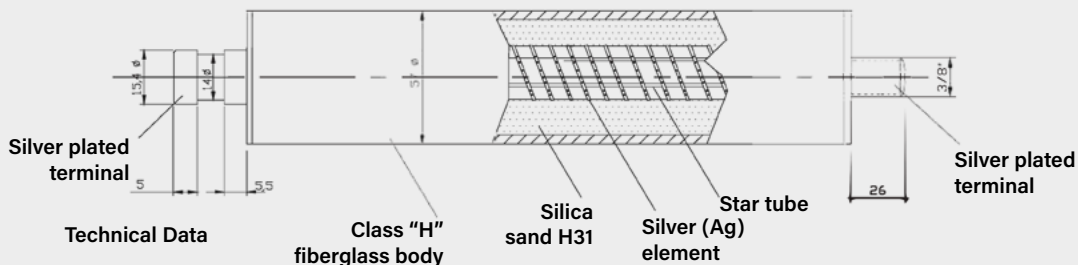
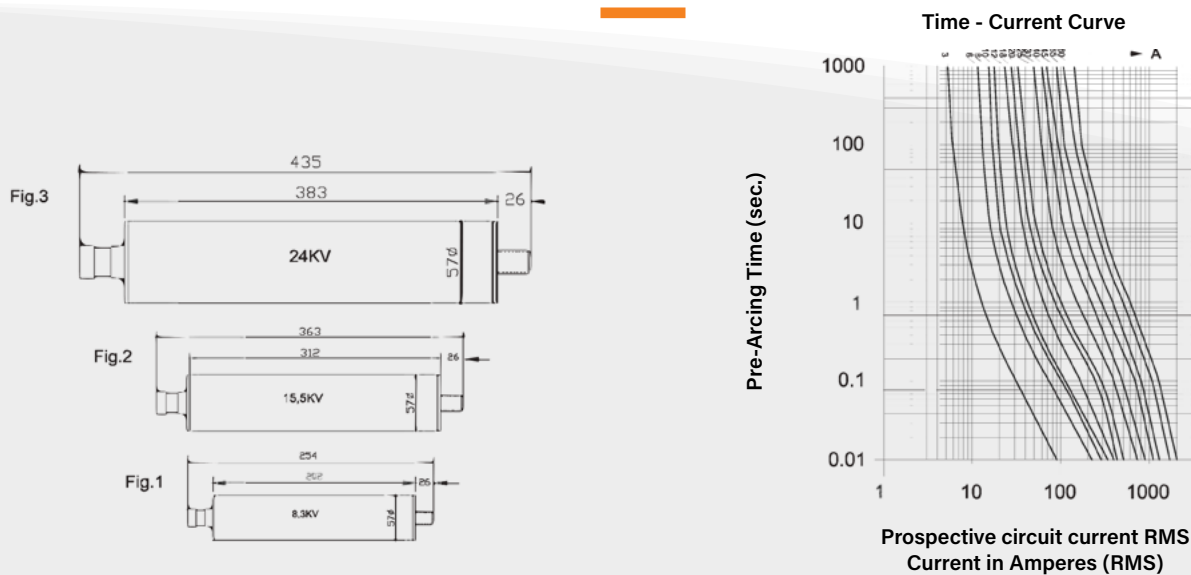
Fig. 1. EJ-5 capacitor fuse for use indoors or inside an enclosure only.



Standard 1/2" hex. Head bolt recommended for mounting

Load Break Disconnect Fuses

Tested and Approved by CESI - IPH Nr. 23152130449.0258



Voltage	Amp.	Type	1 st melt	1 st Total	I.R.	Arc voltage	Fig.
8,3KV	3	E8 - 3	5,76	190	30KA	30KV	1
	6	E8 - 6	23	759	30KA	32KV	
	8	E8 - 8	41	1354	30KA	29KV	
	10	E8 - 10	64	2116	30KA	29KV	
	12	E8 - 12	92	3047	30KA	26KV	
	18	E8 - 18	207	6855	30KA	26KV	
	20	E8 - 20	280	8380	30KA	26KV	
	25	E8 - 25	400	13225	30KA	26KV	
	30	E8 - 30	576	19044	30KA	26KV	
	40	E8 - 40	1024	33856	30KA	26KV	
	45	E8 - 45	1296	42849	30KA	26KV	
	65	E8 - 65	2704	89401	30KA	23KV	
15,5KV	80	E8 - 80	4096	135424	30KA	22KV	2
	4	E15 - 4	5,76	190	30KA	50KV	
	6	E15 - 6	23	759	30KA	54KV	
	8	E15 - 8	41	1354	30KA	46KV	
	10	E15 - 10	64	2116	30KA	46KV	
	12	E15 - 12	92	3047	30KA	43KV	
	18	E15 - 18	207	6855	30KA	41KV	
	20	*E15 - 20	280	8380	30KA	38KV	
	25	E15 - 25	400	13225	30KA	38KV	
	30	E15 - 30	576	19044	30KA	38KV	
	40	E15 - 40	1024	33856	30KA	38KV	
	50	E15 - 50	1600	52900	30KA	38KV	
24KV	4	E24 - 4	5,76	190	30KA	67KV	3
	6	E24 - 6	23	759	30KA	61KV	
	8	E24 - 8	41	1354	30KA	60KV	
	10	E24 - 10	64	2116	30KA	60KV	
	12	E24 - 12	92	3047	30KA	60KV	
	18	E24 - 18	207	6855	30KA	60KV	
	20	E24 - 20	280	8380	30KA	60KV	
	25	E24 - 25	400	13225	30KA	60KV	
	30	E24 - 30	576	19044	30KA	60KV	
	40	E24 - 40	1024	33856	30KA	60KV	
	50	E24 - 50	1600	52900	30KA	60KV	

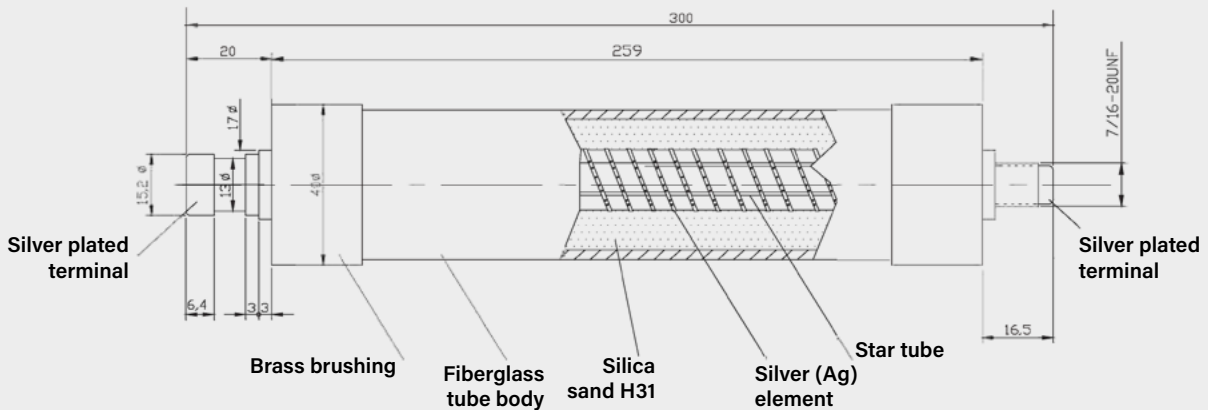
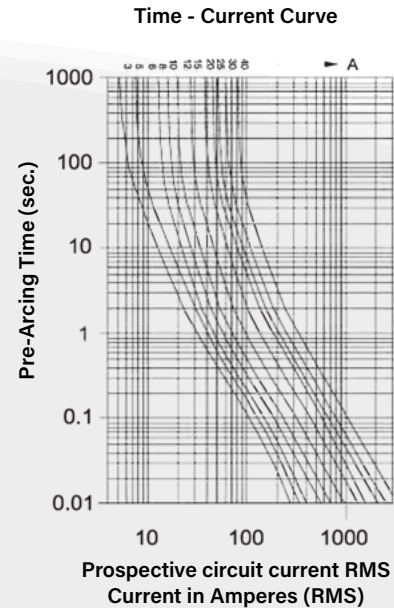
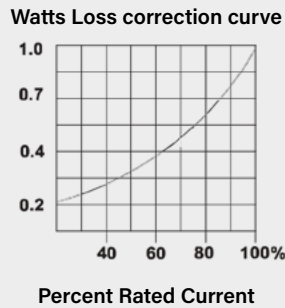
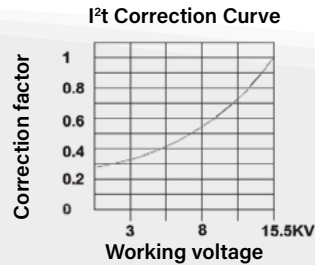
Loadbreak Elbow Current-Limiting Fuse

Tested & Approved by CESI-IPH Nr. 23152130449.0258

25kV Nom. Sys. Voltage
15.5 kV Nom. Fuse Voltage

**Similar Cooper
FEF155A020EA**

FE CURRENT • LIMITING
FUSED ELBOW FUSE
FOR 25KV CLASS
20A 15.5KV MAX.
50KA INTERRUPTING RATING

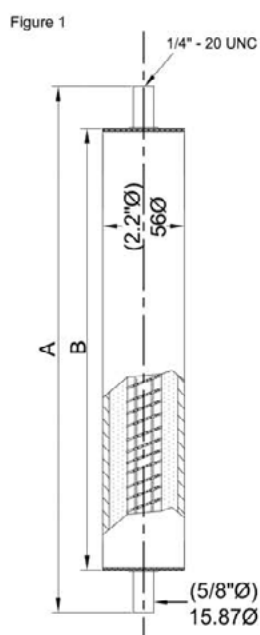


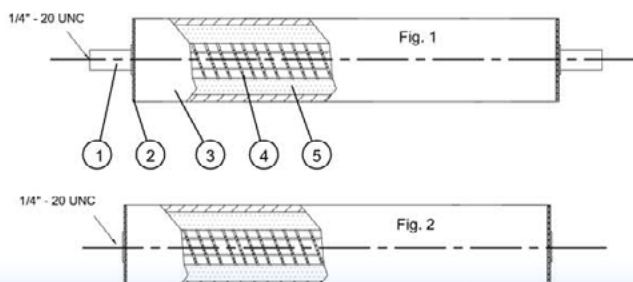
Technical Data

Voltage	Amp.	Type	I ² t melt	I ² t Total	I.R.	Arc voltage
8.3 / 13KV	4	4A / 5120-8	22	50	30KA	30KV
	6	6A / 5120-8	71	113	30KA	32KV
	8	8A / 5120-8	94	202	30KA	29KV
	10	10A / 5120-8	140	320	30KA	29KV
	12	12A / 5120-8	199	455	30KA	26KV
	18	18A / 5120-8	450	1025	30KA	26KV
	20	20A / 5120-8	560	1267	30KA	26KV
	25	25A / 5120-8	870	1980	30KA	26KV
	30	30A / 5120-8	1253	2851	30KA	26KV
	40	40A / 5120-8	2240	3780	30KA	26KV
15,5 / 24KV	4	4A / 5120-15	22	50	30KA	67KV
	6	6A / 5120-15	71	113	30KA	65KV
	8	8A / 5120-15	94	202	30KA	65KV
	*10	10A / 5120-15	140	320	30KA	62KV
	12	12A / 5120-15	199	455	30KA	62KV
	18	18A / 5120-15	450	1025	30KA	62KV
	20	20A / 5120-15	560	1267	30KA	62KV

Dimensional For Oil-Submersible Current Limiting Back-Up Fuse

Standard ANSI/IEEE C37.41-2016

Main Dimension - Transformer Back-up Fuse	Fuse Code	Current Rating (A)	Dimension		Min Melt I _T (A ² s)	Max Clear I _T (A ² s)	Figure	Fuse Voltage (KV)	Peak arc Voltage (KV)	Max. interrupting Capacity (KA)		
			A	B								
Figure 1 	DEFTH8/30	30	7.2 (184)	6.0 (153)			1	8.3	24	50		
	DEFTH8/40	40	7.2 (184)	6.0 (153)								
	DEFTH8/50	50	7.2 (184)	6.0 (153)								
	DEFTH8/65	65	7.2 (184)	6.0 (153)								
	DEFTH8/80	80	9.6 (245)	8.5 (215)								
	DEFTH8/100	100	9.6 (245)	8.5 (215)								
	DEFTH8/125	125	9.6 (245)	8.5 (215)								
	DEFTH8/150	150	----	11.4 (290)								
	DEFTH8/165	165	----	11.4 (290)			2					
	DEFTH8/180	180	----	11.4 (290)								
	DEFTH8/200	200	----	11.4 (290)								
	DEFTH8/250	250	----	11.4 (290)								
	----	----	----	----								
	----	----	----	----								
	----	----	----	----								
	----	----	----	----								
DEFTH15/30	30	9.6 (245)	8.5 (215)			1	15.5	49	50			
DEFTH15/40	40	9.6 (245)	8.5 (215)									
DEFTH15/50	50	9.6 (245)	8.5 (215)									
DEFTH15/65	65	9.6 (245)	8.5 (215)									
DEFTH15/80	80	14.2 (360)	12.9 (329)									
DEFTH15/100	100	14.2 (360)	12.9 (329)									
DEFTH15/125	125	16.9 (430)	15.6 (397)			2						
DEFTH15/150	150	----	16.0 (406)									
DEFTH15/160	160	----	16.0 (406)									
DEFTH15/180	180	----	16.0 (406)									
----	----	----	----									
----	----	----	----									
DEFTH23/30	30	15.6 (396)	14.4 (365)			1				23	72	30
DEFTH23/40	40	15.6 (396)	14.4 (365)									
DEFTH23/50	50	15.6 (396)	14.4 (365)									
DEFTH23/65	65	15.6 (396)	14.4 (365)									
DEFTH23/80	80	16.9 (430)	15.6 (398)									
DEFTH23/100	100	16.9 (430)	15.6 (398)									
DEFTH23/125	125	----	19.0 (482)			2						
DEFTH23/150	150	----	19.0 (482)									
DEFTH23/165	165	----	19.0 (482)									
----	----	----	----									

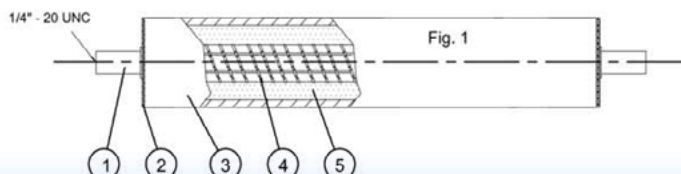


5	Silica Sand Filler	H-31 / 40-mesh	---
4	Element	---	---
3	Fiberglass / Epoxy Tube	---	1
2	Epoxy Adhesive	---	---
1	Contact	---	2

Dimensional For Oil-Submersible Current Limiting Back-Up Fuse

Standard ANSI/IEEE C37.41-2016

Main Dimension - Transformer Back-up Fuse	Fuse Code	Current Rating (A)	Dimension		Min Melt I _t (A ² s)	Max Clear I _t (A ² s)	Figure	Fuse Voltage (KV)	Peak arc Voltage (KV)	Max. interrupting Capacity (KA)
			A	B						
Figure 1 	DEFTH38/50	50	19.32" (490)	18.32" (465)			1	38	105	50
	DEFTH38/65	65								
	DEFTH38/80	80								
	DEFTH38/100	100								
	DEFTH38/125	125	21.97" (558)	20.97" (533)						
	DEFTH38/140	140								
	DEFTH38/165	165								
	DEFTH38/180	180								
	DEFTH38/200	200								25
Similar to: Cooper # CBUC... Hi-Tech # HTSS... Mersen # 9F59CCF...										



Ref.	Title / Material / Dimension	Draw. Nr.	Qty.
5	Silica Sand Filler	H-31 / 40-mesh	---
4	Element	---	---
3	Fiberglass / Epoxy Tube	---	1
2	Epoxy Adhesive	---	---
1	Contact	---	2

International Fuses



BS88 British Standard Fuse

- AC Voltage: 250V, 300V, 450V, 550V, 690V & 1000V
- Amperages: 2A to 600A
- Interrupting Rating: 200kA & 300kA
- Designed to IEC 269.4, IEC 33, VDE 636-23, DIN 43653 & BS 88-4 Specs.
- 250V, 2A to 100Amp Fuses
- 300V, 125A to 600Amp Fuses
- 450V, 5A to 600Amp Fuses
- 550V, 8A to 200Amp Fuses
- 690V, 5A to 600Amp Fuses
- 1000V, 400A to 600Amp Fuses

Applications:

Semiconductor Type Ultra Rapid British Standard Fuses. High Braking Capacity, Low Power Dissipation, High Current Limiting, Low Switching Voltage with Excellent Performance. British Standard Fuses for UK or British manufactured equipment, also used in North American UPS applications.



Type NH Square Body Fuses

- AC Voltage: 500V / 660V, 690V / 800V, 1000V / 1300V & 1000V / 1250V
- Amperages: 2A to 2000A
- Interrupting Rating: 80kA & 120kA
- Sizes: NH000, NH00, NH0, NH1, NH2, NH3, NH4 & NH5
- Design Type: German Standard, French Standard, American Standard & Press-Pack
- With or Without Visual Trip Indicator or Microswitch
- Designed to DIN 43620, IEC 60269, DIN 43653, DIN 80, DIN 110, VDE 0636, BS 88 Specs.
- 500V / 690V, 10A to 2000Amps, Sizes NH000 to NH5, Equipped for Micro Switch, DIN 43620 Fuses
- 690V / 800V, 10A to 2000Amps, Sizes NH000 to NH5, Pin Indicator, DIN 43620 Fuses
- 690V / 800V, 10A to 400Amps, Sizes NH000

to NH00, Pin Indicator, DIN 43653 Fuses
• 1000V / 1300V, 40A to 1600Amps, Sizes NH1 to NH3, Equipped for Micro Switch, DIN 43653 Fuses

Applications:

Square-Body Fuses for aR (Semiconductor Protection), gL/gG (General Purpose Fuses), aM (Motor Protection), gTR (Transformer Protection), gB (Mining Fuses), and gR (Full Range Semiconductor Protection). Silver plated knife blades, short or long and ceramic bodies. Used in DC common Bus, DC Drives, Power converters/rectifiers and reduced voltage starters. Can be fabricated with Visual Indicator, Micro Switch or Pin for Micro Switch. UL / CSA Standard protection against short circuit.



Type HH - High Voltage HRC Fuse-Links

- AC Voltage: 7.2KV, 8.3KV, 17.5KV, 24KV & 36KV
- Amperages: 2A to 400A
- Sizes: 192mm, 292mm, 442mm & 537mm
- Designed to DIN 43625, IEC 282-1, VDE 0670, EN 60644, IEC 60282-1, IEC 60644, IEC 60787 & ANSI C37 Specs.
- 7.2KV, 2A to 400Amps, German Style & Type "Gardy" Fuses
- 8.3KV, 2A to 80Amps, German Style Fuses
- 17.5KV, 2A to 250Amps, German Style & Type "Gardy" Fuses

- 24KV, 2A to 100Amps, German Style Fuses
- 36KV, 2A to 100Amps, German Style & Type "Gardy" Fuses

Applications:

German Fuse (Current-Limiting) Conforms to DIN 43625, IEC 282-1, VDE 0670. Used in Medium to High Voltage Distribution networks, Transformers, condensers and engines for Primary Fuses, Backup Fuses or Full Range Fuses. Various types for indoor, outdoor and oil-submerged applications. UL / CSA Standard protection against short circuit.

British Standard Fuses 2 - 600A, 450V / 1 000V

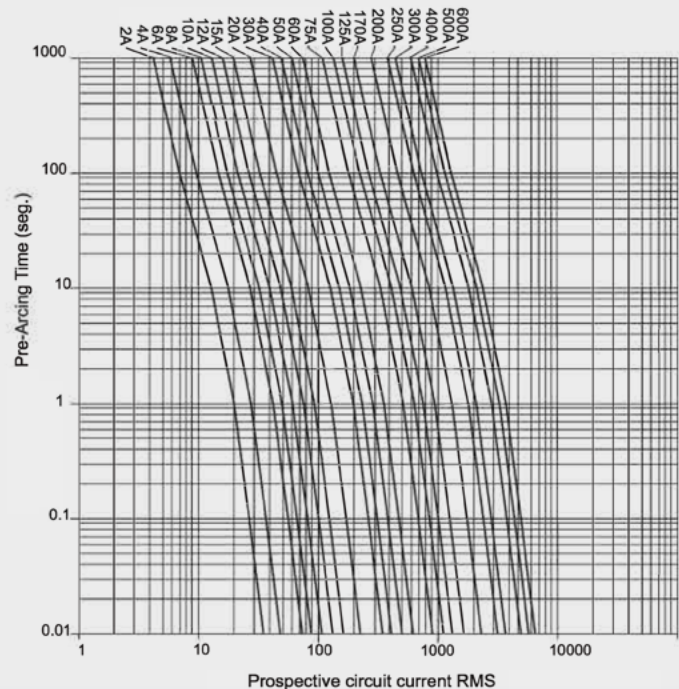
In accord. with IEC 60269, BS88 Standard low voltage fuses

*high breaking capacity, * low power dissipation, * high current limiting, * silver plated contacts, * low switching voltage, * silver element design, * excellent performance,

Dimensions

Type	Current	Voltage	Fig.	A	B	C	D	E	F	G	H
GSA	1 a 25	450	1	47	28	38	8.4	8.4	4	6	5
GSA	25 a 100	450	1	57	26	42	17	18	6.6	12	8.5
GSA	125 a 250	450	1	85	32	60	33	37	10	25	15
GSA	300 a 600	450	3	85	32	60	34	83	10	25	15
GSB	1 a 20	1000	1	72	53	64	8.5	8.5	4	6	5
GSB	25 a 75	1000	1	80	50	63	17	18	6.5	12	8.5
GSB	100 a 250	1000	1	106	54	81	33	37	10	25	15
GSB	300 a 600	1000	3	106	54	81	34	83	10	25	15
GSD	125 a 250	300	1	57	27	41	17	18	6.5	12	8.5
GSD	300 a 350	300	1	85	32	60	33	37	10	25	15
GSD	700	300	3	85	32	60	34	83	10	25	15
GSG	10 a 110	1000	1	75	45	60	17	18	6.5	12	8.5
GSG	75 a 150	1000	4	94	45	70	38	19	8	31	10
GSG	170 a 190	1000	1	106	45	81	33	37	10	25	15
GSG	175 a 350	1000	3	106	54	81	34	83	10	25	15
GSG	400 a 600	1000	3	135	76	110	40	87	10	25	15
GSA	25 a 100	450	6	25	---	---	17	31.5	6.5	12.5	9.5
NIT	2 a 25	415	2	56	31.5	44	14	14	5	11	---
NS	1 a 25	415	5	51	35.5	---	14	---	---	12.7	---
SS	2 a 25	415	5	61	26.5	---	14	---	---	12.7	---
TCP	1 a 25	550	1	110	69	---	34	35	8.5	19	10
TIS	25 a 63	550	1	88	55	70	27	28	5	13	---
TFP	125 a 200	550	1	110	69	94	41	43	8.5	19	---
TIA	1 a 40	550	1	87	54	70	22	26	5	13	---

Time - Current Curve

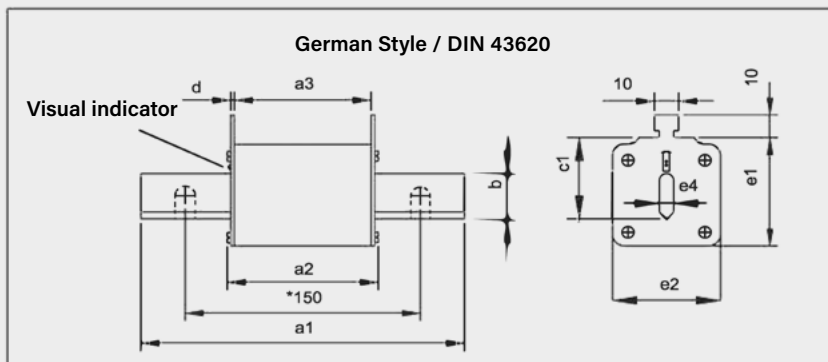


General Purpose Fuses For Cable And Wire Protection

The characteristic time x current curves shown are according to NBR IEC 60269 - 2 -1, DIN 43620 1- 4

- High breaking capacity • Low power dissipation • High current limiting • Silver plated contacts • Low switching voltage

Knife type per DIN 43620 Body sizes 00, 0, 1, 2



Voltage

500 I 660 / 690V

Standards:

IEC 60269-1-2, EN 60269-1-2,
DIN 43620/1, DIN 43653, BS 88
VDE 0636/22, SEM 2810,
VDE 0636 part 2011, DIN 43653,
OVE-SN40, SEV 1066,

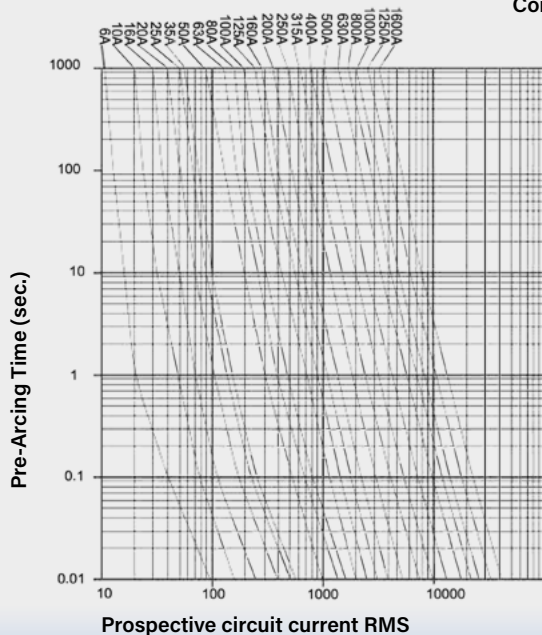
gB = For mining application

Dimensions

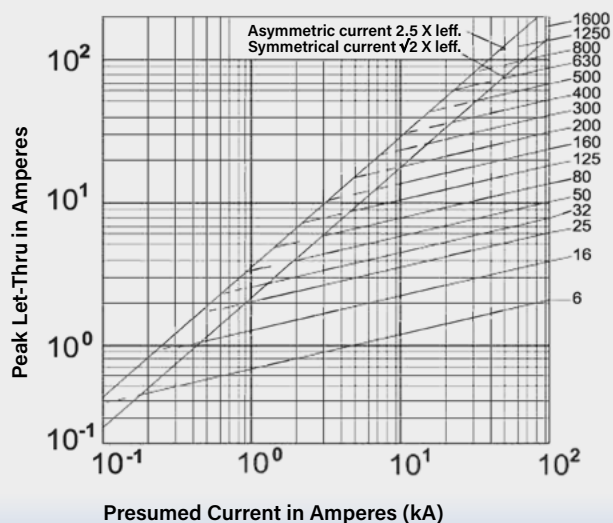
No.	Size	Current	a1	a2	a3	b	c1	d	e1	e2	e4
5322	000	≤ 100	80	49	46	15	35	1.5	41	21	6
5323	00	160	80	49	46	15	35	2	48	28	6
5324	0	≤ 160	125	66	62	15	35	2	48	28	6
5325/1	01	≤ 160	135	72	62	15	40	2.5	53	28	6
5325	1	250	135	72	62	20	40	2.5	53	45	6
5326/1	02	≤ 250	150	72	62	20	48	2.5	61	45	6
5326	2	400	150	72	62	25	48	2.5	61	60	6
5327/1	03	≤ 400	150	72	62	25	60	2.5	76	60	6
5327	3	630	150	72	62	35	60	2.5	76	72	6
5328	*4	800 - 1600	200	72	62	63.5	87	3	105	100	8

Time / Current for gUG fuse, conf. NBR IEC 60269

Conf. VDE 0636/21



Peak Let-Through Curves



Mining Protection Fuses

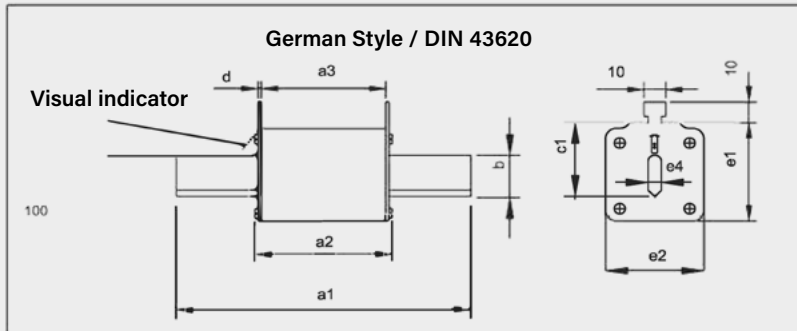
NH DIN Fuse - Links, Sizes 00 - 2

According to DIN/ IEC / VDE

- High breaking capacity
- Low power dissipation
- High current limiting

- Silver plated contacts
- Low switching voltage
- Silver element

Knife type per DIN 43620 Body sizes 00, 0, 1, 2



Voltage **500V** Standards:

IEC 60269-1-2, EN 60269-1-2,
DIN 43620/1, DIN 43653, BS 88
VDE 0636/22, SEM 2810,
VDE 0636 part 2011, DIN 43653,
OVE-SN40, SEV 1066,

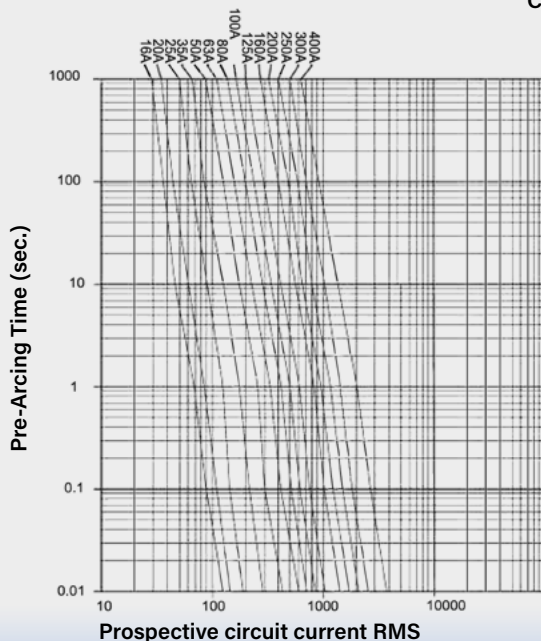
gB = For mining application

Dimensions

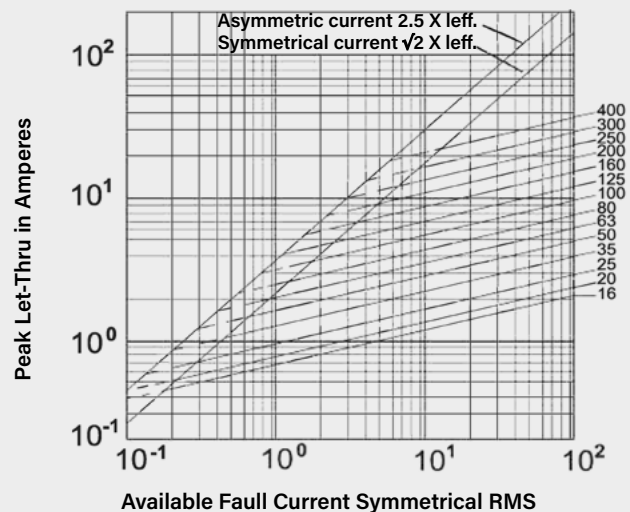
No.	Size	Current	a1	a2	a3	b	c1	d	e1	e2	e4
5315	00	16 - 125	80	49	46	15	35	2	48	28	6
5316	0	25 - 160	125	66	62	15	35	2	48	28	6
5317	1	16 - 250		72	62	20	40	2.5	53	46	6
5318	2	80 - 400	150	72	62	25	48	2.5	61	58	6

Prospective circuit current RMS

Time - Current Curve for Utilization category gB.
Conf. VDE 0636/21



Peak Let-Through Curves



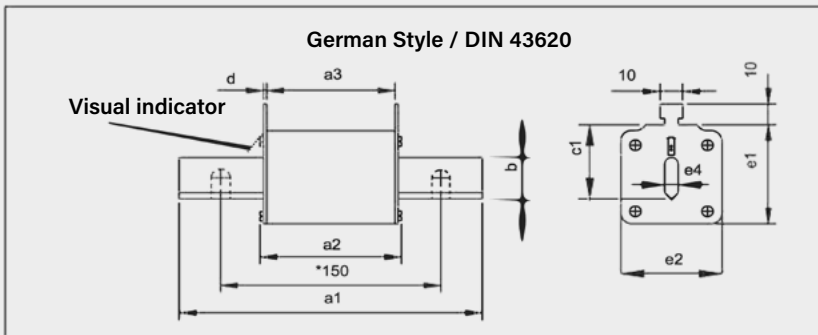
Fuses for Transformers Protection

NH DIN fuse - links, Sizes 2 - 4

According to DIN/ IEC / VDE

- High breaking capacity
- Low power dissipation
- High current limiting
- Silver plated contacts
- Low switching voltage
- Silver element

Knife type per DIN 43620 Body sizes 2, 3, and 4



Voltage **400V** Standards:

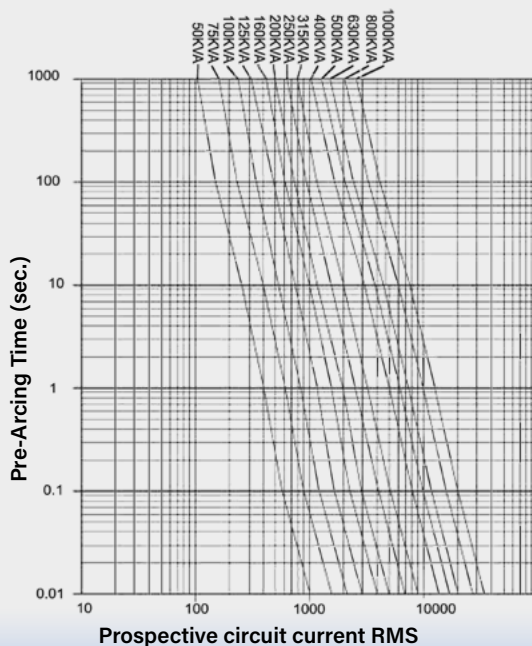
IEC 60269-1-2, EN 60269-1-2,
DIN 43620/1, DIN 43653, BS 88
VDE 0636/22, SEM 2810,
VDE 0636 part 2011, DIN 43653,
OVE-SN40, SEV 1066,

gTr = Transformers Protection

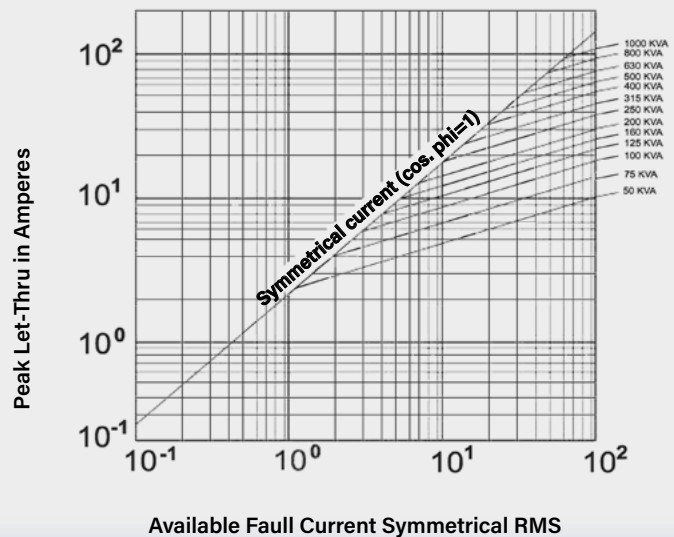
Dimensions

No.	Size	Current	a1	a2	a3	b	c1	d	e1	e2	e4
5319	2	50 - 250	150	72	62	25	48	2.5	61	58	6
5320	3	100 - 630	150	72	62	35	60	2.5	76	72	6
5321	*4	100 - 1000	200	72	62	63.5	87	3	105	100	8

Time - Current Curve for Utilization category gTr
Conf. VDE 0636/21



Peak Let-Through Curves



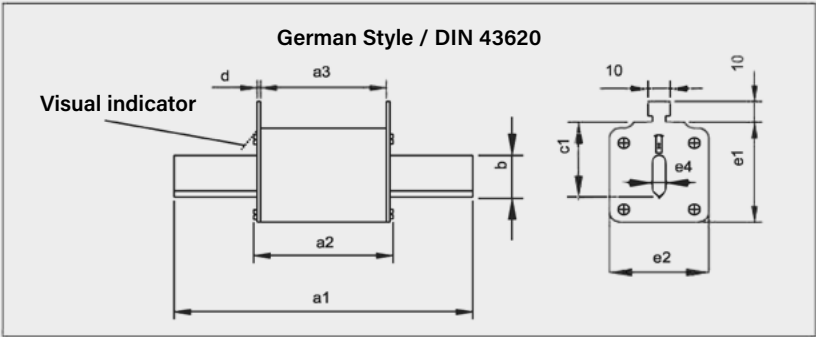
Fuses for Motor Circuit Protection

NH DIN fuse - links, Sizes 00 - 2

According to DIN/ IEC / VDE

- High breaking capacity
- Low power dissipation
- High current limiting
- Silver plated contacts
- Low switching voltage
- Silver element

Knife type per DIN 43620 Body sizes 2, 3, and 4



Voltage
500 I 660 / 690V
Standards:

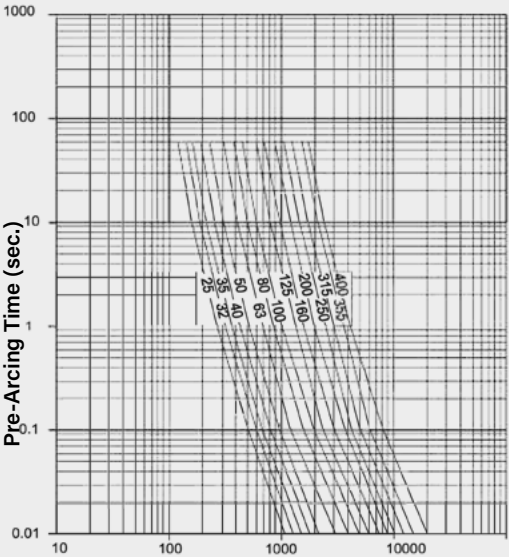
IEC 60269-1-2, EN 60269-1-2,
DIN 43620/1, DIN 43653, BS 88
VDE 0636/22, SEM 2810,
VDE 0636 part 2011, DIN 43653,
OVE-SN40, SEV 1066,

aM = Engine Circuit Protection

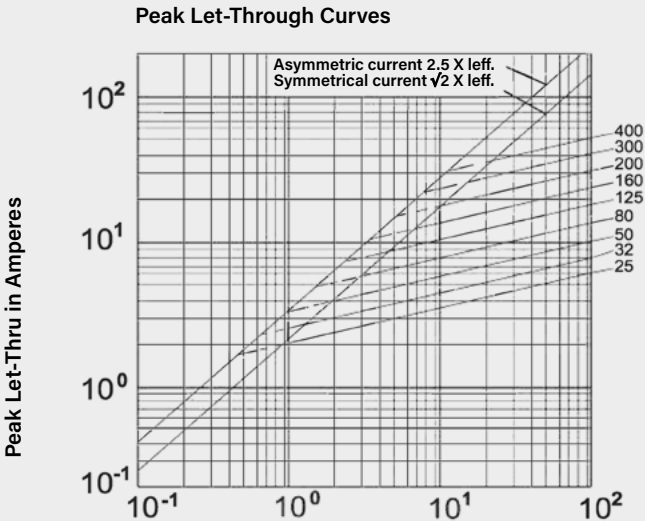
Dimensions

No.	Size	Current	a1	a2	a3	b	c1	d	e1	e2	e4
5312	00	4 - 100	80	49	46	15	35	2	48	28	6
5313	1	25 - 250	135	72	62	20	40	2.5	53	46	6
5314	2	80 - 400	150	72	62	25	48	2.5	61	58	6

Time - Current Curve for Utilization category aM
Conf. VDE 0636/21

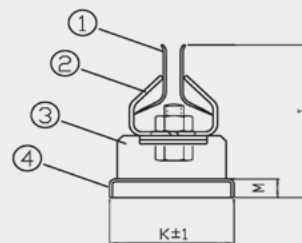


Prospective circuit current RMS



Available Fault Current Symmetrical RMS

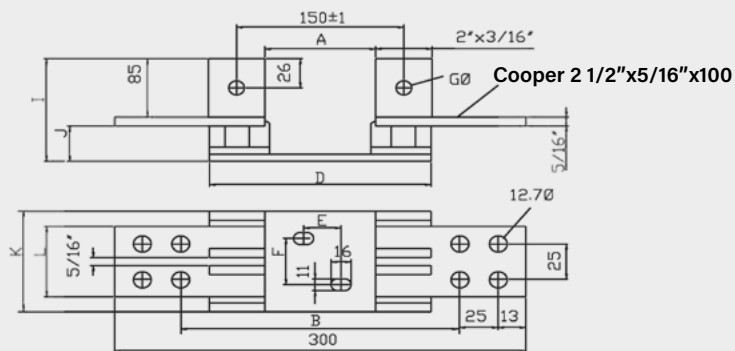
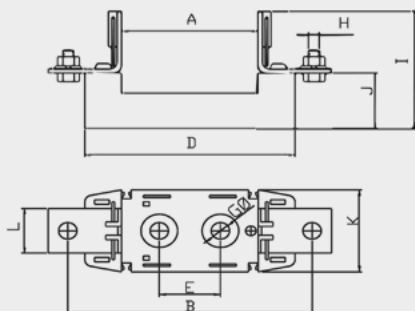
According to standards DIN 43620/3, VDE 0636/21



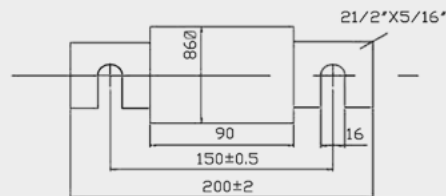
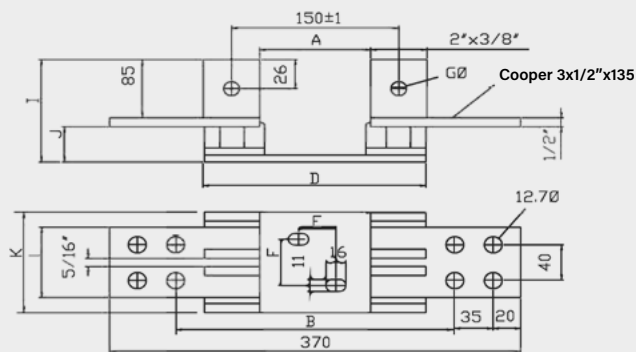
5	Screw and bolt set	2	
4	Steel plate	1	
3	Premix isolator 1000V	2	
2	Steel spring	4	
1	Silver plated cooper clamp	4	
Item	Description	QTY	

Size	A	B	C	D	E	F	G	H		J	K	L	M
000 / 00	57	100	--	87	25	--	7.5Ø	M6	58	25	37	20	--
0	74	150	187	133	25	30	7.5Ø	M8	58	19	35	20	4
1	82	175	205	160	25	30	11Ø	M10	80	33	58	35	10
2	82	200	230	160	25	30	11Ø	M10	85	33	58	35	10
3	82	210	240	160	25	30	11Ø	M12	97	33	58	35	10
4	103	224	300	200	30	46	13Ø	--	125	33	100	63,5	--
5	103	260	370	200	30	46	13Ø	--	112	33	100	76,2	--

Base - NH - Size 4 for 800 to 1250A, 690V



Fuse - NH - Size 5



Types

Fuse Size 5
High Braking
Capacity
SOOV / 660V / 690V

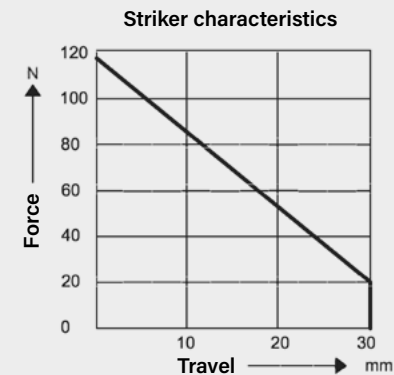
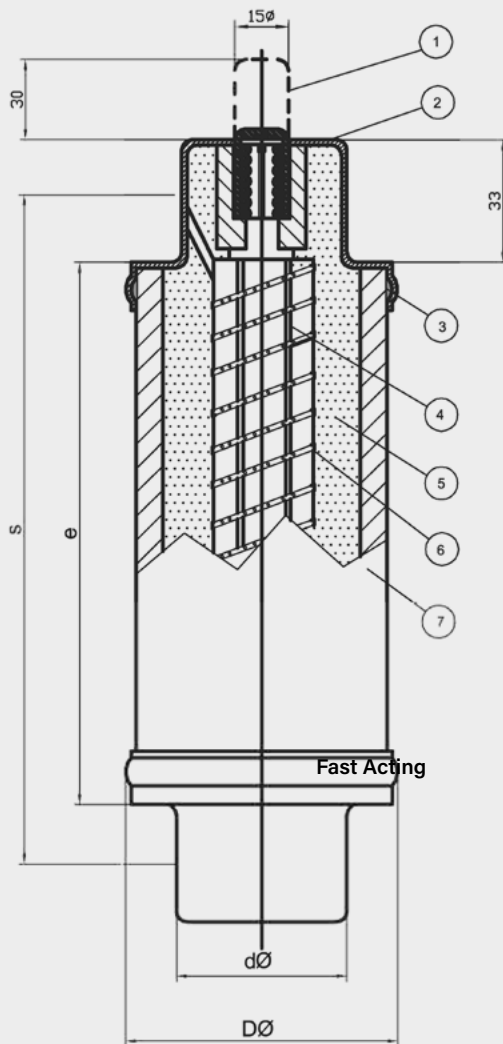
gL/gG = Cable Protection and General Purpose
aR/gR= Semiconductor protection
gTr = Transformer Protection

H.V. HRC Fuse - links

HV HRC fuse-links in accordance with VDE 0670, EN 60644, IEC 60282-1, IEC 60644 and IEC 60787.

"Fuses offer unique advantages compared to other protective devices

- High breaking capacity
- High current limiting
- Low switching voltage
- Extremely short times
- Low power dissipation



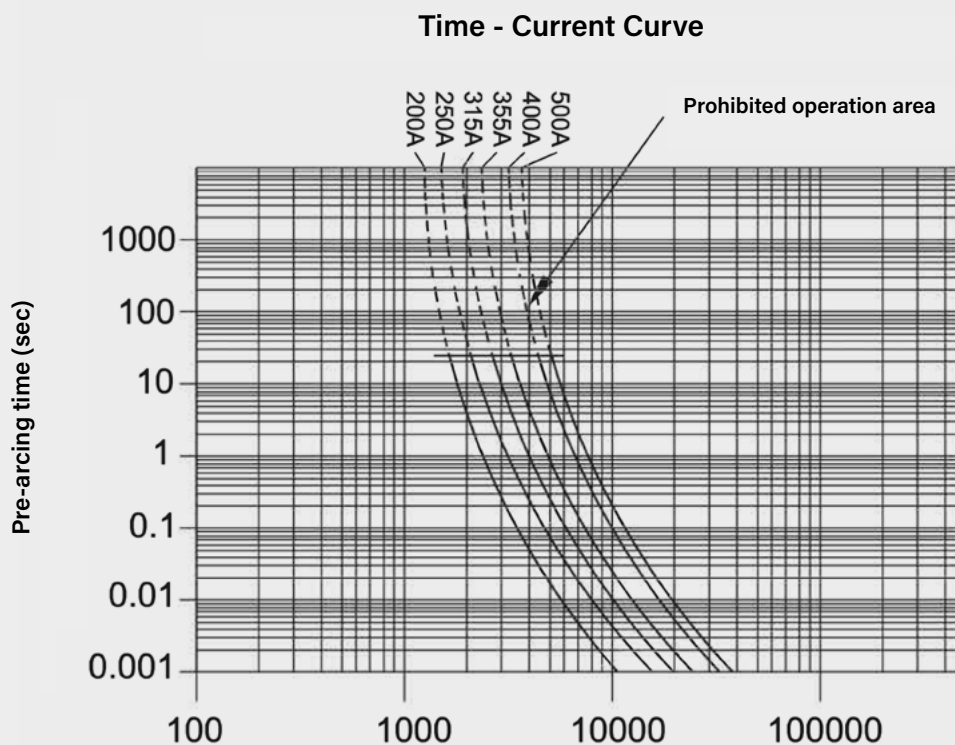
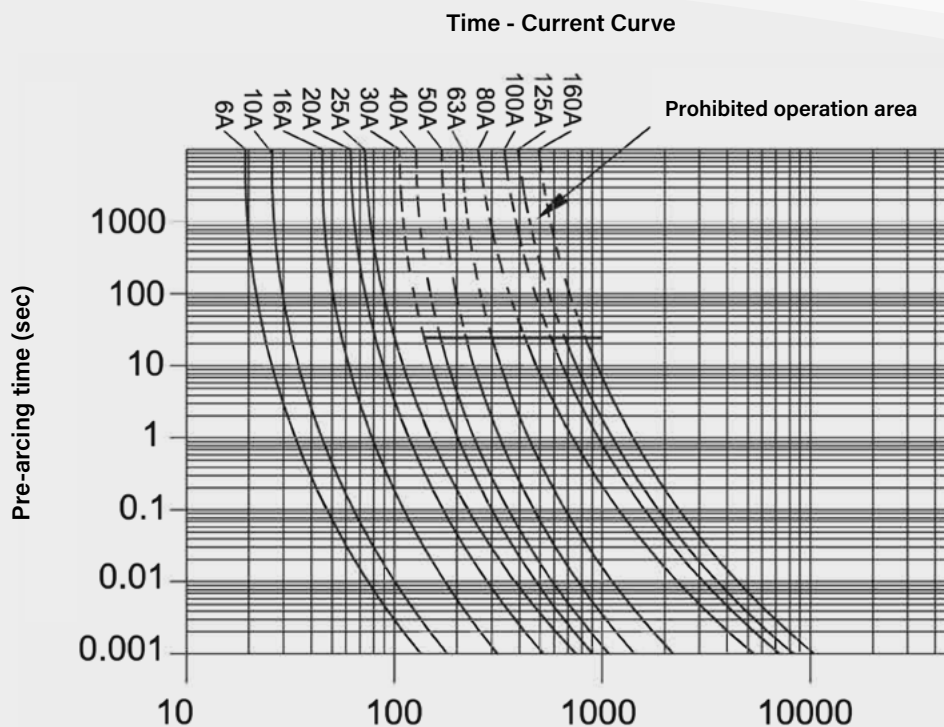
German Style

Voltage	Current	Number	Dimensions			
			DØ	s	e	dØ
7.2	2 a 20	400	66	225	192	45
7.2	25 a 63	401	66	225	192	
7.2	80 a 125	402	85	225	192	
7.2	2 a 20	403	66	325	292	
7.2	25 a 63	404	66	325	292	
7.2	80 a 125	405	85	325	292	
7.2	160 a 250	406	85	325	292	
7.2	315 a 400	407	85	325	292	
17.5	2 a 20	412	66	325	292	
17.5	25 a 63	413	66	325	292	
17.5	80 a 125	414	85	325	292	
17.5	2 a 20	415	66	475	442	
17.5	25 a 63	416	66	475	442	
17.5	80 a 125	417	85	475	442	
17.5	160 a 250	418	85	570	537	
24	2 a 10	419	66	475	442	
24	12 a 30	420	66	475	442	
24	32 a 63	421	85	475	442	
24	80 a 100	422	85	475	442	
36	2 a 10	423	66	570	537	
36	12 a 30	424	66	570	537	
36	32 a 63	425	85	570	537	
36	80 a 100	426	85	570	537	

Ref.	Material
1	Spring Striker 120 N
2	Copper - contact
3	Epoxy
4	Star cor
5	Granular Quartz
6	Fuse elements
7	Porcelain barrel

H.V. HRC Fuse - links

HV HRC fuse-links in accordance with VOE 0670, EN 60644, IEC 60282-1, IEC 60644 and IEC 60787.



Excellent Performance | Low Arc Voltage | Low Watts Loss

Ultra-Rapid Semiconductor Fuses



SEMICONDUCTOR FUSES / FORM 101

- Voltages: 130V, 250V, 500V, 600V, 700V, 1000V, 1200V & 1500V
- Amperages: 1A to 2000A
- Interrupting Rating: 200kA AC & 100kA DC
- Indicator options available

UL / CSA Standard protection against short circuit.

- 130V 1A to 2000Amps, American, Type UFR Form 101 Fuses
- 250V 1A to 2000Amps, American, Type UFR Form 101 Fuses
- 500V 1A to 1600Amps, American, Type UFR Form 101 Fuses
- 600V 1A to 1600Amps, American, Type UFR Form 101 Fuses

- 700V 1A to 800Amps, American, Type UFR Form 101 Fuses
- 1000V 1A to 1000Amps, American, Type UFR Form 101 Fuses

Applications:

Semiconductor Technology Fuses (Ultra-Rapid /Fast Acting, 200kA IR, Current Limiting, High Interrupting Capacity with Superior DC Capabilities as well). American Standard (cylindrical design). Extending circuit protection to thyristors, triacs, diodes, and multiple other solid-state components. It also protects heavy duty devices such as electrochemical rectifiers, heavy-duty power supplies with low I^2t , as well as the protection of DC drives, UPS, Motor Drives, Inverters, heavy traction, and heavy-duty equipment.



SEMICONDUCTOR FUSES

- Voltages: 500V / 660V, 690V / 800V, 1000V / 1300V & 1000V / 1250V
- Amperages: 1A to 2000A
- Interrupting Rating: 200kA AC & 100kA DC
- Indicator options available

•NH Type Square Body, Sizes NH000 to NH5. American, French and German Standards, DIN 43620, DIN 43653 IEC 269.1, 500VAC to 1300VAC.

- 500V / 660V, 10A to 2000Amps, Sizes NH000 to NH5, DIN 43620 Fuses
- 690V / 800V, 10A to 2000Amps, Sizes NH000 to NH5, DIN 43620 Fuses
- 690V / 800V, 10A to 400Amps, Sizes NH000 to NH00, DIN 43653 Fuses
- 690V / 800V, 10A to 400Amps, Sizes NH00, DIN 43653 Press-Pack Fuses
- 690V / 800V, 40A to 1600Amps, Sizes NH1 to NH3, IEC 269.1 French Blade Fuses
- 690V / 800V, 40A to 1600Amps, Sizes NH1 to NH3, DIN 43653, Blade Type DIN 80 & 110 Fuses
- 690V / 800V, 40A to 1600Amps, Sizes NH1 to NH3, American Standard in Accordance with BS88 Fuses
- 690V / 800V, 40A to 1600Amps, Sizes NH1 to NH3, IEC 269.1 & 4, Press-Pack Fuses
- 690V / 800V, 1000A to 2000Amps, Sizes NH2x2-2x3, IEC 269.1 & 4, French Standard Fuses

- 1000V / 1300V, 10A to 2000Amps, Sizes NH00 to NH5, DIN 43620, IEC 269.1 & 4, aR/gR Class Fuses
- 1000V / 1300V, 40A to 1600Amps, Sizes NHI to NH3, DIN 43653, Blade Type DIN 110 Fuses
- 1000V / 1300V, 40A to 1600Amps, Sizes NHI to NH3, American Standard in Accordance with BS88 Fuses
- 1000V / 1300V, 40A to 1600Amps, Sizes NH1 to NH3, IEC 269.1 & 4, Press-Pack Fuses
- 1000V / 1250V, 1250A to 2000Amps, Sizes NH2x3, IEC 269.1 & 4, French Standard Fuses

Applications:

Semiconductor Technology Fuses (Ultra-Rapid / Fast Acting, 200kA IR, Current Limiting, High Interrupting Capacity with Superior DC Capabilities). American Standard (cylindrical design). Extending circuit protection to thyristors, triacs, diodes, and multiple other solid-state components. It also protects heavy duty devices such as electrochemical rectifiers, heavy-duty power supplies with low I^2t , as well as the protection of DC drives, UPS, Motor Drives, Inverters, reduced voltage starters, heavy traction, and heavy-duty equipment.



FERRULE CARTRIDGE / MIDGET FUSES

- Voltages: 220V / 500V, 220V / 660V, 220V / 750V & 220V / 600V
- Amperages: 2A to 200A
- Interrupting Rating: 200kA, 100kA, 17kA 90kA
- Sizes: 10x38, 14x51, 22x58, 27x60, 20x76, 20x127 (millimeters)
- Indicator options available

- Designed to IEC 269.1 & 4, VDE 636-23 & IEC 269.4 Specs.

Applications:

Ferrule Semiconductor Protection Fuses for the protection of power semiconductors. Extremely High breaking capacity, low power dissipation, silver plated contacts, low switching voltage. Full range protection, and allows selective coordination.

Semiconductor Fuses Form 101 for Semiconductor Protection

UL/ CSA - Class.
130 - 700V, 5 - 1200A

- High breaking capacity
- Low power dissipation
- High current limiting
- Silver plated contacts

- Low I²t
- Low switching voltage
- Extremely short times

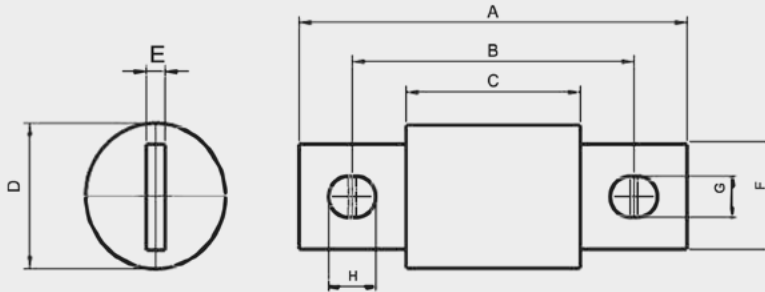


FIG. 1

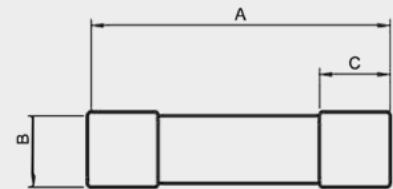
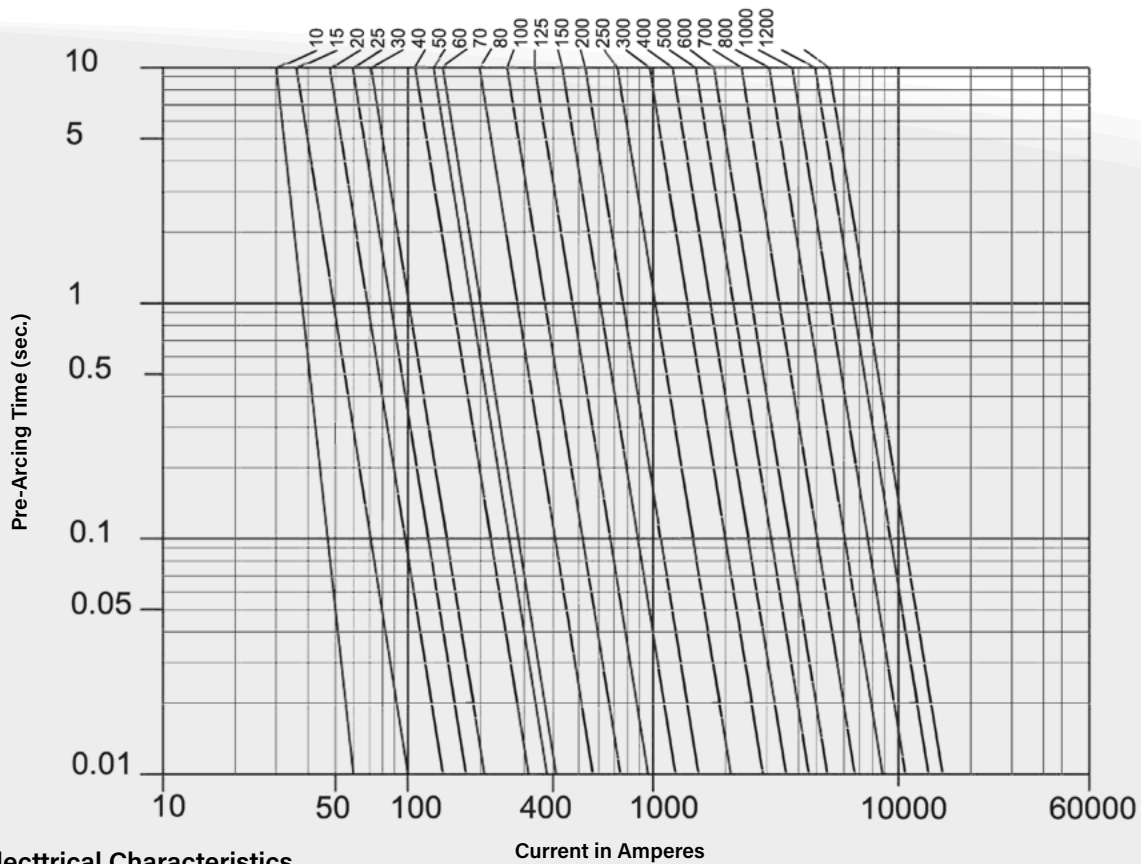


FIG. 2

Dimensions

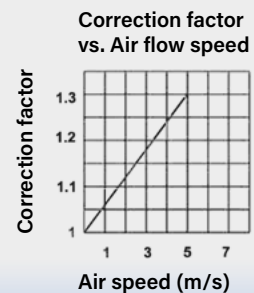
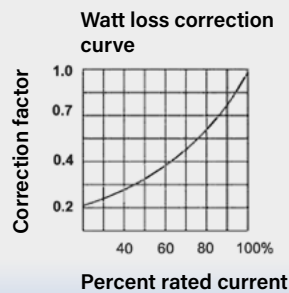
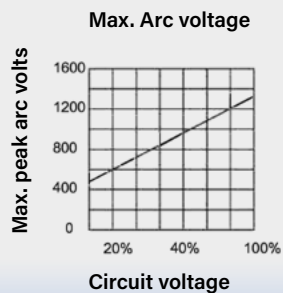
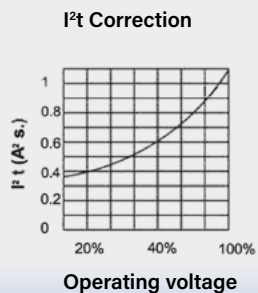
Volt.	Corr.	A		B		C		D		E		F		G		H		FIG.	
		inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm		
130 V	5-30	1.50	38	0.40	10.3	0.375	9.5											2	5670
	35-60	2.00	50.8	0.81	20.6	0.625	16											2	5671
	70-400	2.66	67.4	2.06	52.4	1.156	29	1.0	25.4	0.125	3.3	0.75	19	0.312	8	0.44	11	1	5672
	400-800	3.50	89	2.44	62	1.250	32	1.5	38	0.250	6.4	1.0	25.4	0.406	10.3	0.41	10.3	1	5673
250 V	5-30	2.00	51	0.56	14.3	0.609	16											2	5674
	35-60	1.19	81	2.44	62	1.562	40	0.812	20.6	0.125	3.2	0.72	19	0.344	8.7	0.41	10.3	1	5675
	70-200	3.12	79	2.37	60	1.625	42	1.234	32	0.188	4.8	1.0	25.4	0.344	8.7	0.41	10.3	1	5676
	225-600	3.85	98	2.78	71	1.594	41	1.5	38	0.250	6.3	1.0	25.4	0.440	11	0.52	13	1	5677
500 V	5-30	2.00	51	0.56	14.3	0.609	16											2	5678
	35-60	3.19	81	2.37	60	1.593	40	0.813	21	0.125	3.2	0.72	18	0.344	8.8	0.52	13.2	1	5679
	70-100	3.63	92	2.83	72	1.906	49	0.947	24	0.125	3.2	0.75	19	0.351	9	0.375	9.5	1	5680
	125-200	3.63	92	2.83	72	1.906	48	1.157	29	0.189	4.7	1.0	25.4	0.345	8.7	0.405	10.3	1	5681
	250-400	4.35	110	3.07	78	2.094	53	1.5	38	0.251	6.4	1.0	25.4	0.434	11	0.767	20	1	5682
	450-600	4.35	110	3.14	80	2.094	53	2.0	51	0.251	6.4	1.5	38	0.434	11	0.70	18	1	5683
	700-800	5.97	152	4.10	104	2.219	56	2.5	64	0.375	9.5	2.0	51	0.564	14.3	1.23	31	1	5684
	1000	6.96	177	4.97	126	3.219	82	3.0	76	0.439	11	2.4	60	0.626	16	0.877	22	1	5685
700 V	5-30	2.00	51	0.56	14.3	0.609	16											2	5686
	35-60	4.37	111	3.51	89	2.750	70	0.813	21	0.126	3.2	0.725	19	0.345	9	0.543	13.8	1	5687
	70-100	4.40	112	3.60	91	2.594	66	0.947	24	0.126	3.2	0.751	19	0.345	9	0.374	9.5	1	5688
	125-200	5.06	128	3.83	97	2.760	70	1.5	38	0.250	6.4	1.0	25.4	0.433	11	0.767	20	1	5689
	250-400	5.06	128	3.82	97	2.760	70	2.0	51	0.250	6.4	1.5	38	0.433	11	0.767	20	1	5690
	500-600	6.63	168	4.75	120	2.844	72	2.5	64	0.376	9.5	2.0	50.8	0.564	14.3	1.25	31	1	5691
	700-800	6.81	173	5.31	135	3.312	84	2.750	70	0.376	9.5	2.0	50.8	0.626	16	0.875	22	1	5692

Time-Current Curve Form 101



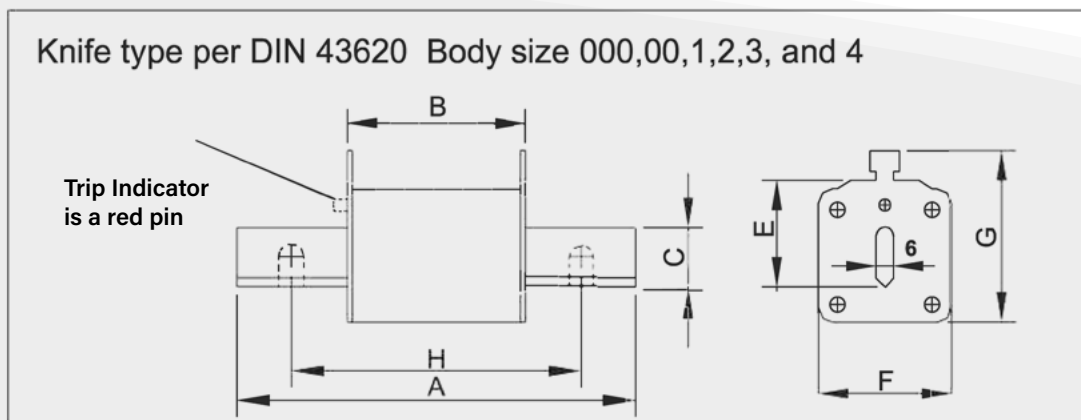
Electrical Characteristics

V	Current	$I^2 t$ (A.s.x10 ³) Total / Clearing	Current	$I^2 t$ (A.s.x10 ³) Total / Clearing
130 V	10	0.017	200	33
	20	0.115	250	48
	25	0.240	300	74
	30	0.340	400	133
	40	0.640	500	192
	50	1.2	600	273
	60	1.7	700	370
	70	4.1	800	550
	80	5.1	900	650
	100	8.2	1000	790
	125	11.4	1100	990
	150	19	1200	1,223
V	Current	$I^2 t$ (A.s.x10 ³) Total / Clearing	Current	$I^2 t$ (A.s.x10 ³) Total / Clearing
250 V	10	0.038	200	27
	20	0.110	250	48.5
	25	0.180	300	68.2
	30	0.245	400	106
	40	0.680	500	19
	50	1	600	267
	60	1.5	700	320
	70	3.5	800	495
	80	4.3	900	650
	100	7.1	1000	780
	125	12	1100	950
	150	16.5	1200	1,150
V	Current	$I^2 t$ (A.s.x10 ³) Total / Clearing	Current	$I^2 t$ (A.s.x10 ³) Total / Clearing
500 V	10	0.032	200	8.5
	20	0.100	250	32.2
	25	0.170	300	50
	30	0.253	400	96.5
	40	0.370	500	148
	50	0.670	600	210
	60	0.900	700	265
	70	0.960	800	410
	80	1.4	900	425
	100	2	1000	455
	125	3.5	1100	525
	150	4.6	1200	600
V	Current	$I^2 t$ (A.s.x10 ³) Total / Clearing	Current	$I^2 t$ (A.s.x10 ³) Total / Clearing
600 V	10	0.038	200	103
	20	0.150	250	163
	25	0.266	300	229
	30	0.388	400	486
	40	2.2	500	730
	50	3.5	600	1000
	60	5.2	700	1870
	70	12.5	800	2500
	80	15	900	2899
	100	25	1000	3330
	125	40	1100	4330
	150	67	1200	5500
V	Current	$I^2 t$ (A.s.x10 ³) Total / Clearing	Current	$I^2 t$ (A.s.x10 ³) Total / Clearing
700 V	10	0.038	200	20.3
	20	0.150	250	40.5
	25	0.266	300	56
	30	0.450	400	103
	40	0.550	500	155
	50	0.881	600	223
	60	0.330	700	321
	70	1.7	800	455
	80	2.1	900	672
	100	3.3	1000	955
	125	7.2	1100	1330
	150	13	1200	1950



Semiconductor Fuses 500V / 660 V

DIN 43620 fuse, IEC 269.1 e 4 aR/gR Class



Dimensions DIN 43620

Size	A	B	C	E	F	G	H	TYPE
000	78	52	16	35	21	55	---	1512354
00	78	52	16	35	29	60	---	1512355
1*	135	70	20	40	45	63	---	1512356
1	135	70	20	40	45	63	---	1512357

Dimensions DIN 43620

Size	A	B	C	E	F	G	H	TYPE
2	150	70	26	48	58	72	---	1512358
3	150	70	35	60	72	87	---	1512359
4	200	70	64	87	98	113	150	1512360
5	204	80	64	80	85	---	150	1512361

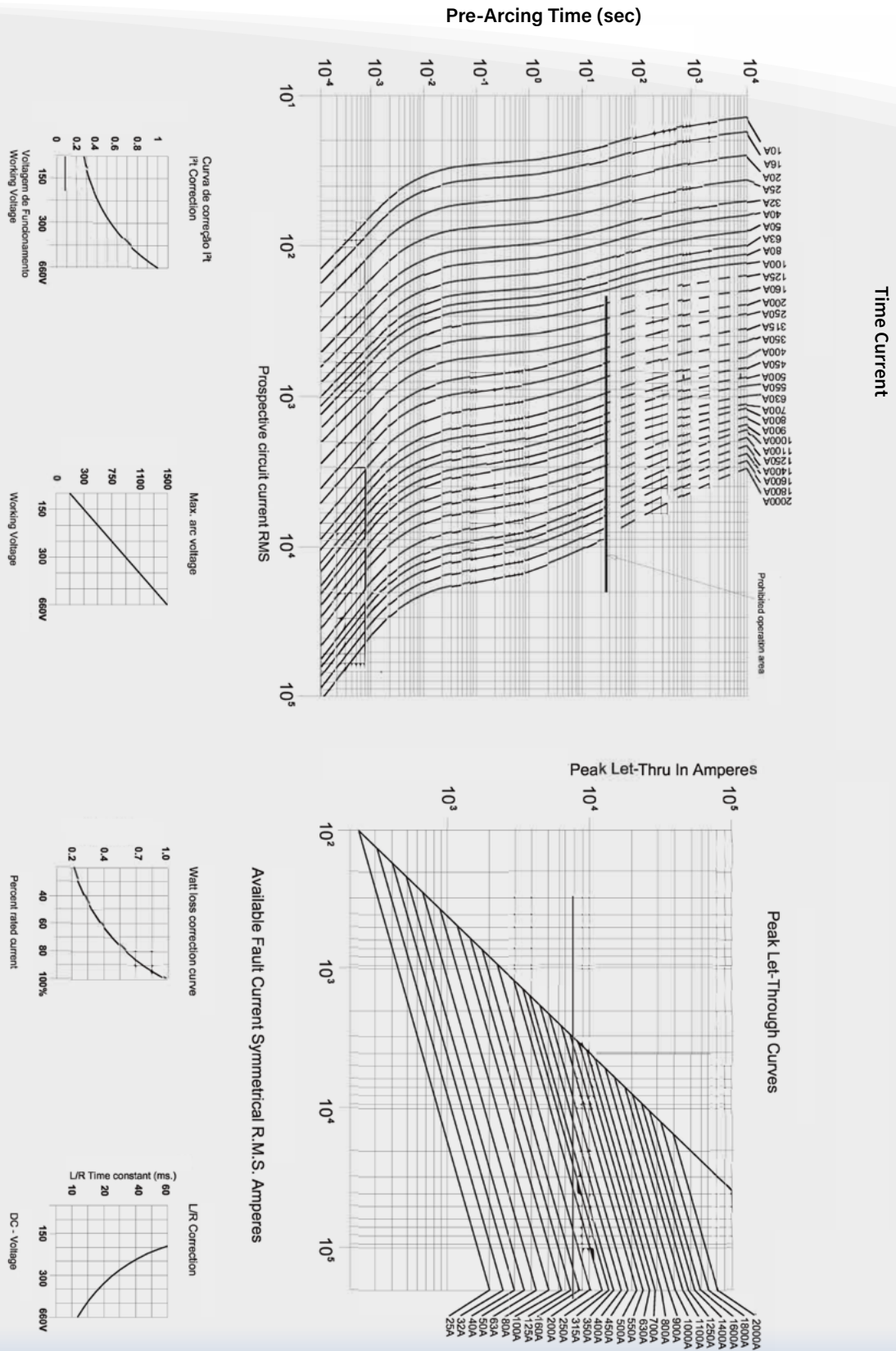
Electrical Characteristics

Size	Current	I ² t (A ² s.)		Watts	Size	Current	I ² t (A ² s.)		Watts
		Pre-arc	Total Clearing				Pre-arc	Total Clearing	
000 / 00	10	4.4	34	3.2	1/2	16	7.8	43	4.8
	16	7.6	55	4.8		20	16	83	5.3
	20	12.3	83	5.3		25	26	133	7.3
	25	21.5	153	7.3		32	36	190	7.9
	32	39	263	7.9		40	44	275	9.5
	40	64	443	9.5		50	78	523	12
	50	117	776	12		63	110	703	13
	63	213	1400	13		80	179	1193	18
	80	377	2493	18		100	345	2133	21
	100	699	4680	21		125	500	3810	25
	125	1139	8300	25		160	1033	7443	33
	160	2230	15030	33		200	1990	13300	46
	200	4000	26630	35		250	3980	27500	56
	225	5800	37660	39		315	6100	44800	60
	250	7250	47850	44		350	9430	61000	62
	315	11300	74580	55		400	13600	98000	66

Size	Current	I ² t (A ² s.)		Watts	Tam. Size	Current	I ² t (A ² s.)		Watts
		Pre-arc	Total Clearing				Pre-arc	Total Clearing	
2 / 3	400	11640	75100	64	4	630	39800	268000	92
	500	22000	146600	76		700	61000	408500	96
	630	39800	268000	92		800	65000	445000	116
	720	61000	408500	96		900	98000	654500	122
	500	13200	89000	100		1000	136000	890000	127
3	630	29800	199000	106		1100	179000	1210500	133
	720	46000	310900	111		1200	265500	1796000	149
	800	73200	475000	113		1250	275300	1873000	152
	900	119000	660000	119		1400	365000	2400000	156
	1000	146900	940300	123		1600	580300	3960000	162
	1250	288000	1948900	140		1800	876000	5300000	166
	1400	373200	2444000	153		2000	1120300	63860000	172
	1600	580000	3910000	160					
	1800	889900	5244300	166					

Current limiting/ High interrupting rating Low watts Loss/ Silver element.

NH Fuse-links size 000 - 5 aR 500 / 660V



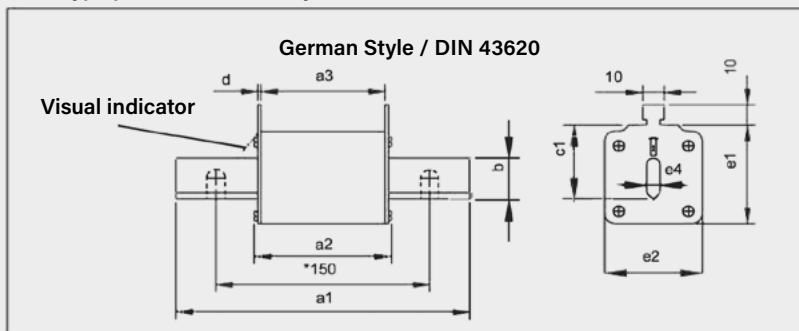
Ultra-Rapid Semiconductor Fuses

NH DIN fuse - links, Sizes 000-4

According to DIN/ IEC / VDE

- High breaking capacity
- Low power dissipation
- High current limiting
- Silver plated contacts
- Low switching voltage
- Silver element

Knife type per DIN 43620 Body sizes 00, 0, 1, 2



Voltage 500V - 690V

Standards:

IEC 60269-1-2, EN 60269-1-2,
DIN 43620/1, DIN 43653, BS 88
VDE 0636/22, SEM 2810,
VDE 0636 part 2011, DIN 43653,
OVE-SN40, SEV 1066,

gB = For mining application

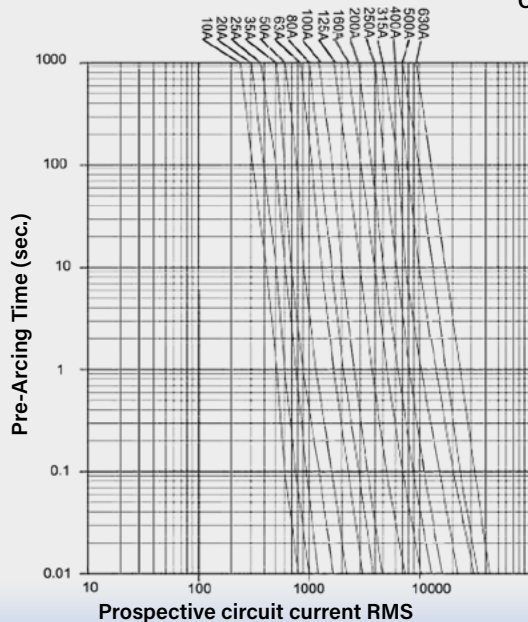
Dimensions

No.	Size	Current	a1	a2	a3	b	c1	d	e1	e2	e4
5305	000	2 - 100	80	49	46	15	35	1.5	41	21	6
5306	00	2 - 160	80	49	46	15	35	2	48	28	6
5307	0	6 - 160	125	66	62	15	35	2	48	28	6
5308	1	6 -250	135	72	62	20	40	2.5	53	46	6
5309	2	250 - 400	150	72	62	25	48	2.5	61	58	6
5310	3	500 - 630	150	72	62	35	60	2.5	76	72	6
5311	*4	800 - 1600	200	72	62	63.5	87	3	105	100	8

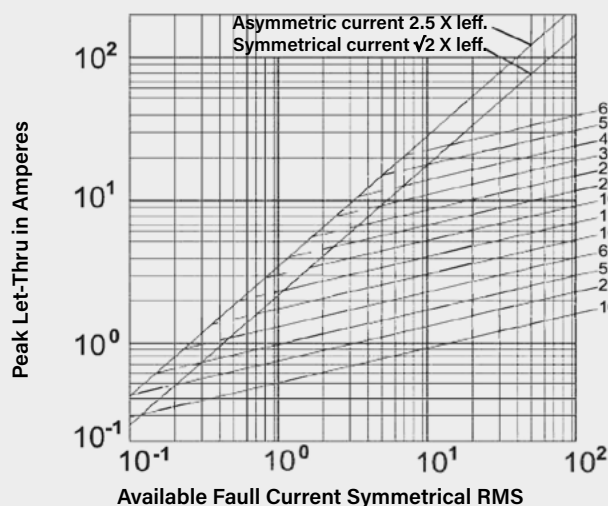
Prospective circuit current RMS

Time - Current Curve for Utilization category gR, ate 500V

Conf. VDE 0636/21



Peak Let-Through Curves



Ultra-Rapid Semiconductor Fuses

NH DIN fuse - links, Sizes 000 - 5

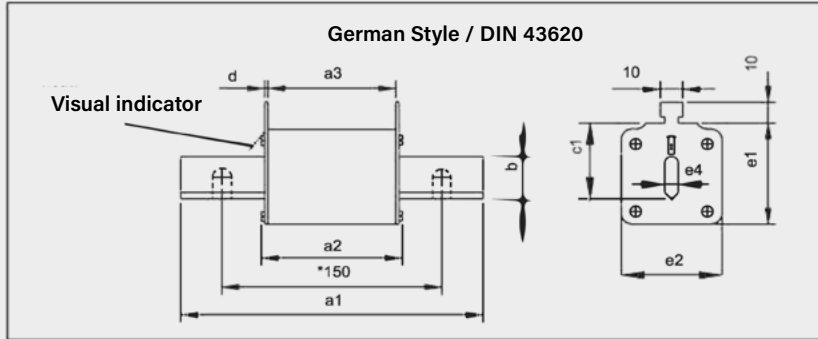
According to DIN/ IEC / VDE

- High breaking capacity
- Low power dissipation

- High current limiting
- Silver plated contacts

- Low switching voltage
- Silver element

Knife type per DIN 43620 Body sizes 00, 0, 1, 2



Voltage

500 I 660 / 690V

Standards:

IEC 60269-1-2, EN 60269-1-2,
DIN 43620/1, DIN 43653, BS 88
VDE 0636/22, SEM 2810,
VDE 0636 part 2011, DIN 43653,
OVE-SN40, SEV 1066,

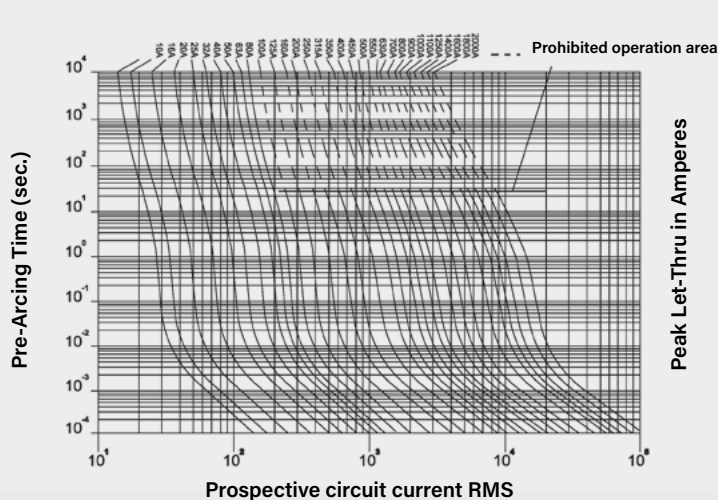
gB = For mining application

Dimensions

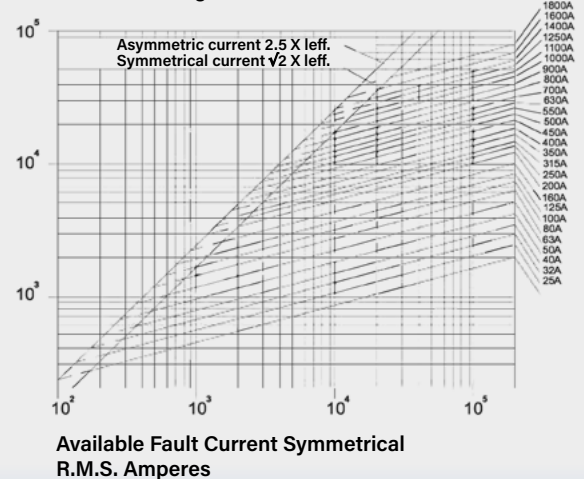
No.	Size	Current	a1	a2	a3	b	c1	d	e1	e2	e4
5329	000	2 - 100	80	49	46	15	35	1.5	41	21	6
5330	00	2 - 160	80	49	46	15	35	2	48	28	6
5331	0	6 - 160	125	66	62	15	35	2	48	28	6
5332	1	6 - 250	135	72	62	20	40	2.5	53	46	6
5333	2	250 - 400	150	72	62	25	48	2.5	61	58	6
5334	3	500 - 630	150	72	62	35	60	2.5	76	72	6
5335	*4	800 - 1600	200	72	62	63.5	87	3	105	100	8
5336	*5	1800 - 2000	200	72	62	63.5	87	3	86Ø	86Ø	8

Prospective circuit current RMS

Time Current Curve for Utilization category aR, a 690V
Conf. VDE 0636/21

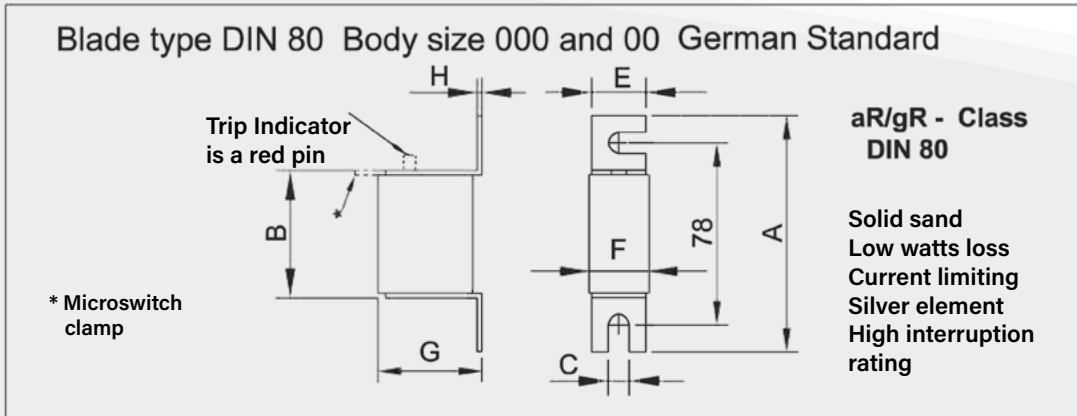


Peak Let-Through Curves



Semiconductor Fuses 690V / 800V

German Standard (DIN 43653 Fuse)



Dimensions DIN 43653

Size	A	B	C	E	F	G	H	TIPO / TYPE		
								Without indicator	Visual indicator	Indicator pin Type "P" for Microswitch
000	100	54	8	20	21	40	2	D1878	D1928	D1988
00	100	54	10	28	29	60	2	-----	D3178	D3228

Electrical Characteristics

Tamh. 00 / Size: 00

Size	Current	I ² t (A ² s.)		Watts
		Pre-arc	Total Clearing	
00	10	6	32	5.4
	16	8	51	7.2
	20	11	91	7.8
	25	19	138	8.5
	30	29	206	9
	40	52	371	10
	50	91	590	11
	63	210	1398	13
	80	376	2490	16
	100	691	4100	22
	125	1100	6250	27
	160	1850	12060	31
	200	3105	22100	34
	250	6569	40400	42
	315	10869	68400	53
	350	12300	89330	60
	400	17210	113300	69

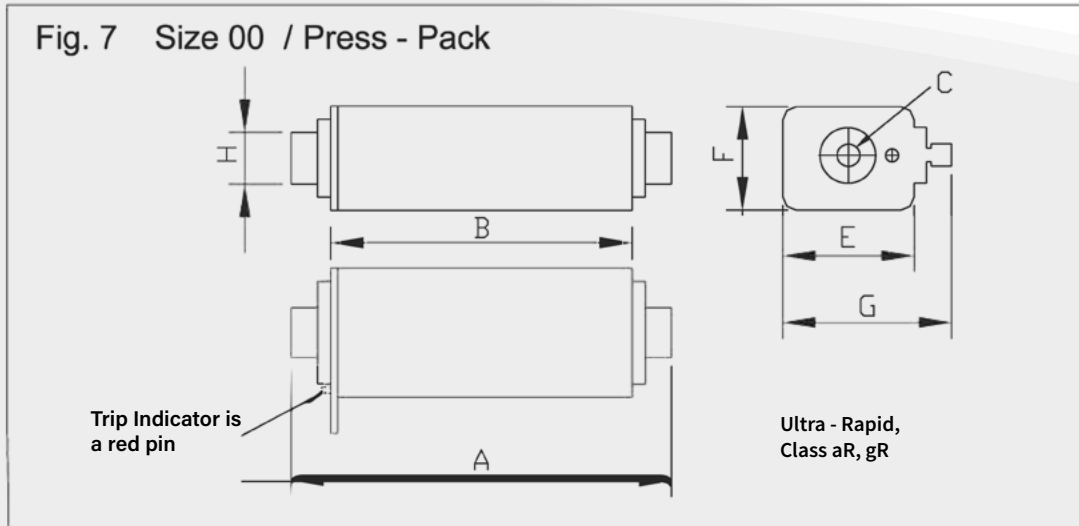
Tamh. 000 / Size: 000

Size	Current	I ² t (A ² s.)		Watts
		Pre-arc	Total Clearing	
000	10	4.1	27.3	3.4
	16	7.6	51	6.2
	20	10	81	7.8
	25	19.8	132	9.8
	30	39.5	276	11
	40	70	469	13
	50	114	790	16
	63	210	1398	20
	80	376	2490	23
	100	691	4556	26
	125	1180	8250	27
	160	2220	15760	33
	200	4105	27100	39
	250	7569	49400	42
	315	11869	78400	51
	350	23300	109330	60
	400	32210	143300	69

- Current limiting
- High interrupting rating
- Low watts Loss
- Silver element.

Semiconductor Fuses 690V / 800V

German Standard (DIN 43653 Fuse)



Dimensions DIN 43653

Size	A	B	C	E	F	G	H	TYPE		
								Without indicator	Visual indicator	Indicator pin Type "P" for Microswitch
00	64	53	M8	47	29	61	16	-----	D3278	D3328

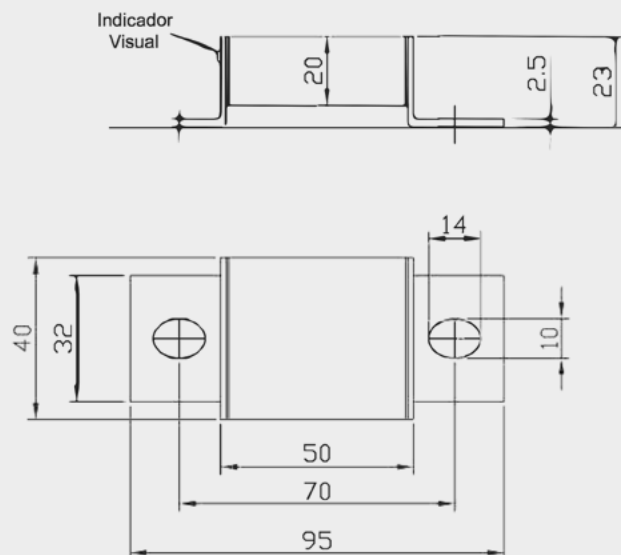
Electrical Characteristics

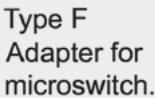
Size: 00

Size	Current	I ² t (A ² s.)		Watts
		Pre-arc	Total Clearing	
00	10	4.1	27.3	3.4
	16	7.6	51	6.2
	20	10	81	7.8
	25	19	132	8.8
	30	29	176	9.5
	40	52	369	10
	50	104	690	12
	63	210	1298	14
	80	306	2090	16
	100	600	4056	20
	125	1080	6750	27
	160	2020	12760	33
	200	3105	23100	37
	250	6569	40400	42
	315	10869	68400	53
	350	16300	109330	60
	400	17210	123300	69

- Current limiting
- High interrupting rating
- Low watts Loss
- Silver element.

000 Nr. 1512325





Dimensions								TYPE	
Size	A	B	C	E	F	G	H	Indicator pin Type "P"	Indicator Type "F" for Microswitch base
1	100	48	20	9	45	54	76	D3878	D3928
1	110	48	25	11	55	64	87	D4878	D4928
2	125	48	30	13	60	70	91	D5878	D5928
3	125	49	35	13	72	85	91	D6878	D6928

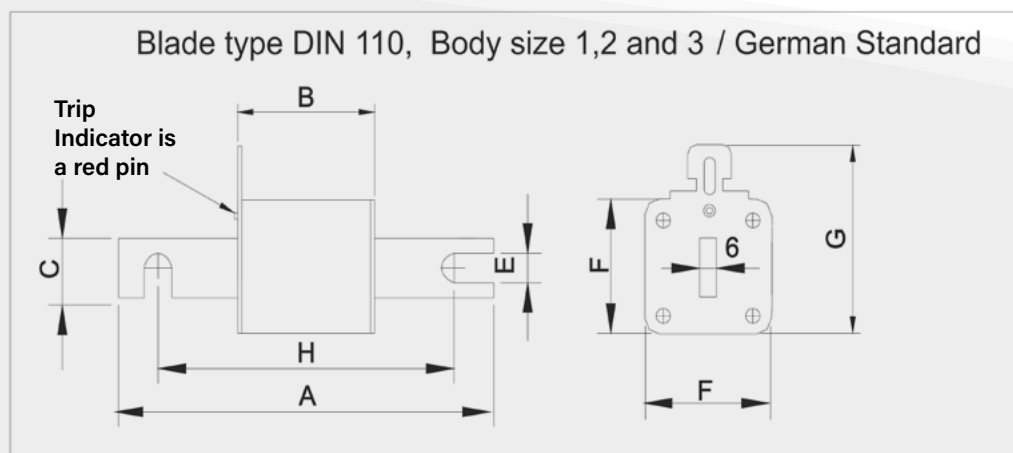
1	Size	Current	I² t (A² s.)		Watts	Size	Current	I² t (A² s.)		Watts
			Pre-arc	Total Clearing				Pre-arc	Total Clearing	
	40	41	279	9.8	200	1640	12300	46		
	50	81	580	11	250	2970	27000	56		
	63	120	780	14	315	6100	44800	60		
	80	184	1230	19	350	8430	51000	62		
	100	360	2490	21	400	13600	98000	66		
	125	543	3600	25	450	17070	135200	69		
	160	1086	7350	31	500	24000	175300	73		
	200	2210	14200	37	550	34600	237000	76		
250	4030	27100	40	630	52800	333000	78			
315	7080	46700	49	720	69900	423000	85			
350	10100	68000	56	800	102700	733000	98			
400	14700	102000	60							
450	19800	129000	67							
500	26000	172000	70							
550	33100	221000	76							
630	46800	319000	82							

Size	Current	I ² t (A ² s.)		Watts
		Pre-arc	Total Clearing	
2	400	11640	75100	64
	450	16000	107690	69
	500	22000	146600	76
	550	27600	185000	79
	630	39800	268000	92
	720	61000	408500	96
	800	83200	555000	103
	900	119000	790000	112
	1000	176900	1200000	116
	1100	248000	1690000	122
	1250	348900	1980000	129
Size	Current	I ² t (A ² s.)		Watts
		Pre-arc	Total Clearing	
3	500	13200	89000	100
	550	18500	132500	103
	630	29800	199000	106
	720	46000	310900	111
	800	65000	445000	116
	900	98000	654500	122
	1000	136000	890000	127
	1100	179000	1210500	133
	1250	265500	1796000	149
	1400	360000	2221000	158
	1500	460000	3100000	210
	1600	525000	3450000	243

DENCO® fuses

Semiconductor Fuses 690V / 800V

German Standard (DIN 43653)



Dimensions								DIN 110		
								TYPE		
Size	A	B	C	E	F	G	H	Visual indicator	Indicator Type "F" for Microswitch base	-----
1	133	49	25	11	45	54	108	D3728	D3778	-----
1	138	49	25	11	55	64	108	D4728	D4778	-----
2	139	49	25	11	60	70	108	D5728	D5778	-----
3	139	51	35	11	72	85	108	D6728	D6778	-----

Electrical Characteristics

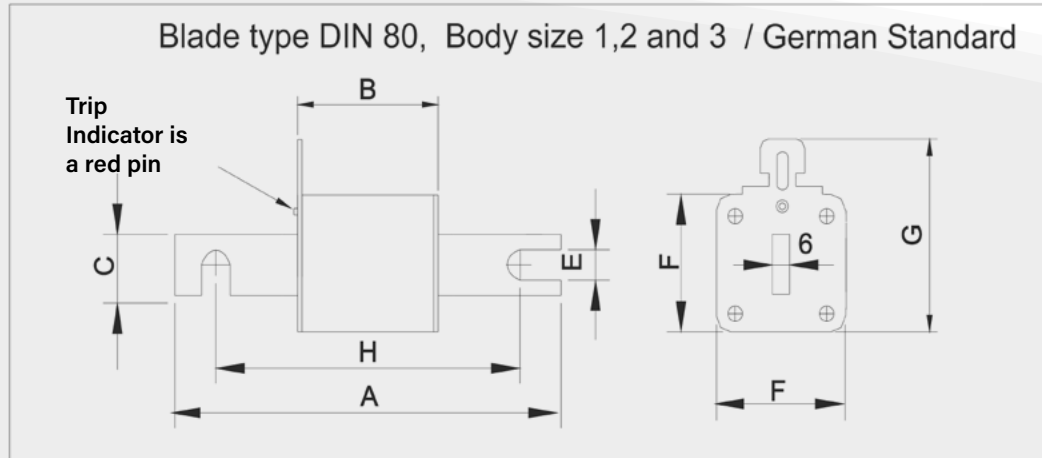
Size	Current	I ² t (A ² s.)		Watts
		Pre-arc	Total Clearing	
1	40	41	279	9.8
	50	81	580	11
	63	120	780	14
	80	184	1230	19
	100	360	2490	21
	125	543	3600	25
	160	1086	7350	31
	200	2210	14200	37
	250	4030	27100	40
	315	7080	46700	49
	350	10100	68000	56
	400	14700	102000	60
	450	19800	129000	67
	500	26000	172000	70
	550	33100	221000	76
	630	46800	319000	82
1	200	1640	12300	46
	250	2970	27000	56
	315	6100	44800	60
	350	8430	51000	62
	400	13600	98000	66
	450	17070	135200	69
	500	24000	175300	73
	550	34600	237000	76
	630	52800	333000	78
	720	69900	423000	85
	800	102700	733000	98

Size	Current	I ² t (A ² s.)		Watts
		Pre-arc	Total Clearing	
2	400	11640	75100	64
	450	16000	107690	69
	500	22000	146600	76
	550	27600	185000	79
	630	39800	268000	92
	720	61000	408500	96
	800	83200	555000	103
	900	119000	690000	112
	1000	176900	1200000	116
	1100	248000	1690000	122
	1250	348900	1980000	129
3	500	13200	89000	100
	550	18500	132500	103
	630	29800	199000	106
	720	46000	310900	111
	800	65000	445000	116
	900	98000	654500	122
	1000	136000	890000	127
	1100	179000	1210500	133
	1250	265500	1796000	149
	1400	360000	2221000	158
	1500	460000	3100000	210
	1600	525000	3450000	243

Current limiting/ High interrupting rating Low watts loss/ Silver element.

Semiconductor Fuses 690V / 800V

German Standard (DIN 43653)



Dimensions								DIN 80			TYPE		
Size	A	B	C	E	F	G	H	Visual indicator	Indicator Type "F" for Microswitch base	-----			
1	105	49	25	11	45	54	78	D3578	D3628	-----			
1	109	49	25	11	55	64	78	D4578	D4628	-----			
2	110	49	25	11	60	70	78	D5578	D5628	-----			
3	110	51	35	11	72	85	78	D6578	D6628	-----			

Electrical Characteristics

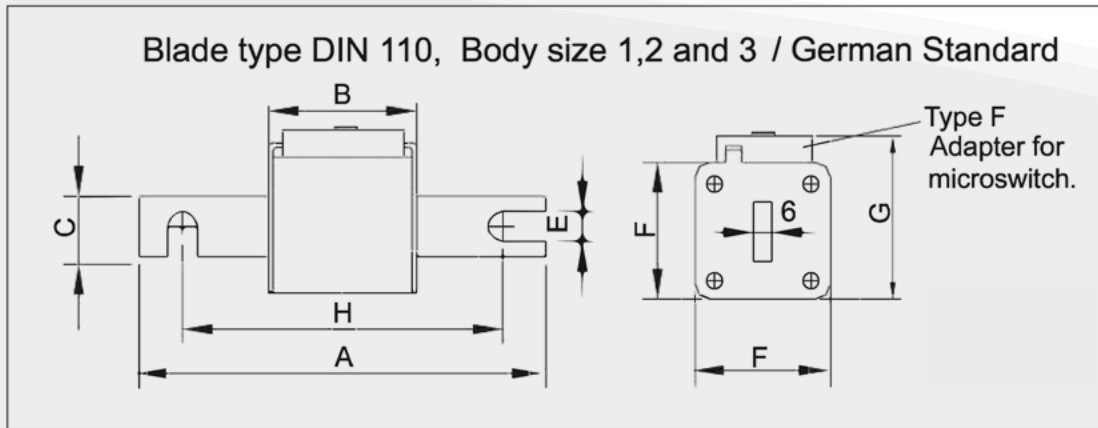
Size	Current	I ² t (A ² s.)		Watts
		Pre-arc	Total Clearing	
1	40	41	279	9.8
	50	81	580	11
	63	120	780	14
	80	184	1230	19
	100	360	2490	21
	125	543	3600	25
	160	1086	7350	31
	200	2210	14200	37
	250	4030	27100	40
	315	7080	46700	49
	350	10100	68000	56
	400	14700	102000	60
	450	19800	129000	67
	500	26000	172000	70
	550	33100	221000	76
	630	46800	319000	82

Size	Current	I ² t (A ² s.)		Watts
		Pre-arc	Total Clearing	
2	400	11640	75100	64
	450	16000	107690	69
	500	22000	146600	76
	550	27600	185000	79
	630	39800	268000	92
	720	61000	408500	96
	800	83200	555000	103
	900	119000	690000	112
	1000	176900	1200000	116
	1100	248000	1690000	122
	1250	348900	1980000	129
3	500	13200	89000	100
	550	18500	132500	103
	630	29800	199000	106
	720	46000	310900	111
	800	65000	445000	116
	900	98000	654500	122
	1000	136000	890000	127
	1100	179000	1210500	133
	1250	265500	1796000	149
	1400	360000	2221000	158
	1500	460000	3100000	210
	1600	525000	3450000	243

Current limiting/ High interrupting rating Low watts loss/ Silver element.

Semiconductor Fuses 690V / 800V

German Standard (DIN 43653)



Dimensions

DIN 110

Size	A	B	C	E	F	G	H	TYPE		
								-----	-----	Indicator Type "F" for Microswitch base
1	133	49	25	11	45	54	108	-----	-----	D3828
1	138	49	25	11	55	64	108	-----	-----	D4828
2	139	49	25	11	60	70	108	-----	-----	D5828
3	139	51	35	11	72	85	108	-----	-----	D6828

Electrical Characteristics

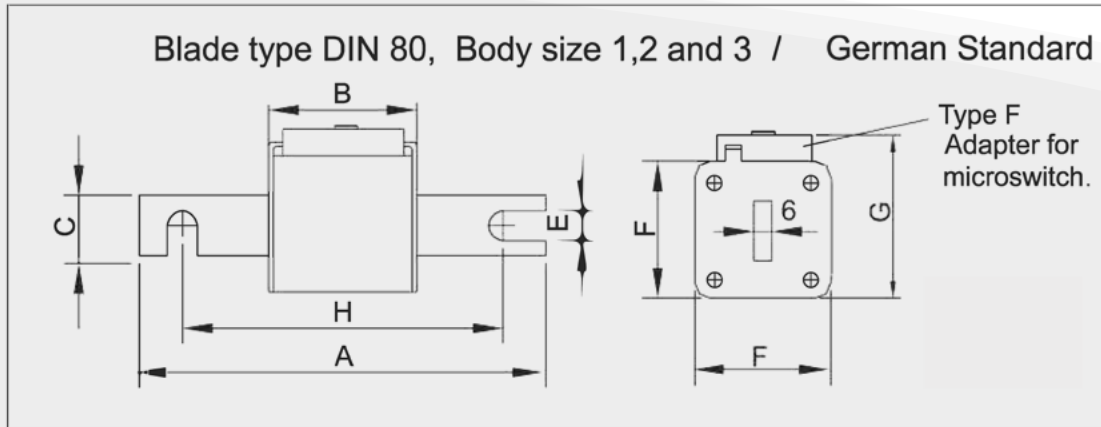
Size	Current	I ² t (A ² s.)		Watts
		Pre-arc	Total Clearing	
1	40	41	279	9.8
	50	81	580	11
	63	120	780	14
	80	184	1230	19
	100	360	2490	21
	125	543	3600	25
	160	1086	7350	31
	200	2210	14200	37
	250	4030	27100	40
	315	7080	46700	49
	350	10100	68000	56
	400	14700	102000	60
	450	19800	129000	67
	500	26000	172000	70
	550	33100	221000	76
	630	46800	319000	82

Size	Current	I ² t (A ² s.)		Watts
		Pre-arc	Total Clearing	
2	400	11640	75100	64
	450	16000	107690	69
	500	22000	146600	76
	550	27600	185000	79
	630	39800	268000	92
	720	61000	408500	96
	800	83200	555000	103
	900	119000	690000	112
	1000	176900	1200000	116
	1100	248000	1690000	122
	1250	348900	1980000	129
3	500	13200	89000	100
	550	18500	132500	103
	630	29800	199000	106
	720	46000	310900	111
	800	65000	445000	116
	900	98000	654500	122
	1000	136000	890000	127
	1100	179000	1210500	133
	1250	265500	1796000	149
	1400	360000	2221000	158
	1500	460000	3100000	210
	1600	525000	3450000	243

Current limiting/ High interrupting rating Low watts loss/ Silver element.

Semiconductor Fuses 690V / 800V

German Standard (DIN 43653)



Dimensions

DIN 80

Size	A	B	C	E	F	G	H	TYPE		
								-----	-----	Indicator Type "F" for Microswitch base
1	105	49	25	11	45	54	78	-----	-----	D3678
1	109	49	25	11	55	64	78	-----	-----	D4678
2	110	49	25	11	60	70	78	-----	-----	D5678
3	110	51	35	11	72	85	78	-----	-----	D6678

Electrical Characteristics

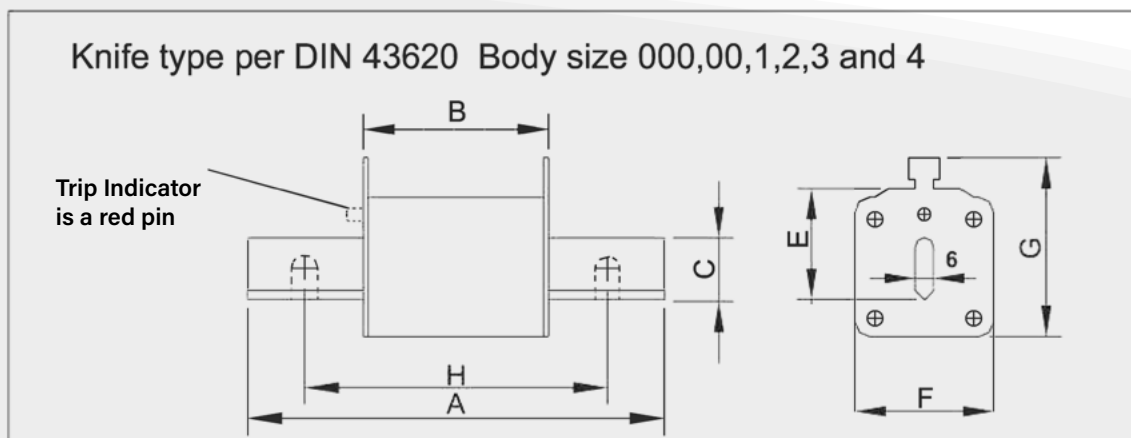
Size	Current	I ² t (A ² s.)		Watts
		Pre-arc	Total Clearing	
1	40	41	279	9.8
	50	81	580	11
	63	120	780	14
	80	184	1230	19
	100	360	2490	21
	125	543	3600	25
	160	1086	7350	31
	200	2210	14200	37
	250	4030	27100	40
	315	7080	46700	49
	350	10100	68000	56
	400	14700	102000	60
	450	19800	129000	67
	500	26000	172000	70
	550	33100	221000	76
	630	46800	319000	82
1	200	1640	12300	46
	250	2970	27000	56
	315	6100	44800	60
	350	8430	51000	62
	400	13600	98000	66
	450	17070	135200	69
	500	24000	175300	73
	550	34600	237000	76
	630	52800	333000	78
	720	69900	423000	85
	800	102700	733000	98

Size	Current	I ² t (A ² s.)		Watts
		Pre-arc	Total Clearing	
2	400	11640	75100	64
	450	16000	107690	69
	500	22000	146600	76
	550	27600	185000	79
	630	39800	268000	92
	720	61000	408500	96
	800	83200	555000	103
	900	119000	690000	112
	1000	176900	1200000	116
	1100	248000	1690000	122
	1250	348900	1980000	129
3	500	13200	89000	100
	550	18500	132500	103
	630	29800	199000	106
	720	46000	310900	111
	800	65000	445000	116
	900	98000	654500	122
	1000	136000	890000	127
	1100	179000	1210500	133
	1250	265500	1796000	149
	1400	360000	2221000	158
	1500	460000	3100000	210
	1600	525000	3450000	243

Current limiting/ High interrupting rating Low watts loss/ Silver element.

Semiconductor Fuses 690V / 800 V

DIN 43620 fuse, IEC 269.1 e 4 aR/gR Class



Dimensions DIN 43620

Size	A	B	C	E	F	G	H	TYPE
000	78	52	16	35	21	55	---	D2128
00	78	52	16	35	29	60	---	D3261
1*	135	70	20	40	45	63	---	D4378
1	135	70	20	40	45	63	---	D4378

Dimensions DIN 43620

Size	A	B	C	E	F	G	H	TYPE
2	150	70	26	48	58	72	---	D6378
3	150	70	35	60	72	87	---	D7378
4	200	70	64	87	98	113	150	1512204
5	204	80	64	80	85	---	150	1512220

Electrical Characteristics

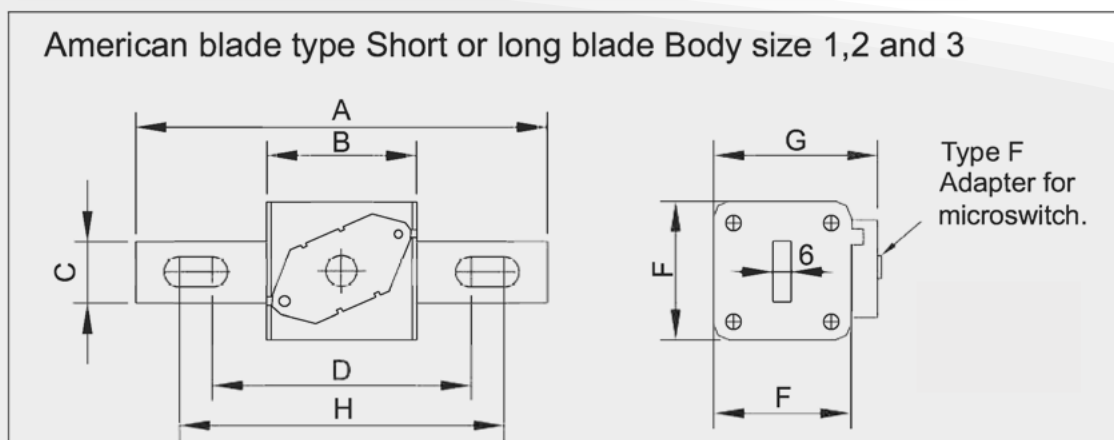
Size	Current	I ² t (A ² s.)		Watts
		Pre-arc	Total Clearing	
000 / 00	10	4.4	34	3.2
	16	7.6	55	4.8
	20	12.3	83	5.3
	25	21.5	153	7.3
	32	39	263	7.9
	40	64	443	9.5
	50	117	776	12
	63	213	1400	13
	80	377	2493	18
	100	699	4680	21
	125	1139	8300	25
	160	2230	15030	33
	200	4000	26630	35
	225	5800	37660	39
	250	7250	47850	44
	315	11300	74580	55
1 / 2	16	7.8	43	4.8
	20	16	83	5.3
	25	26	133	7.3
	32	36	190	7.9
	40	44	275	9.5
	50	78	523	12
	63	110	703	13
	80	179	1193	18
	100	345	2133	21
	125	500	3810	25
	160	1033	7443	33
	200	1990	13300	46
	250	3980	27500	56
	315	6100	44800	60
	350	9430	61000	62
	400	13600	98000	66

Size	Current	I ² t (A ² s.)		Watts
		Pre-arc	Total Clearing	
2 / 3	400	11640	75100	64
	500	22000	146600	76
	630	39800	268000	92
	720	61000	408500	96
	800	73200	475000	113
3	500	13200	89000	100
	630	29800	199000	106
	720	46000	310900	111
	800	73200	475000	113
	900	119000	690000	119
	1000	146900	944300	123
	1250	288000	1948900	140
	1400	373200	2444000	153
	1600	580000	3910000	160
	1800	889900	5244300	166
4	630	39800	268000	92
	700	61000	350500	96
	800	65000	445000	116
	900	98000	654500	122
	1000	136000	890000	127
	1100	179000	1210500	133
	1200	265500	1796000	149
	1250	275300	1873000	152
	1400	365000	2400000	156
	1600	580300	3960000	162
5	1800	876000	5300000	166
	2000	1120300	63860000	172

Current limiting/ High interrupting rating Low watts Loss/ Silver element.

Semiconductor Fuses 690V / 800V

American Standard in accord. to BS 88



Dimensions

Size	A	B	C	D	E	F	H	TIPO / TYPE		
								Without indicator	-----	Indicator Type "F" for Microswitch base
1	110	48	20	72	11	45	85	D4178	-----	D4228
1	135	48	25	78	14	55	105	D5178	-----	D5228
2	134	48	25	77	14	60	106	D6178	-----	D6228
3	134	49	35	78	16	72	108	D7178	-----	D7228

Electrical Characteristics

Size	Current	I ² t (A ² s.)		Watts
		Pre-arc	Clearing	
1	40	41	279	9.8
	50	81	580	11
	63	120	780	14
	80	184	1230	19
	100	360	2490	21
	125	543	3600	25
	160	1086	7350	31
	200	2210	14200	37
	250	4030	27100	40
	315	7080	46700	49
	350	10100	68000	56
	400	14700	102000	60
	450	19800	129000	67
	500	26000	172000	70
	550	33100	221000	76
	630	46800	319000	82

Size	Current	I ² t (A ² s.)		Watts
		Pre-arc	Total Clearing	
2	400	11640	75100	64
	450	16000	107690	69
	500	22000	146600	76
	550	27600	185000	79
	630	39800	268000	92
	720	61000	408500	96
	800	83200	555000	103
	900	119000	690000	112
	1000	176900	1200000	116
	1100	248000	1690000	122
	1250	348900	1980000	129
3	500	13200	89000	100
	550	18500	132500	103
	630	29800	199000	106
	720	46000	310900	111
	800	65000	445000	116
	900	98000	654500	122
	1000	136000	890000	127
	1100	179000	1210500	133
	1250	265500	1796000	149
	1400	360000	2221000	158
	1500	460000	3100000	210
	1600	525000	3450000	243

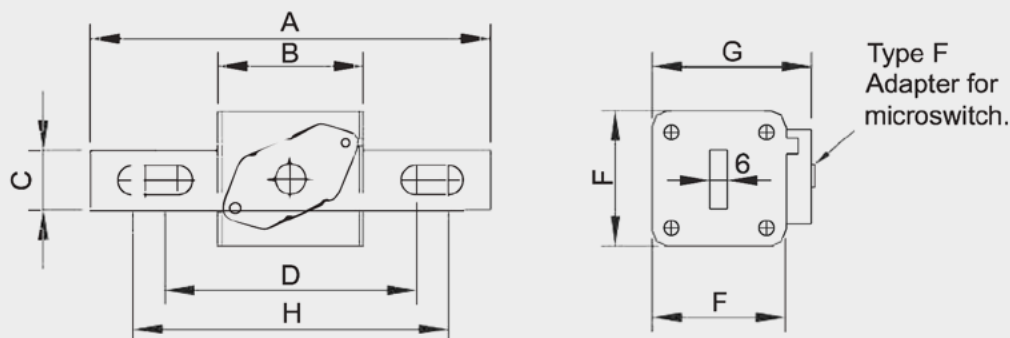
Current limiting/ High interrupting rating Low watts loss/ Silver element.

Semiconductor Fuses 690V / 800V

American Standard in accord. to BS 88

American blade type Short or long blade Body size 1,2 and 3

Fig. 4 - Size 1,2,3 - American Standard



Dimensions

Size	A	B	C	D	E	F	H	TYPE		
								Without indicator	-----	Indicator Type "F" for Microswitch base
1	148	48	20	85	11	45	110	D4278	-----	D4328
1	157	48	25	99	14	55	105	D5278	-----	D5328
2	159	48	25	99	14	60	106	D6278	-----	D6328
3	155	49	35	97	16	72	108	D7278	-----	D7328

Electrical Characteristics

Size	Current	I ² t (A ² s.)		Watts
		Pre-arc	Total Clearing	
1	40	41	279	9.8
	50	81	580	11
	63	120	780	14
	80	184	1230	19
	100	360	2490	21
	125	543	3600	25
	160	1086	7350	31
	200	2210	14200	37
	250	4030	27100	40
	315	7080	46700	49
	350	10100	68000	56
	400	14700	102000	60
	450	19800	129000	67
	500	26000	172000	70
	550	33100	221000	76
	630	46800	319000	82
1	200	1640	12300	46
	250	2970	27000	56
	315	6100	44800	60
	350	8430	51000	62
	400	13600	98000	66
	450	17070	135200	69
	500	24000	175300	73
	550	34600	237000	76
	630	52800	333000	78
	720	69900	423000	85
	800	102700	733000	98

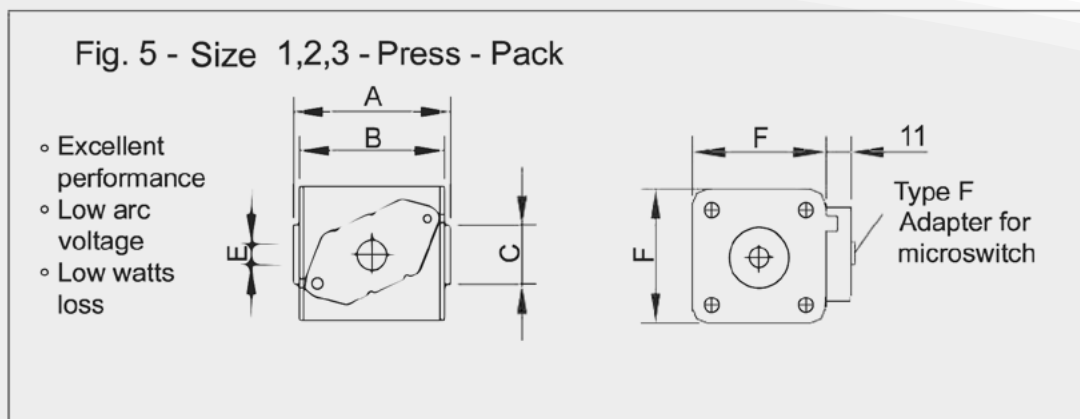
Size	Current	I ² t (A ² s.)		Watts
		Pre-arc	Total Clearing	
2	400	11640	75100	64
	450	16000	107690	69
	500	22000	146600	76
	550	27600	185000	79
	630	39800	268000	92
	720	61000	408500	96
	800	83200	555000	103
	900	119000	690000	112
	1000	176900	1200000	116
	1100	248000	1690000	122
	1250	348900	1980000	129
3	500	13200	89000	100
	550	18500	132500	103
	630	29800	199000	106
	720	46000	310900	111
	800	65000	445000	116
	900	98000	654500	122
	1000	136000	890000	127
	1100	179000	1210500	133
	1250	265500	1796000	149
	1400	360000	2221000	158
	1500	460000	3100000	210
	1600	525000	3450000	243

Current limiting/ High interrupting rating Low watts loss/ Silver element.

Semiconductor Fuses 690V / 800V

Press - Pack in accord. to IEC 269.1 and 4

End contact type, single hole Body size 1,2 and 3



Dimensions

Size	A	B	C	E	F	TYPE		
						Visual indicator	Indicator Type "P" for Microswitch base	Indicator Type "F" for Microswitch base
1	50	48	18	M8 (5/16")	45	D3978	-----	D4028
1	50	48	18	M8 (5/16")	55	D4978	-----	D5028
2	50	48	30	M10 (3/8")	60	D5978	-----	D6028
3	52	49	38	M12 (1/2")	72	D6978	-----	D7028

Electrical Characteristics

Size	Current	I ² t (A ² s.)		Watts
		Pre-arc	Total Clearing	
1	40	41	279	9.8
	50	81	580	11
	63	120	780	14
	80	184	1230	19
	100	360	2490	21
	125	543	3600	25
	160	1086	7350	31
	200	2210	14200	37
	250	4030	27100	40
	315	7080	46700	49
	350	10100	68000	56
	400	14700	102000	60
	450	19800	129000	67
	500	26000	172000	70
	550	33100	221000	76
	630	46800	319000	82

Size	Current	I ² t (A ² s.)		Watts
		Pre-arc	Total Clearing	
2	400	11640	75100	64
	450	16000	107690	69
	500	22000	146600	76
	550	27600	185000	79
	630	39800	268000	92
	720	61000	308500	96
	800	83200	455000	103
	900	119000	690000	112
	1000	176900	590000	116
	1100	248000	1200000	122
	1250	348900	1690000	129
3	500	13200	89000	100
	550	18500	132500	103
	630	29800	199000	106
	720	46000	310900	111
	800	65000	380000	116
	900	98000	419500	122
	1000	136000	485000	127
	1100	179000	880500	133
	1250	265500	1396000	149
	1400	360000	1921000	158
	1500	460000	2990000	210
	1600	525000	3450000	243

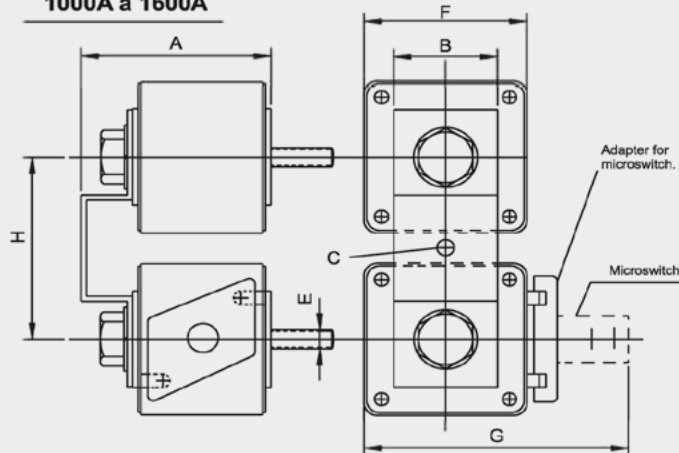
Current limiting/ High interrupting rating Low watts loss/ Silver element.

Semiconductor Fuses 690V / 800V

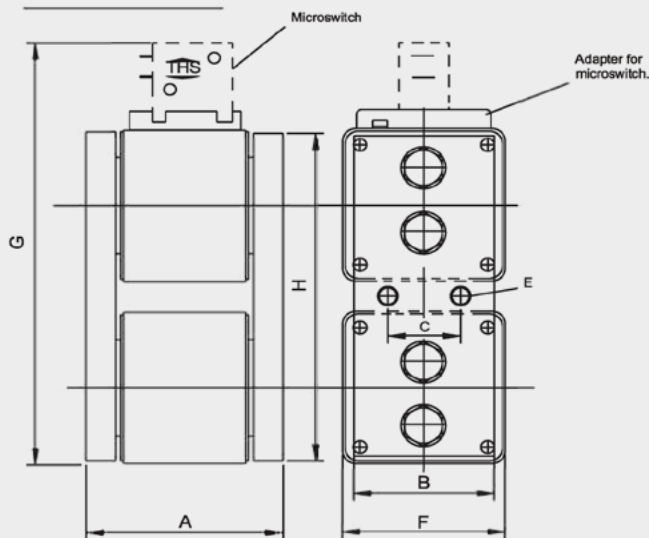
French Standard in accord. to IEC 269.1 and 1/4

Two fuses in parallel connected with fish joint

1000A a 1600A



1600A a 2000A



Dimensions

Size	A	B	C	E	F	G	H	Nr. Ref.
2 x 2	78	60	30	M10	60	188	141	1512386
2 x 3	78	70	40	M10	72	206	170	1512386

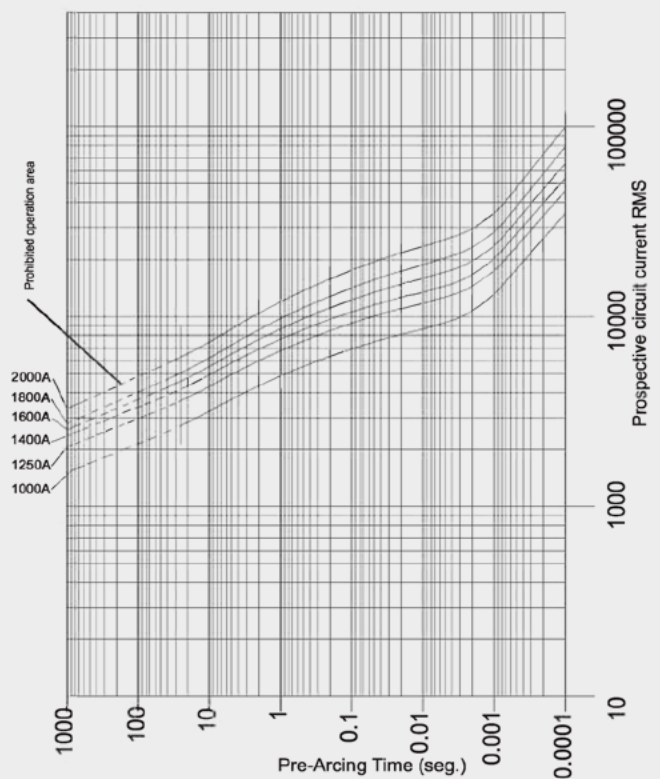
Electrical Characteristics

Size	Current	I² t (A² s.)		Watts	Size	Current	I² t (A² s.)		Watts
		Pre-arc	Total Clearing				Pre-arc	Total Clearing	
2 x 2	1000	110000	553000	162	2 x 3	1600	440000	2331000	220
	1250	203300	1063000	183		1800	643000	3430000	228
	1400	311980	1623880	213		2000	973000	5320000	234

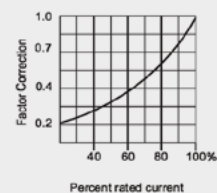
Dimensions

Tamh. / Size	A	B	C	E	F	G	H	Nr. Ref.
2 x 2	67.5	35	11	M10	60	100	72	2F6028
2 x 3	67.5	51	13	M12	72	115	86	2F7028

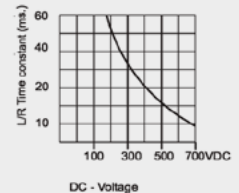
Time Current Curve



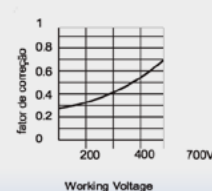
Watt loss correction curve



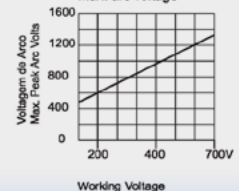
DC voltage working



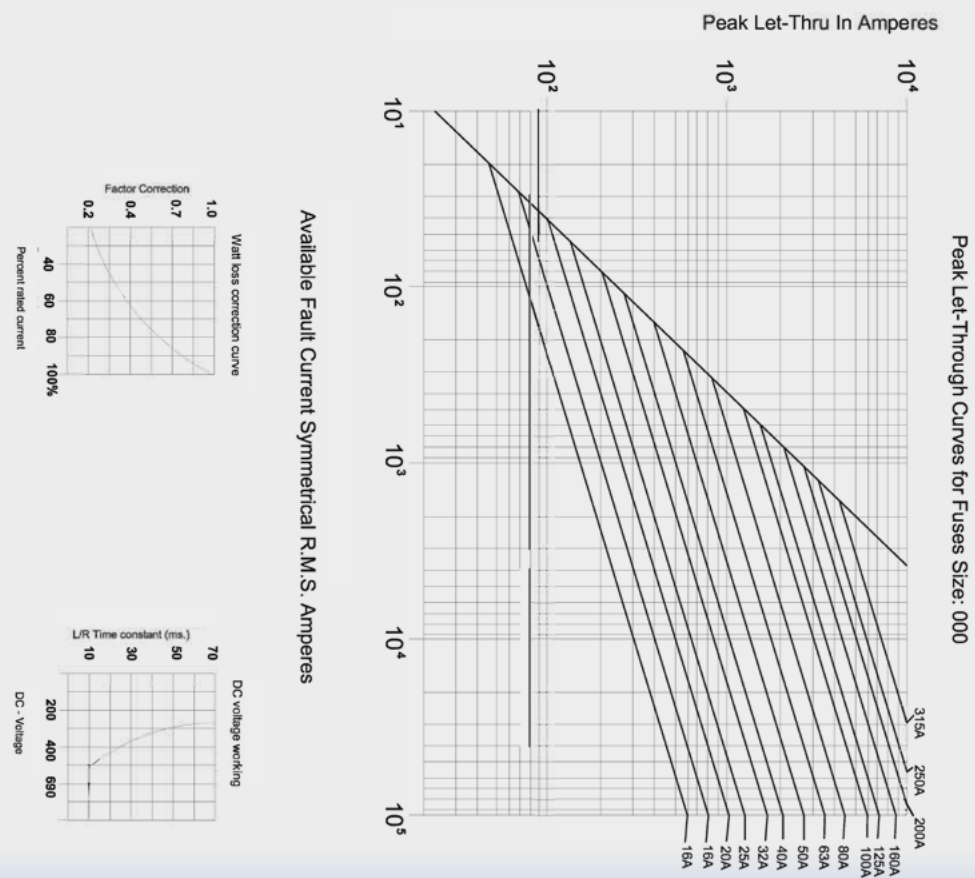
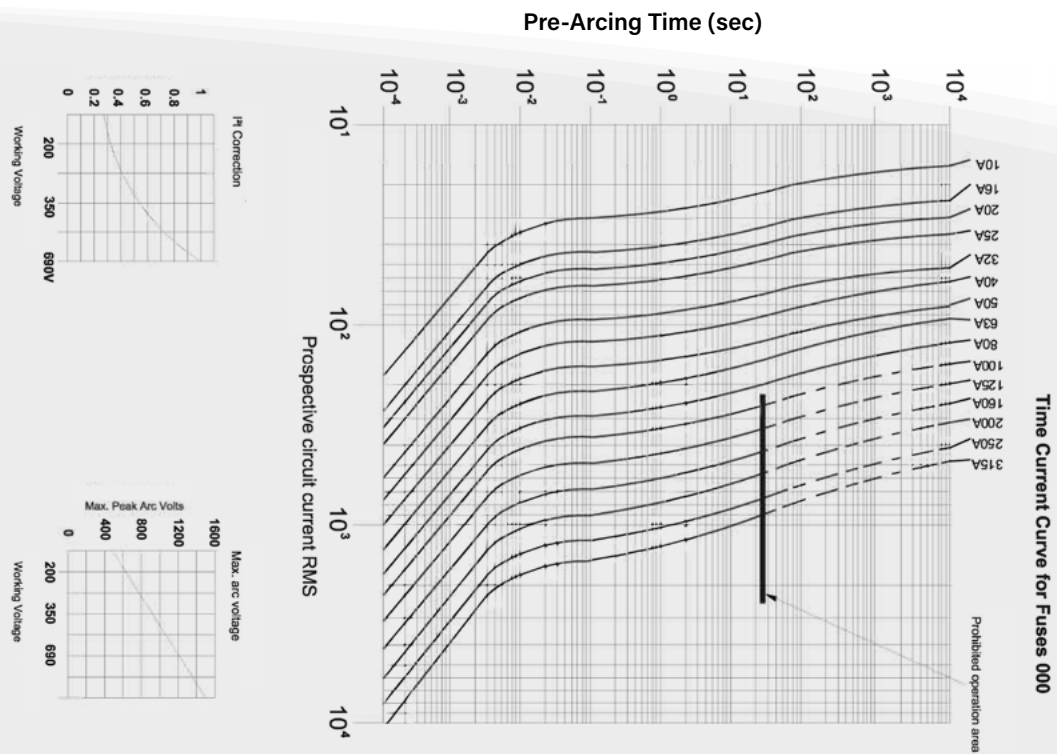
I² t Correction



Max. arc voltage

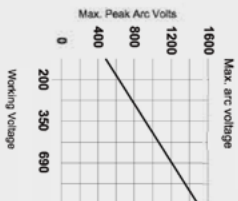
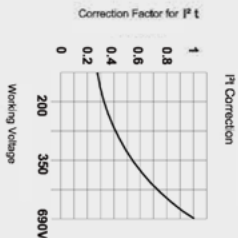
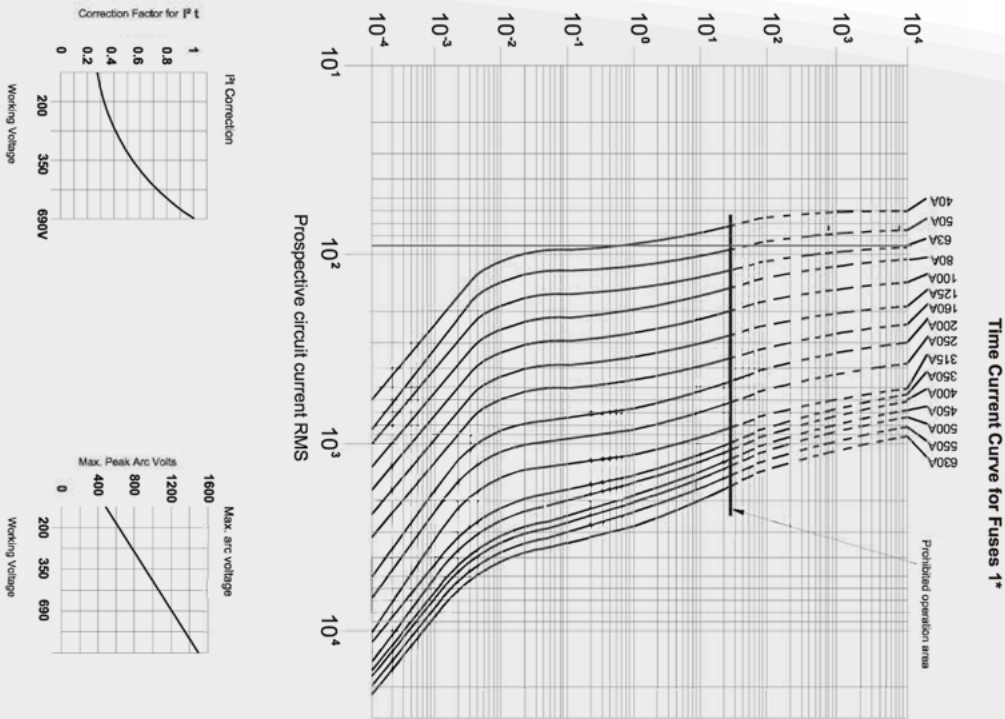


Technical data for Fuses Sizes 000, 690 / 800V

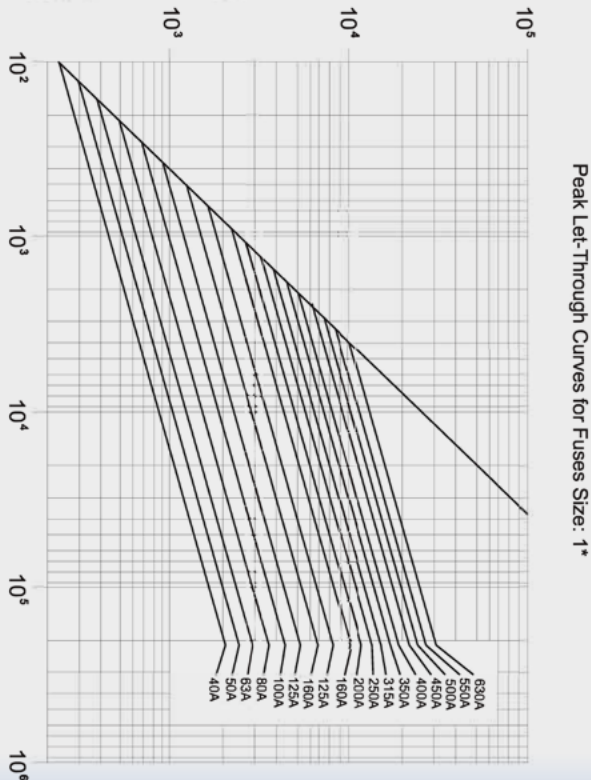


Technical data for Fuses Sizes 1*, 690 / 800V

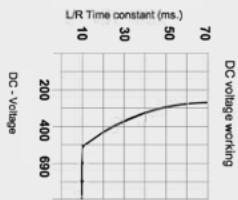
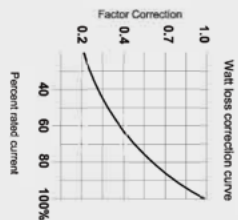
Pre-Arcing Time (sec)



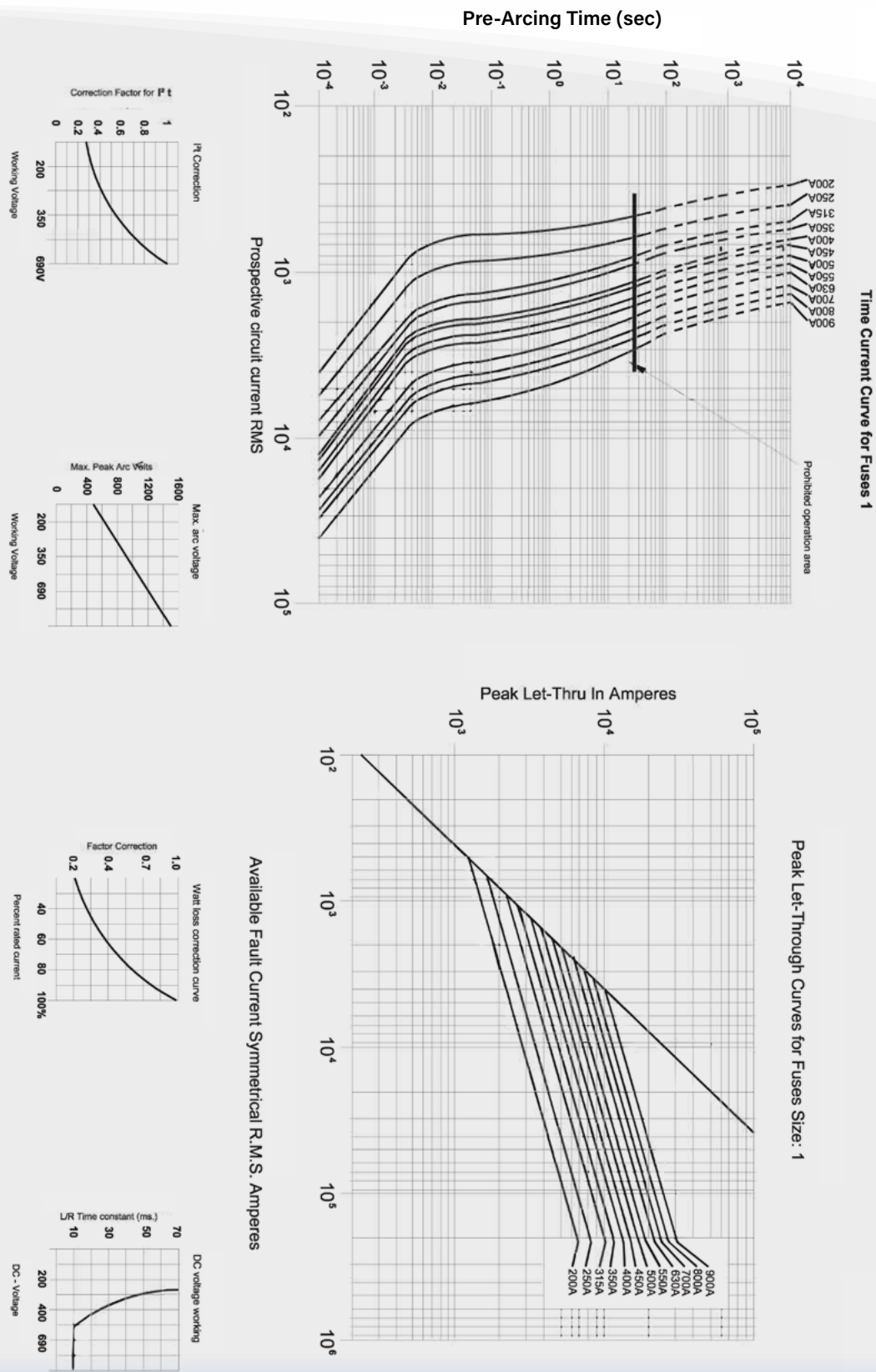
Peak Let-Thru In Amperes



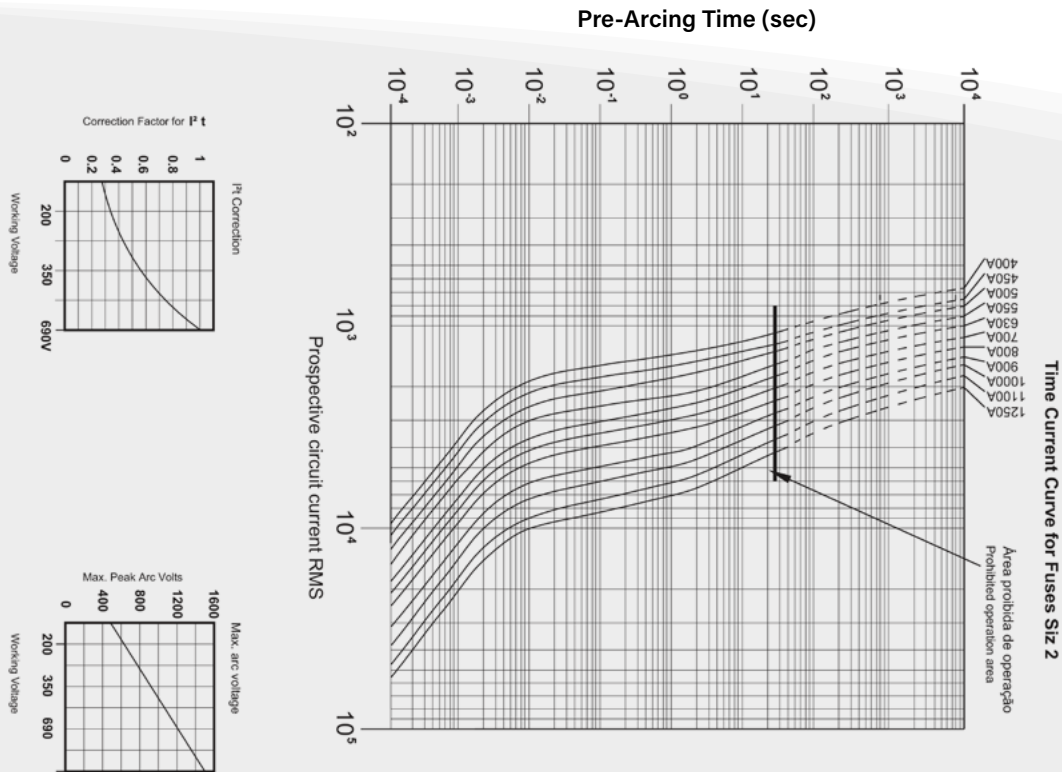
Available Fault Current Symmetrical R.M.S. Amperes



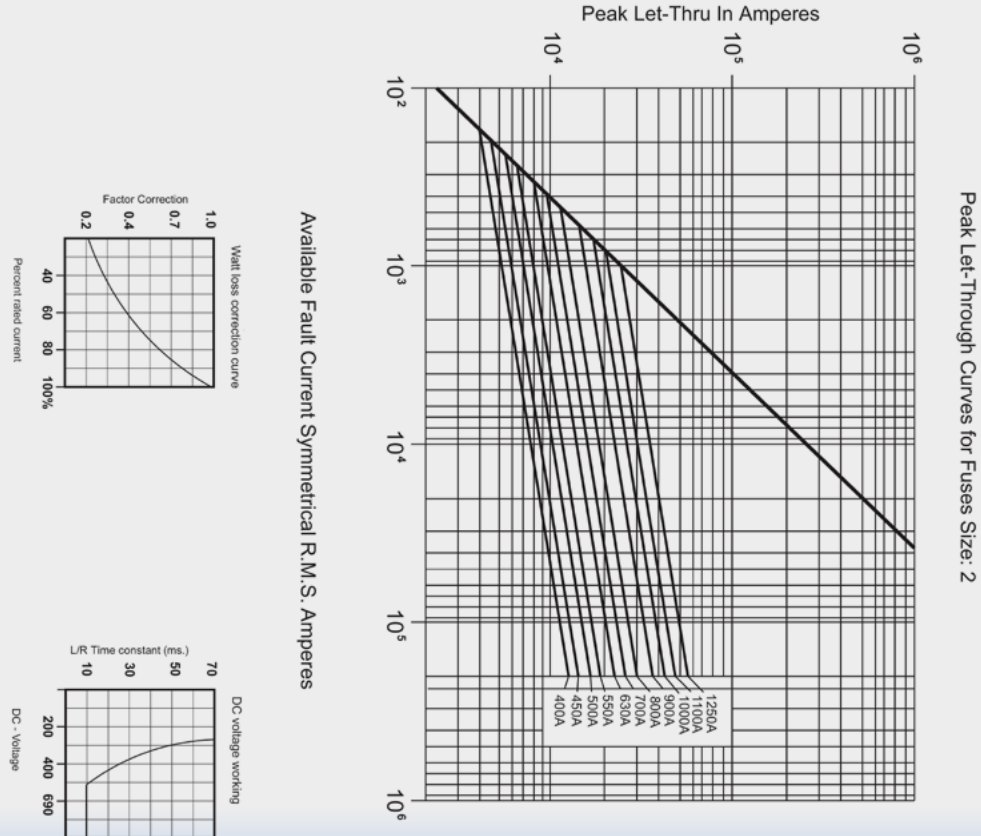
Technical data for Fuses Sizes 1, 690 / 800V



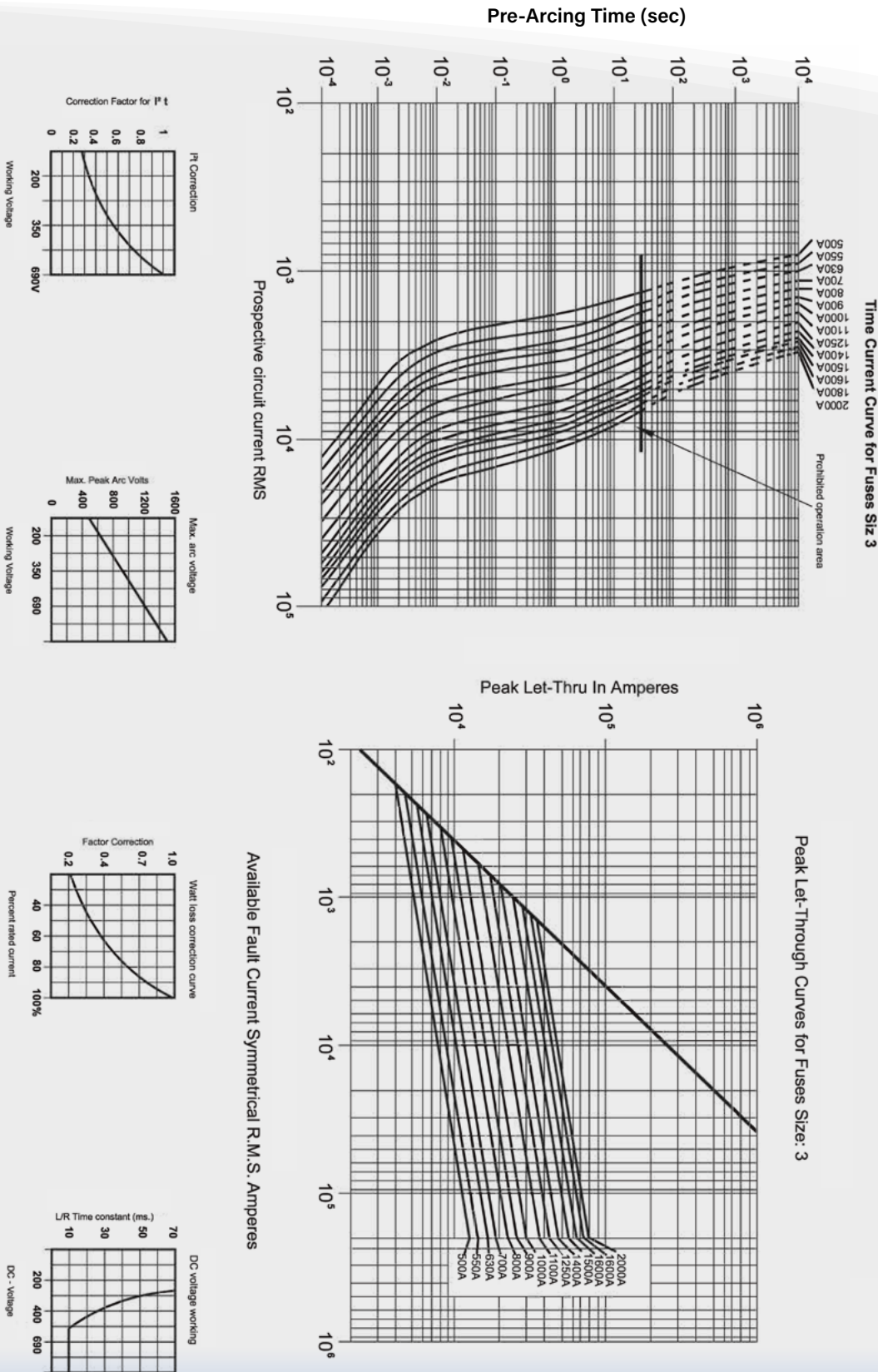
Technical data for Fuses Sizes 2, 690 / 800V



Technical data for Fuses Size. 2, 690 / 800V



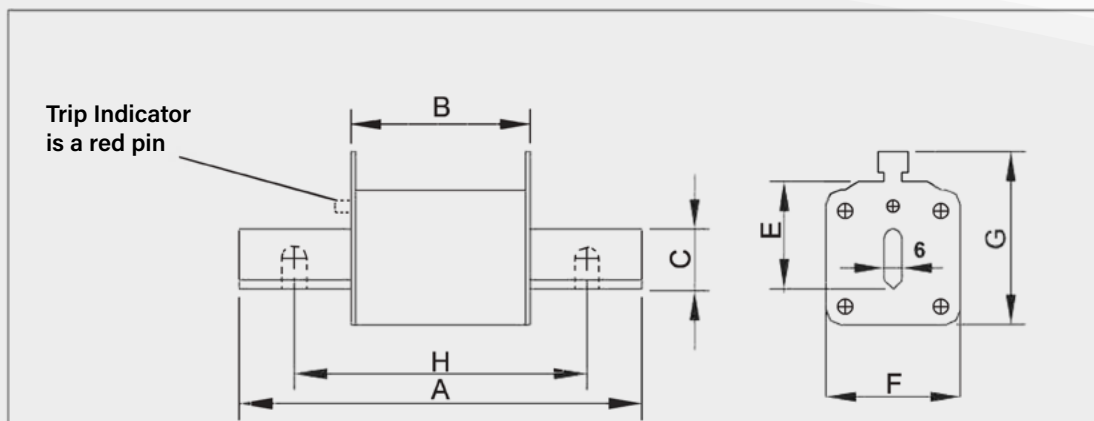
Technical data for Fuses Sizes 3, 690 / 800V



Semiconductor Fuses 1000V / 1300V

DIN 43620 fuse, IEC 269.1 e 4 aR/gR Class

Knife type per DIN 43620 Body size 000,00,1,2,3 and 4



Dimensions

DIN 43620

Size	A	B	C	E	F	G	H
----	---	---	---	---	---	---	---
1) 00	78	52	16	35	29	60	---
1*	135	70	20	40	45	63	---
1	135	70	20	40	45	63	---

1) MAX. 1000V

Dimensions

DIN 43620

Size	A	B	C	E	F	G	H
2	150	70	26	48	58	72	---
3	150	70	35	60	72	87	---
4	200	70	64	87	98	113	150
5	204	80	64	80	85	---	150

Electrical Characteristics

Size	Current	I ² t (A ² s.)		Watts	Size	Current	I ² t (A ² s.)		Watts
		Pre-arc	Total Clearing				Pre-arc	Total Clearing	
00	10	4.4	34	3.2	1	25	26	133	7.3
	16	7.6	55	4.8		32	36	190	7.9
	20	12.3	83	5.3		40	44	275	9.5
	25	21.5	153	7.3		50	130	1050	12
	32	39	223	7.9		63	220	1703	13
	40	64	400	9.5		80	410	3193	18
	50	117	700	12		100	755	5933	21
	63	213	1200	13		125	1400	11000	25
	80	377	2493	18		160	2033	14000	33
	100	699	4680	21		200	4590	25000	46
	125	1139	8300	25		250	7580	45050	56
	160	2230	15030	33		315	14100	80800	66
	200	4000	26630	35		350	21430	121000	69
	225	5800	37660	39		400	34600	203000	76
	250	7250	47850	44		500	65430	339000	86
	315	11300	74580	55		630	12500	670000	96

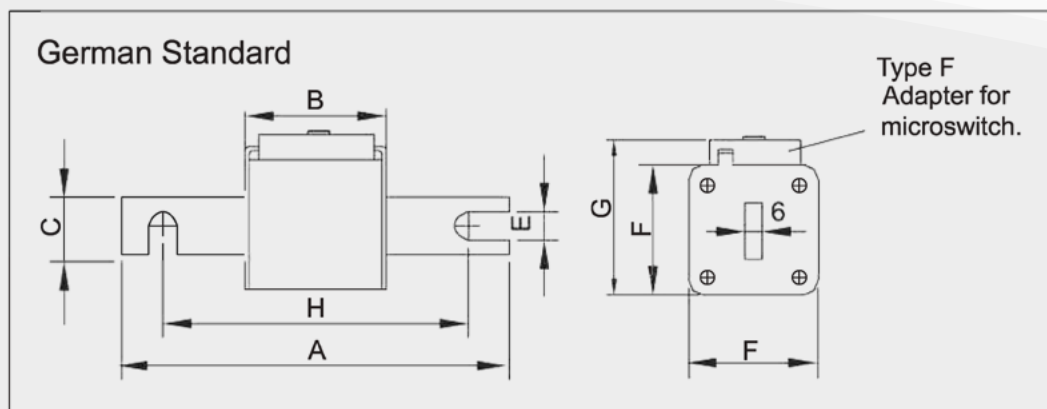
Size	Current	I ² t (A ² s.)		Watts	Size	Current	I ² t (A ² s.)		Watts
		Pre-arc	Total Clearing				Pre-arc	Total Clearing	
2	250	7900	45000	64	4	630	39800	268000	92
	315	13000	77600	76		700	61000	408500	96
	400	29800	168000	92		800	65000	445000	116
	500	48000	300000	96		900	98000	654500	122
	630	11200	538000	108		1000	136000	890000	127
	720	140800	710000	112		1100	179000	1210500	133
3	400	22000	130000	94	5	1200	265500	1796000	149
	500	42500	230000	107		1250	275300	1873000	152
	630	82100	456000	114		1400	365000	2400000	156
	800	195000	1080000	153		1600	580300	3960000	162
	1000	350000	1910000	160		1800	876000	4300000	166
	1250	541900	3220000	190		2000	1120300	5860000	172
	1400	770000	3910000	210					
	1600	1400000	5220000	230					

Current limiting/ High interrupting rating Low watts loss/ Silver element.

Semiconductor Fuses 1000V / 1300V

German Standard DIN 43653

Blade type DIN 110 Body size 1,2 and 3



Dimensions

Size	A	B	C	E	F	G	H	TYPE		
								-----	-----	Indicator Type "F" for Microswitch base
1	138	79	20	11	45	54	108	-----	-----	D3808
1	138	79	25	11	55	64	108	-----	-----	D4808
2	139	79	25	11	60	75	108	-----	-----	D5808
3	139	81	35	11	72	88	108	-----	-----	D6808

Electrical Characteristics

Size	Current	I ² t (A ² s.)		Watts
		Pre-arc	Total Clearing	
1	40	44	275	10
	50	130	1050	15
	63	220	1703	19
	80	410	3194	25
	100	699	5933	30
	125	1139	8300	37
	160	2033	14000	44
	200	4590	25000	49
	250	7580	45050	59
	315	14100	80800	62
	350	21430	121000	67
2	200	4590	25000	57
	250	7580	45050	66
	315	14100	80800	70
	350	21430	121000	75
	400	34600	20300	78
	450	44000	250000	80
	500	65430	339000	88
	550	82000	428000	94
	630	125500	670000	98
3	500	42000	230000	112
	550	55600	319000	120
	630	82100	456000	126
	720	114000	645000	132
	800	195000	1080000	138
	900	235500	1300000	150
	1000	350000	1910000	155
	1100	443000	2400000	170
	1250	544000	3223000	195
	1400	780000	3988000	210
	1500	999000	4500000	216
	1600	1400000	5600000	233

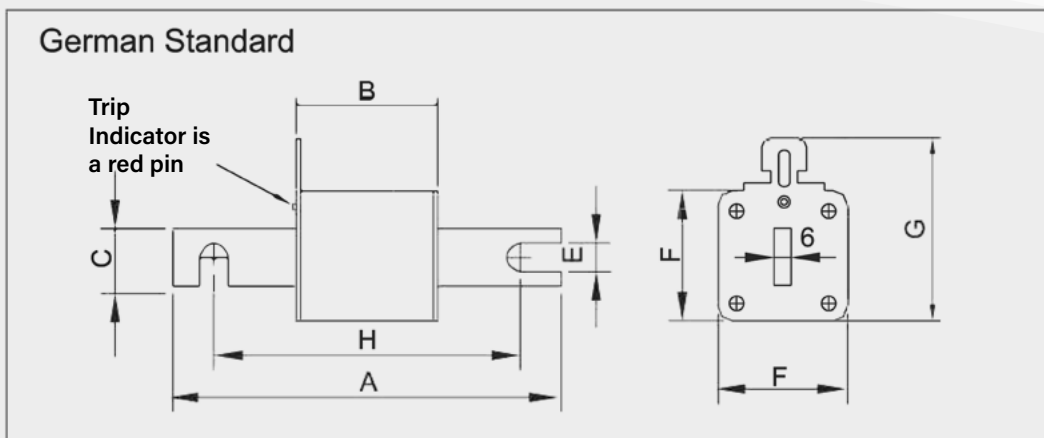
Size	Current	I ² t (A ² s.)		Watts
		Pre-arc	Total Clearing	
2	250	7900	45000	70
	315	13000	77600	73
	350	20300	110000	76
	400	29800	168000	80
	450	42068	239300	88
	500	48000	300000	97
	550	70030	350000	107
	630	112000	538000	112
	720	140800	710000	118
	800	224000	1178000	130
3	500	42000	230000	112
	550	55600	319000	120
	630	82100	456000	126
	720	114000	645000	132
	800	195000	1080000	138
	900	235500	1300000	150
	1000	350000	1910000	155
	1100	443000	2400000	170
	1250	544000	3223000	195
	1400	780000	3988000	210
	1500	999000	4500000	216
	1600	1400000	5600000	233

Current limiting/ High interrupting rating Low watts loss/ Silver element.

Semiconductor Fuses 1000V / 1300V

German Standard DIN 43653

Blade type DIN 110, Body size 1,2 and 3



Dimensions		DIN 110						TYPE		
Size	A	B	C	E	F	G	H	Visual indicator	Indicator Type "F" for Microswitch base	-----
1	138	80	20	11	45	56	108	D3708	D3758	-----
1	138	80	25	11	55	65	108	D4708	D4758	-----
2	138	80	25	11	60	75	108	D5708	D5758	-----
3	139	81	35	11	72	88	108	D6708	D6758	-----

Electrical Characteristics

Size	Current	I ² t (A ² s.)		Watts
		Pre-arc	Total Clearing	
1	40	44	275	10
	50	130	1050	15
	63	220	1703	19
	80	410	3194	25
	100	699	5933	30
	125	1139	8300	37
	160	2033	14000	44
	200	4590	25000	49
	250	7580	45050	59
	315	14100	80800	62
	350	21430	121000	67
1	200	4590	25000	57
	250	7580	45050	66
	315	14100	80800	70
	350	21430	121000	75
	400	34600	20300	78
	450	44000	250000	80
	500	65430	339000	88
	550	82000	428000	94
	630	125500	670000	98

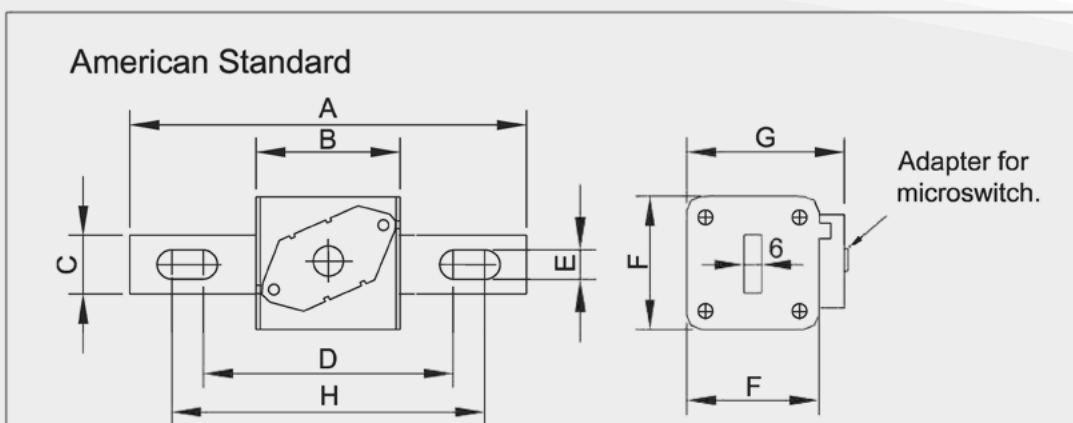
Size	Current	I ² t (A ² s.)		Watts
		Pre-arc	Total Clearing	
2	250	7900	45000	70
	315	13000	77600	73
	350	20300	110000	76
	400	29800	168000	80
	450	42068	239300	88
	500	48000	300000	97
	550	70030	350000	107
	630	112000	538000	112
	720	140800	710000	118
	800	224000	1178000	130
3	500	42000	230000	112
	550	55600	319000	120
	630	82100	456000	126
	720	114000	645000	132
	800	195000	1080000	138
	900	235500	1300000	150
	1000	350000	1910000	155
	1100	443000	2400000	170
	1250	544000	3223000	195
	1400	780000	3988000	210
3	1500	999000	4500000	216
	1600	1400000	5600000	233

Current limiting/ High interrupting rating Low watts loss/ Silver element.

Semiconductor Fuses 1000V / 1300V

American Standard in accord. to BS 88

American blade type Short or blade Body size 1,2 and 3



Dimensions

Size	A	B	C	D	E	F	H	TYPE		
								Visual indicator	-----	Indicator Type "F" for Microswitch base
1	155	75	20	100	11	45	131	D4258	-----	D4308
1	159	75	25	102	14	55	127	D5258	-----	D5308
2	160	75	25	102	14	60	127	D6258	-----	D6308
3	160	75	35	102	16	72	128	D7258	-----	D7308

Electrical Characteristics

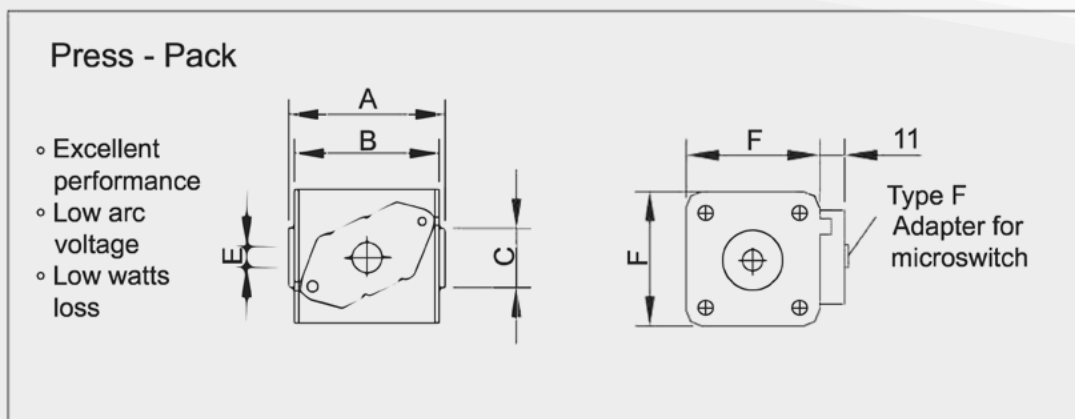
Size	Current	I ² t (A ² s.)		Watts	Size	Current	I ² t (A ² s.)		Watts
		Pre-arc	Total Clearing				Pre-arc	Total Clearing	
1	40	44	275	10	1	200	4590	25000	57
	50	130	1050	15		250	7580	45050	66
	63	220	1703	19		315	14100	80800	70
	80	410	3194	25		350	21430	121000	75
	100	699	5933	30		400	34600	20300	78
	125	1139	8300	37		450	44000	250000	80
	160	2033	14000	44		500	65430	339000	88
	200	4590	25000	49		550	82000	428000	94
	250	7580	45050	59		630	125500	670000	98
	315	14100	80800	62					
2	350	21430	121000	67	2	250	7900	45000	70
						315	13000	77600	73
						350	20300	110000	76
						400	29800	168000	80
						450	42068	239300	88
						500	48000	300000	97
						550	70030	350000	107
						630	112000	538000	112
						720	140800	710000	118
						800	224000	1178000	130
3					3	500	42000	230000	112
						550	55600	319000	120
						630	82100	456000	126
						720	114000	645000	132
						800	195000	1080000	138
						900	235500	1300000	150
						1000	350000	1910000	155
						1100	443000	2400000	170
						1250	544000	3223000	195
						1400	780000	3988000	210
						1500	999000	4500000	216
						1600	1400000	5600000	233

- Current limiting
- High interrupting rating
- Low watts Loss
- Silver element.

Semiconductor Fuses 1000V / 1300V

Press - Pack in according to IEC 269. 1 and 4

End contact type, single hole Body size 1,2,and 3



Dimensions

Size	A	B	C	E	F	TYPE Indicator Type "M" for Microswitch base
1	75	72	25	M8 or 5/16"	45	D3958
1	80	73	25		55	D4008
2	75	73	31	M10 or 5/16"	60	D6158
3	76	73	38	M12 or 1/2"	72	D6958
3	83	73	38	M12	72	D7108

Size	A	B	C	E	F	TYPE Indicator Type "F" for Microswitch base
3	91	73	38	M12 or 1/2"	72	D7064
1	75	72	25	M8 or 5/16"	55	D4958
1	80	72	25	M8	55	D5008
2	81	72	31	M10	60	D6008
2	91	72	31	M10 or 3/8"	72	D6064

Electrical Characteristics

Size	Current	I ² t (A ² s.)		Watts
		Pre-arc	Total Clearing	
1	40	44	275	10
	50	130	1050	15
	63	220	1703	19
	80	410	3194	25
	100	699	5933	30
	125	1139	8300	37
	160	2033	14000	44
	200	4590	25000	49
	250	7580	45050	59
	315	14100	80800	62
1	350	21430	121000	67

Size	Current	I ² t (A ² s.)		Watts
		Pre-arc	Total Clearing	
2	250	7900	45000	70
	315	13000	77600	73
	350	20300	110000	76
	400	29800	168000	80
	450	42068	239300	88
	500	48000	300000	97
	550	70030	350000	107
	630	112000	538000	112
	720	140800	710000	118
	800	224000	1178000	130
3	500	42000	230000	112
	550	55600	319000	120
	630	82100	456000	126
	720	114000	645000	132
	800	195000	1080000	138
	900	235500	1300000	150
	1000	350000	1910000	155
	1100	443000	2400000	170
	1250	544000	3223000	195
	1400	780000	3988000	210
3	1500	999000	4500000	216
	1600	1400000	5600000	233

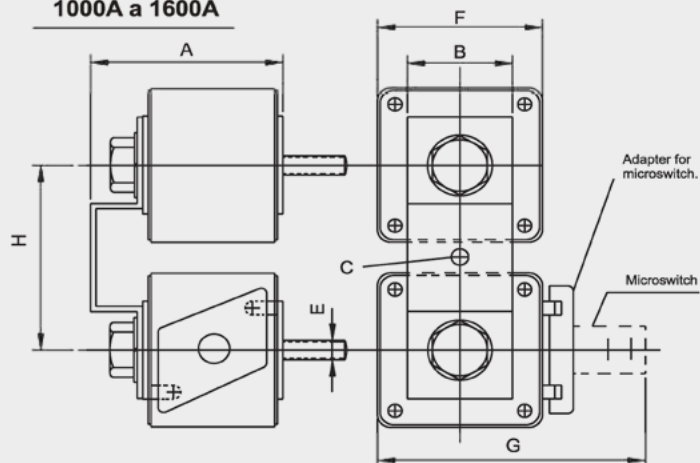
- Current limiting
- High interrupting rating
- Low watts Loss
- Silver element.

Semiconductor Fuses 1000V / 1250V

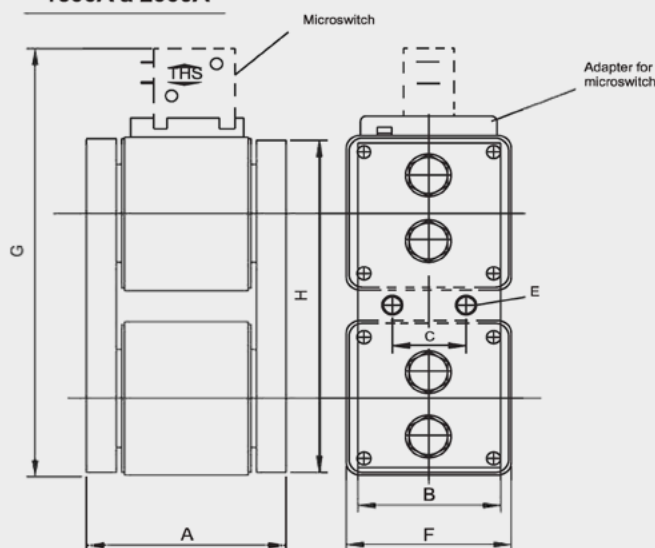
French Standard in accord. to IEC 269. 1/4

Two fuses in parallel connected with fish joint

1000A a 1600A



1600A a 2000A



Dimensions

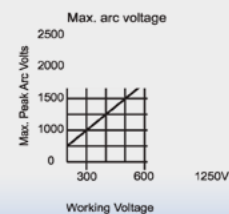
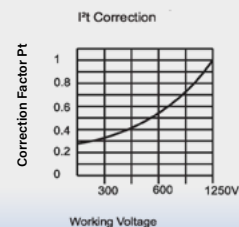
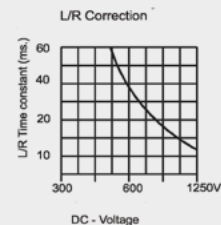
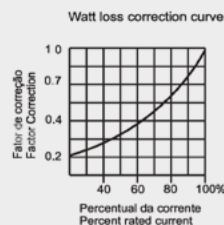
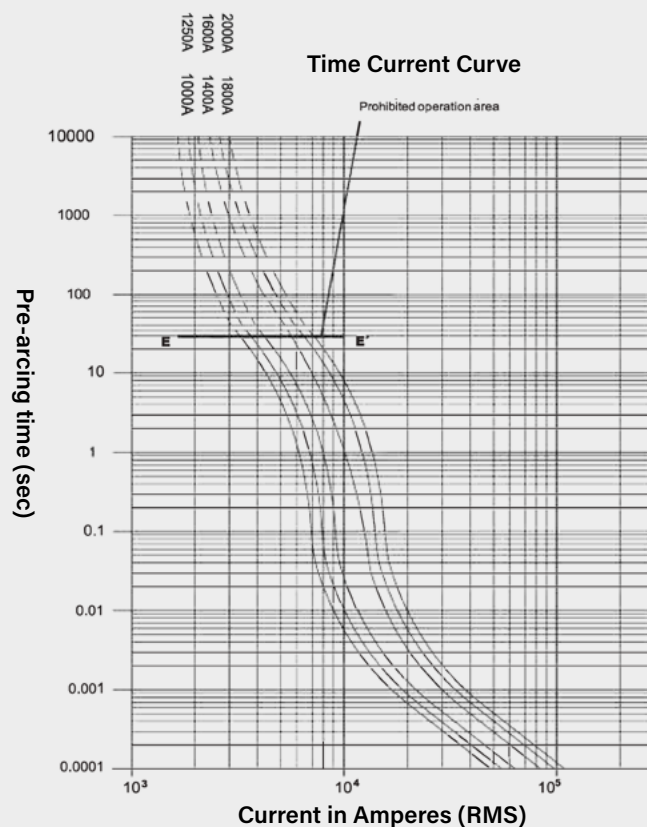
Size	A	B	C	E	F	G	H	Nr. Ref.
2 x 2	91.5	60	30	M10	60	188	141	1512386
2 x 3	91.5	70	40	M10	72	206	170	1512386

Electrical Characteristics

Size	Current	I ² t (A ² s.)			Watts	Size	Current	I ² t (A ² s.)			Watts
		Pre-arc	Total	Clearing				Pre-arc	Total	Clearing	
2 x 2	1000	210000	1233000	209	2 x 3	1600	537480	3224884	250		
	1250	360300	1846000	228		1800	828000	4788000	255		
	1400	422980	2123880	241		2000	1120000	6450000	275		

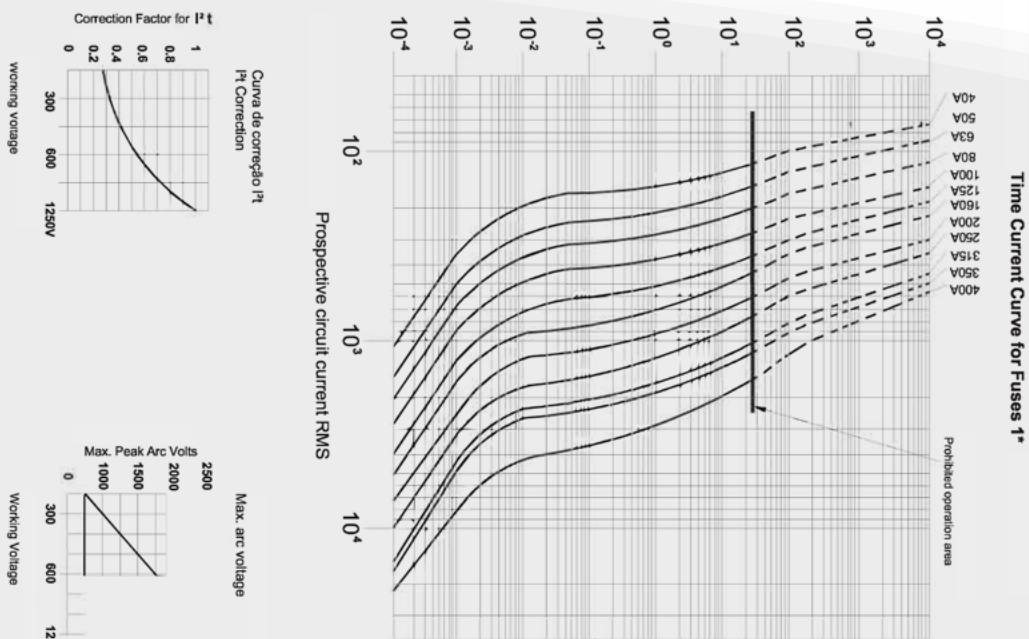
Dimensions

Size	A	B	C	E	F	G	H	Nr. Ref.
2 x 2	91	35	11	M10	60	100	72	2F6158
2 x 3	91	51	13	M12	72	115	86	2F7108

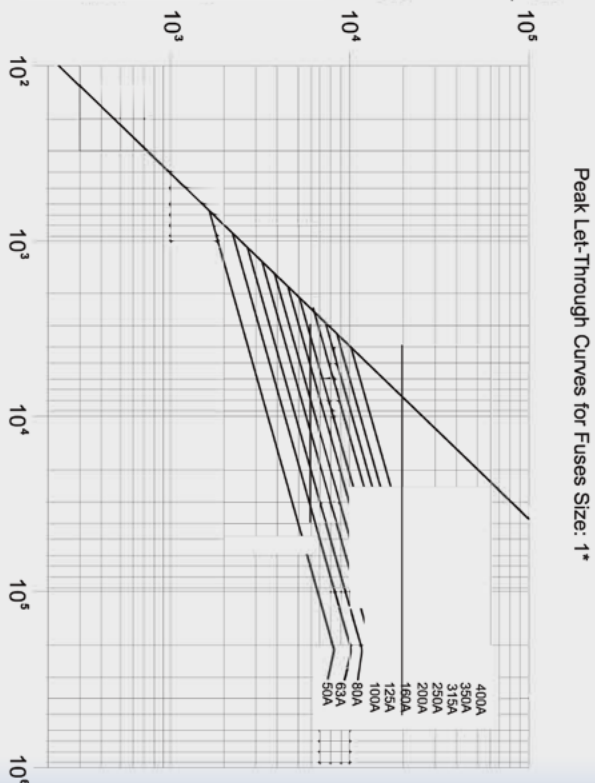


Technical data for Fuses Size 1*, 1000 / 1300V

Pre-Arcing Time (sec)



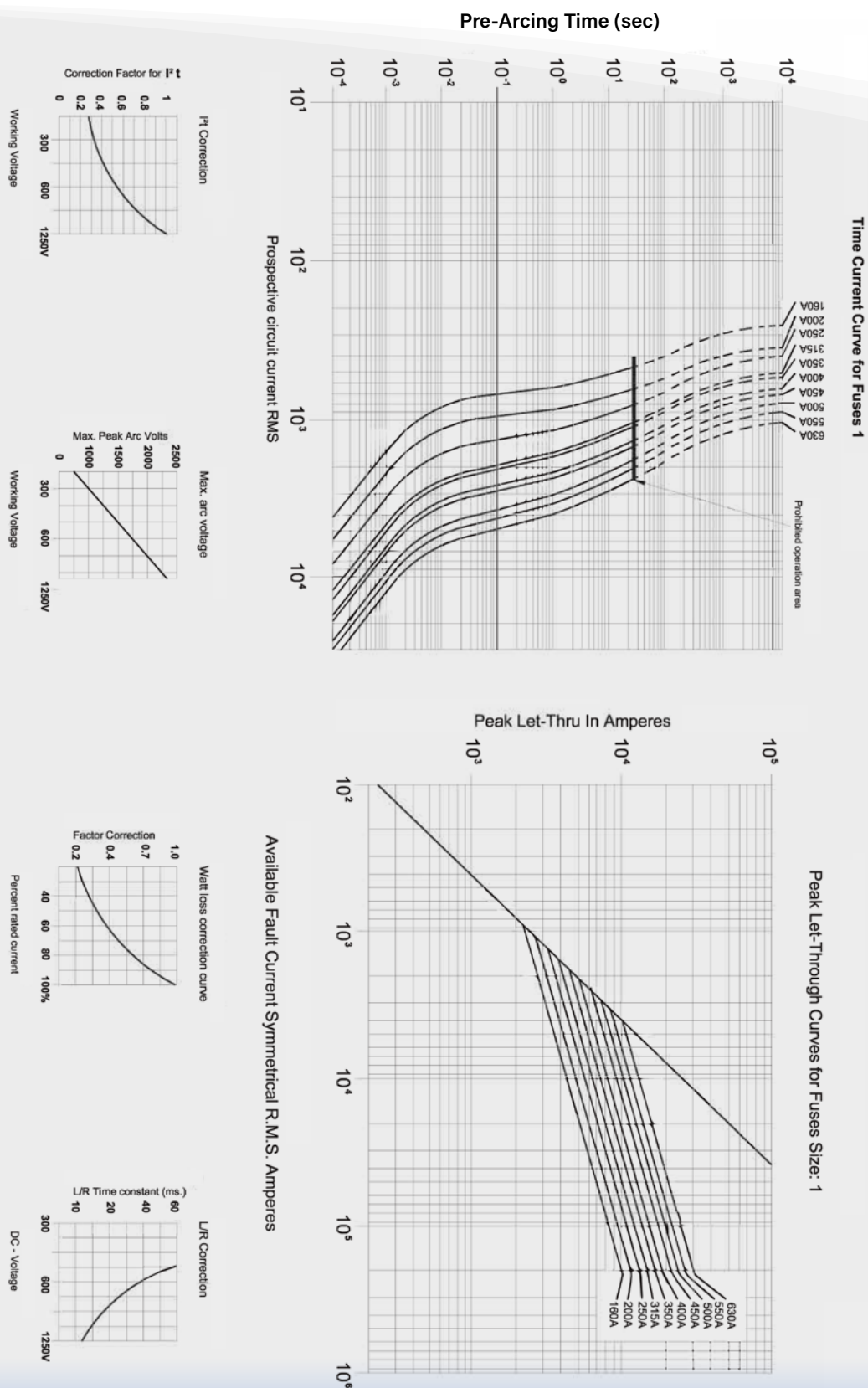
Peak Let-Thru In Amperes



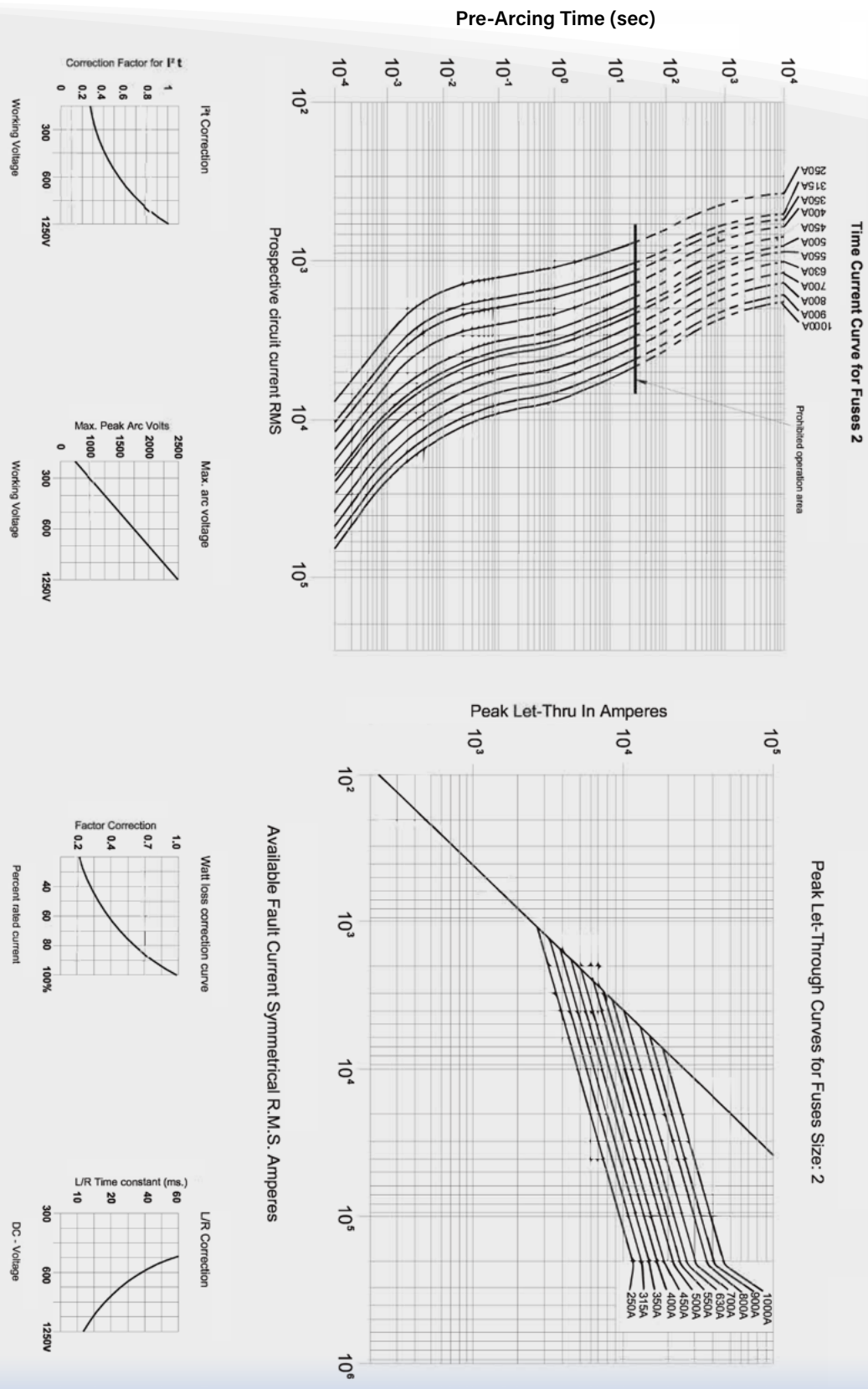
Available Fault Current Symmetrical R.M.S. Amperes



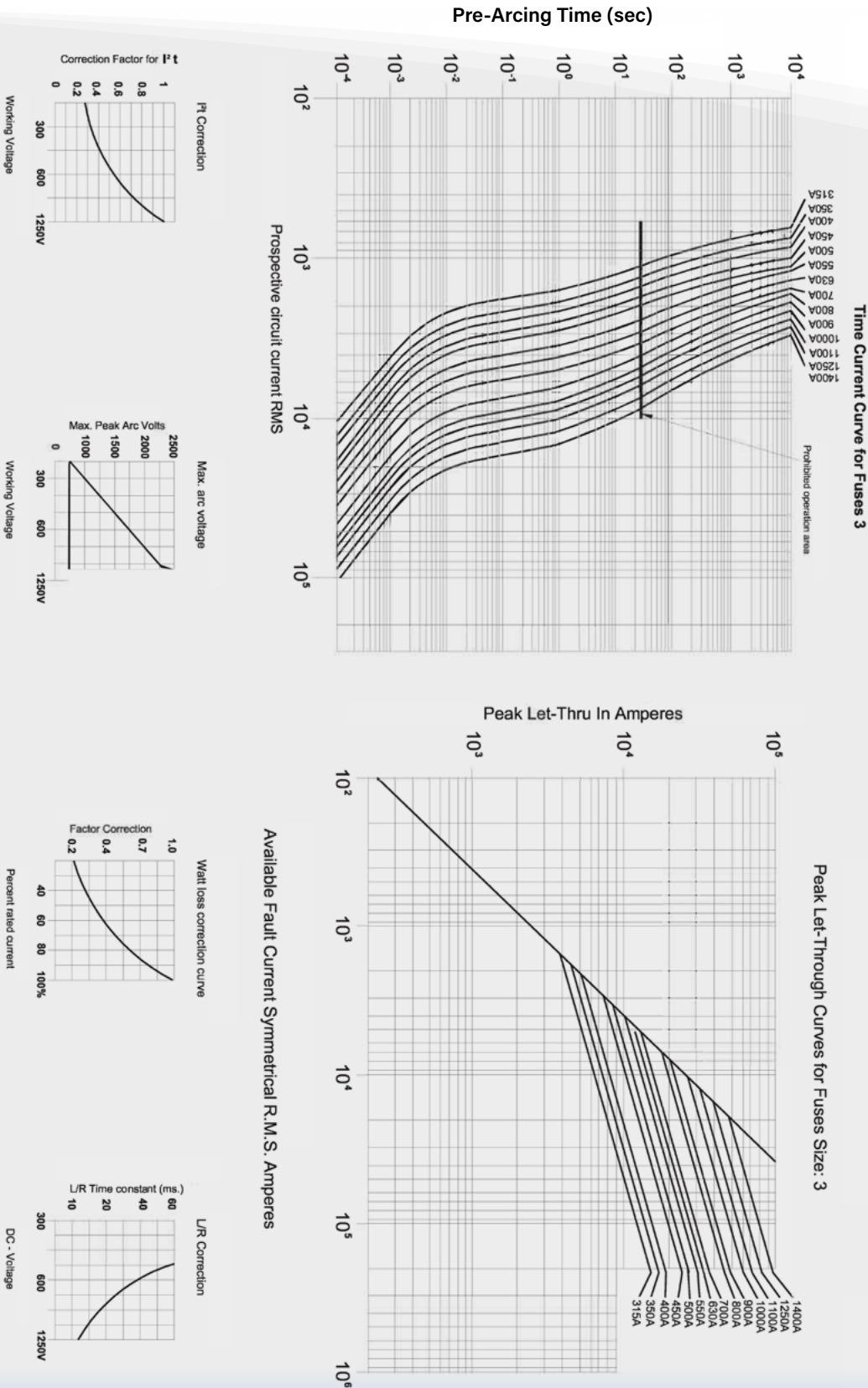
Technical data for Fuses Size 1*, 1000 / 1300V



Technical data for Fuses Sizes 2, 1000 / 1300V



Technical data for Fuses Sizes 3, 1000 / 1300V



Ferrule Semiconductor Protection Fuses

In accordance with IEC 269.1 and VDE 636-23

*high breaking capacity, * low power dissipation, * high current limiting, * silver plated contacts, * low switching voltage, * silver element design, * excellent performance,

Dimensions

Type	Current	Voltage	Fig.	B	D	C
5658	2 a 32	220 / 500		38	10	---
5659	2 a 50	220 / 660	1	51	14.3	---
5660	2 a 50	220 / 660	2	51	14.3	---
5661	10 a 100	220 / 660	1	58	22.2	---
5662	10 a 100	220 / 660	2	58	22.2	---
5663	63 a 200	220 / 660	5	60	27	---
5664	63 a 200	220 / 660	6	60	27	---
5665	10 a 60	220 / 660	1	76	20.6	---
5666	10 a 60	220 / 660	4	76	20.6	---
5667	10 a 60	220 / 750	5	127	20.6	---
5668	10 a 60	220 / 750	6	127	20.6	---
5669	3 a 30	220 / 600	3	38.1	10.4	---

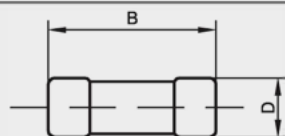


Fig. 1

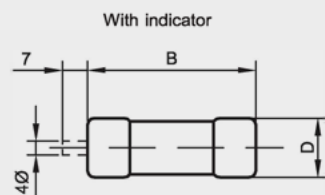


Fig. 2

Midget Fuses – Class CC.

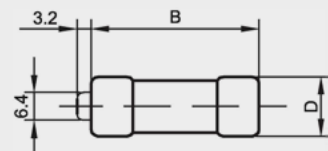


Fig. 3

With indicator

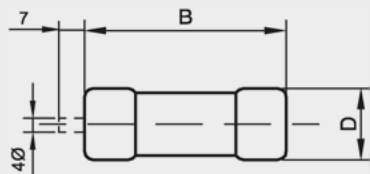


Fig. 4

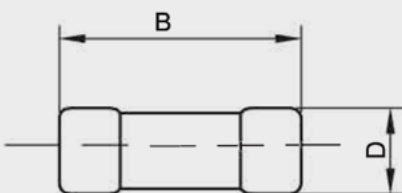


Fig. 5

With indicator

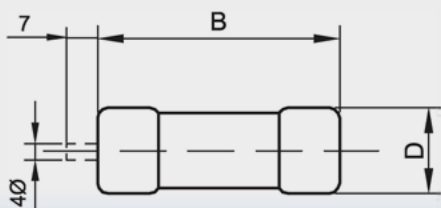
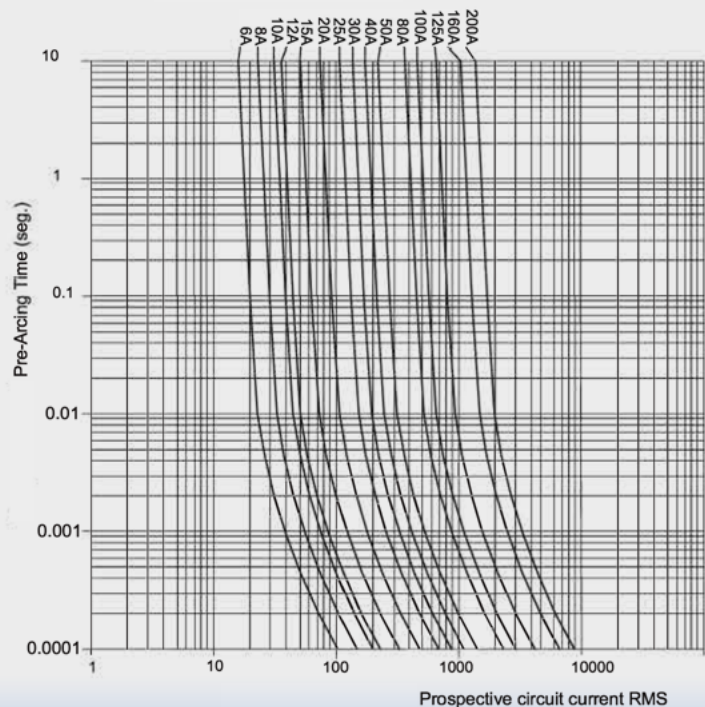


Fig. 6

- **Extremely high Interrupting rating Fuses:**
Protection of power Semiconductors according to IEC 269-1-4
- **aR Class** according to VDE 636-23 and IEC 269-4
- Model according to NF C 63210 and 63211 with built-in blown fuse indication.

Time - Current Curve





**DC FUSES / METRO, TRANSIT, LIGHT RAIL &
LOCOMOTIVE / ELECTRIC VEHICLE / PHOTOVOLTAIC
SOLAR, ALTERNATIVE ENERGY APPLICATIONS**

- ### Applications:

DC Fuses, designed for Direct Current operations. Current Limiting, used primarily in Metro and Transit, Solar Photovoltaic applications and now (EV) Electric Vehicles. DENCO Fuses (which used to be DenMar Transit Engineering) has a long history of designing and manufacturing metro/transit fuses and has also supplied Metros all around the world with many other metro/transit DC fuses in the past such as Semiconductor Devices, Traction Fuses for 3rd Rail Applications, Overhead Catenary, Auxiliary Power Distribution Fuses, Substations, Rectifier Fuses, 3rd Rail Feeders, Main Electrical Feed, Pantograph Applications, Converter Protection, Protection of High Speed DC Breakers Fuses Line Charging Resistor Capacitor Fuse, Line Filter Capacitor Tray, Propulsion Blower Motor, Collector Shoe Fuses, and Distribution Equipment. We also manufacture Electric Vehicle fuses for automobile manufacturers as well as Photovoltaic fuses for Solar & Alternative energy. Give us a call so that we can assist you in selecting the right DC current limiting fuses for your applications.



Applications:

Our fuses can also be designed to your specifications.

Underground Cable Protectors

Type - Limitron - Conf. Standard NBR IEC 60269-1. of 600A / 120kA

Dimensions

Cable Size	FIG.	A	B	C	D	E	F	G
1/0	1	7.12 (180)	1.44 (37)	0.52 (13)	1.75 (44)	3.62 (92)	0.39 (9.9)	---
2/0	1	7.12 (180)	1.44 (37)	0.56 (14)	1.75 (44)	3.62 (92)	0.44 (11)	---
4/0	1	7.12 (180)	1.44 (37)	0.68 (17)	1.75 (44)	3.62 (92)	0.55 (14)	---
250MCM	1	7.12 (180)	1.44 (37)	0.75 (19)	1.88 (48)	3.62 (92)	0.62 (16)	---
350MCM	1	7.62 (194)	1.62 (41)	0.88 (22)	2.00 (51)	3.62 (92)	0.71 (18)	---
500MCM	1	9.38 (238)	1.88 (48)	1.05 (27)	2.88 (73)	3.62 (92)	0.85 (22)	---
1/0	2	8.87 (225)	1.44 (37)	0.52 (13)	1.75 (44)	1.12 (28)	0.39 (9.9)	0.96 (24)
2/0	2	8.87 (225)	1.44 (37)	0.56 (14)	1.75 (44)	1.12 (28)	0.44 (11)	0.96 (24)
4/0	2	8.87 (225)	1.44 (37)	0.68 (17)	1.75 (44)	1.12 (28)	0.55 (14)	0.96 (24)
250MCM	2	9.00 (229)	1.44 (37)	0.75 (19)	1.88 (48)	1.12 (28)	0.62 (16)	0.96 (24)
350MCM	2	9.12 (232)	1.62 (41)	0.88 (22)	2.00 (51)	1.12 (28)	0.71 (18)	0.96 (24)
400MCM	2	9.12 (232)	1.62 (41)	0.88 (22)	2.00 (51)	1.12 (28)	0.71 (18)	0.96 (24)
500MCM	2	10.00 (254)	1.88 (48)	1.05 (27)	2.88 (73)	1.62 (41)	0.85 (22)	1.19 (30)
1/0	3	7.12 (180)	1.44 (37)	0.52 (13)	1.75 (44)	1.12 (28)	0.39 (9.9)	---
2/0	3	7.12 (180)	1.44 (37)	0.56 (14)	1.75 (44)	1.12 (28)	0.44 (11)	---
4/0	3	7.12 (180)	1.44 (37)	0.68 (17)	1.75 (44)	1.12 (28)	0.55 (14)	---
250MCM	3	7.12 (180)	1.44 (37)	0.75 (19)	1.88 (48)	1.12 (28)	0.62 (16)	---
350MCM	3	7.62 (194)	1.62 (41)	0.88 (22)	2.00 (51)	1.12 (28)	0.71 (18)	---
500MCM	3	9.38 (238)	1.88 (48)	1.05 (27)	2.88 (73)	1.62 (41)	0.85 (22)	---
4/0	4	7.87 (200)	1.44 (37)	0.68 (17)	1.75 (44)	3.62 (92)	0.55 (14)	0.52 (13)
250MCM	4	8.00 (203)	1.44 (37)	0.75 (19)	1.88 (48)	3.62 (92)	0.62 (16)	0.58 (14)
350MCM	4	8.12 (206)	1.62 (41)	0.88 (22)	2.00 (51)	3.62 (92)	0.71 (18)	0.68 (17)
500MCM	4	9.38 (238)	1.88 (48)	1.05 (27)	2.88 (73)	3.62 (92)	0.85 (22)	0.81 (21)
4/0	5	9.62 (244)	1.44 (37)	0.52 (13)	2.50 (64)	1.12 (28)	3.62 (92)	0.96 (24)
250MCM	5	9.62 (244)	1.44 (37)	0.58 (14)	2.50 (64)	1.12 (28)	3.62 (92)	0.96 (24)
350MCM	5	9.62 (244)	1.62 (41)	0.68 (17)	2.50 (64)	1.12 (28)	3.62 (92)	0.96 (24)
500MCM	5	10.00 (254)	1.88 (48)	0.81 (21)	2.88 (73)	1.62 (41)	3.62 (92)	1.19 (30)
750MCM	5	10.00 (254)	2.50 (64)	1.00 (25)	2.88 (73)	2.00 (51)	3.75 (95)	1.31 (33)

Time - Current

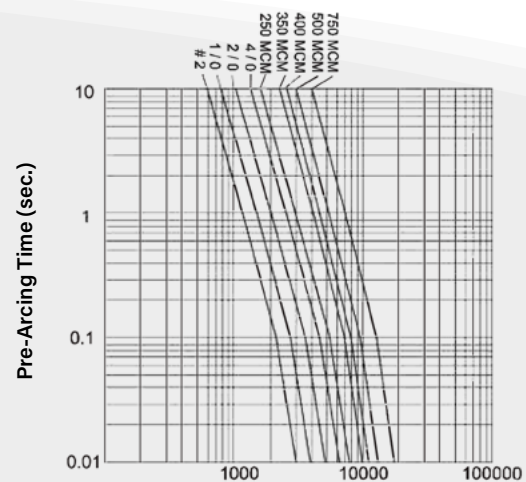


Fig. 1

TYPE: C1 Cable to Cable

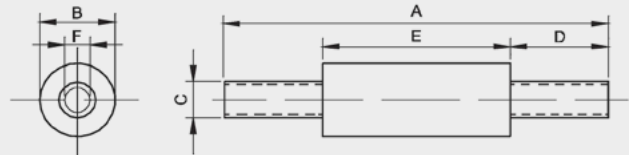


Fig. 2

TYPE: C3 Offset Bus to Cable

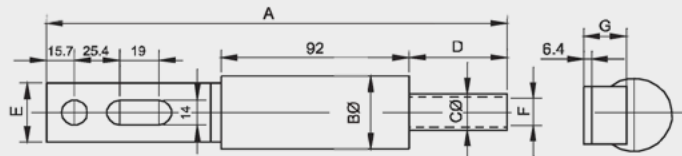


Fig. 3

TYPE: C5 Offset Bus to Bus

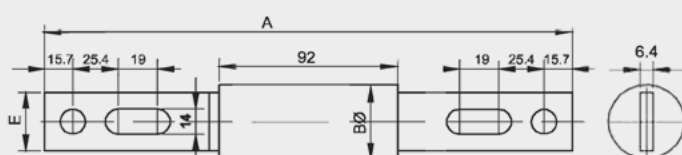


Fig. 4

TIPO: C6 Mole to Cable

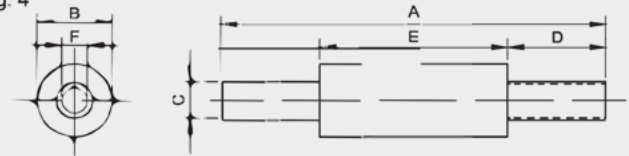
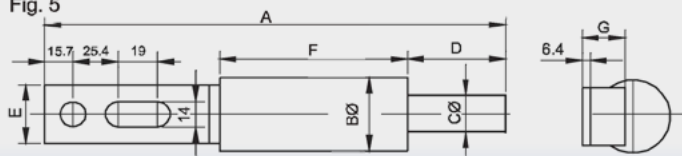


Fig. 5

TIPO: C8 Offset Bus to Mole



Network protector fuses

High Breaking Capacity Fuse for Protection of Circuit Breakers in Underground Distribution Networks

Tested & Approved by CESI-IPH Nr.
03160-15-0534-1

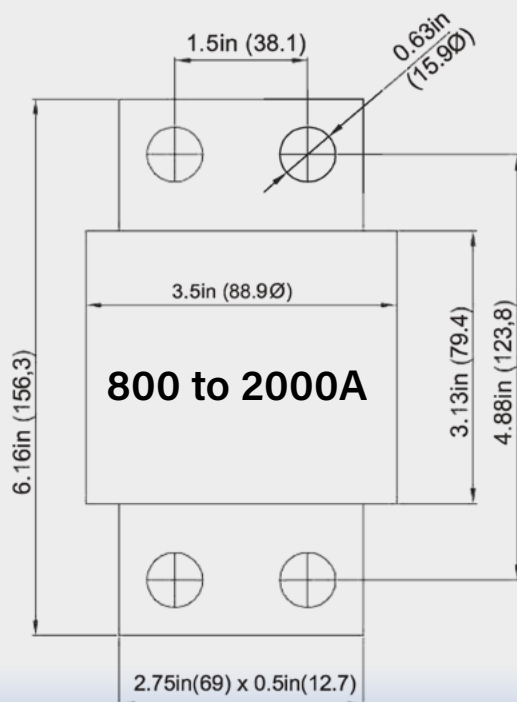
Ratings

- Voltage 600VAC Max
- Interrupting rating 200kA
- Ampere ratings 800 - 3000A

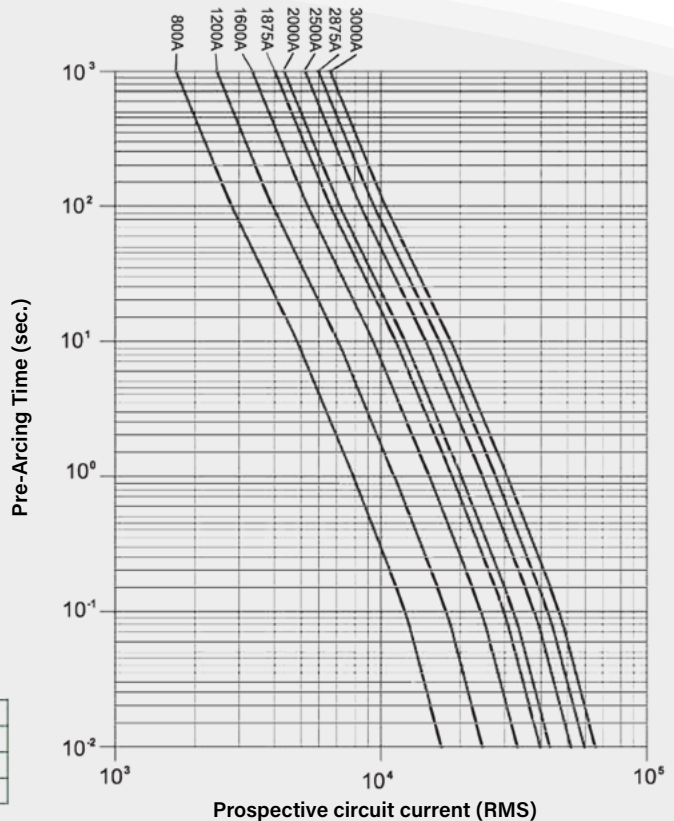
Features and Benefits

- High breaking capacity
- Low power dissipation
- High current limiting
- Low switching voltage
- Silver element design
- Excellent performance

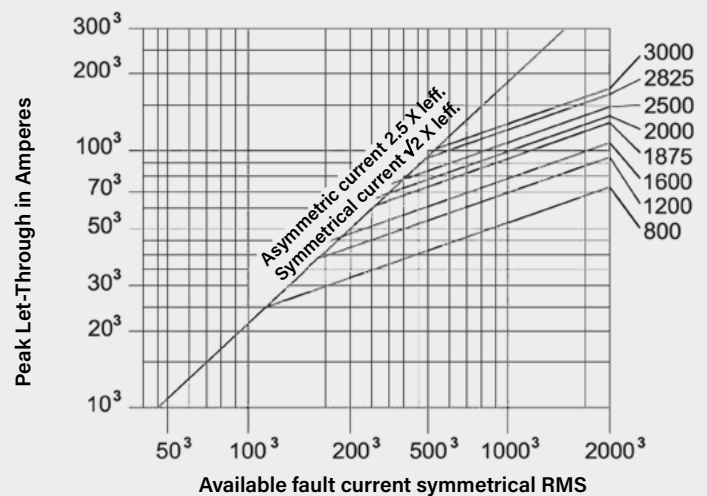
Amperage	EATON	Ferraz Shawmut/ ETI	DENCO Fuses
800	140D318G04	317-0800 - 00	KTU-5216/1
1200	140D318G05	317-1200 - 00	KTU-5216/2
1875-1600	140D318G01	317-1875 - 00	KTU-5216/3



Melting time-current



Peak Let-Through Curves



Network protector fuses

High Breaking Capacity Fuse for Protection of Circuit Breakers in Underground Distribution Networks

Tested & Approved by CESI-IPH Nr.
03160-15-0534-1

Ratings

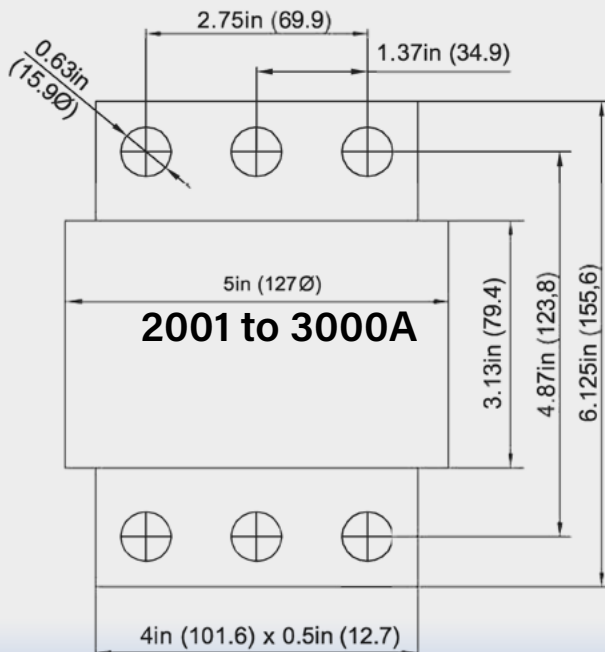
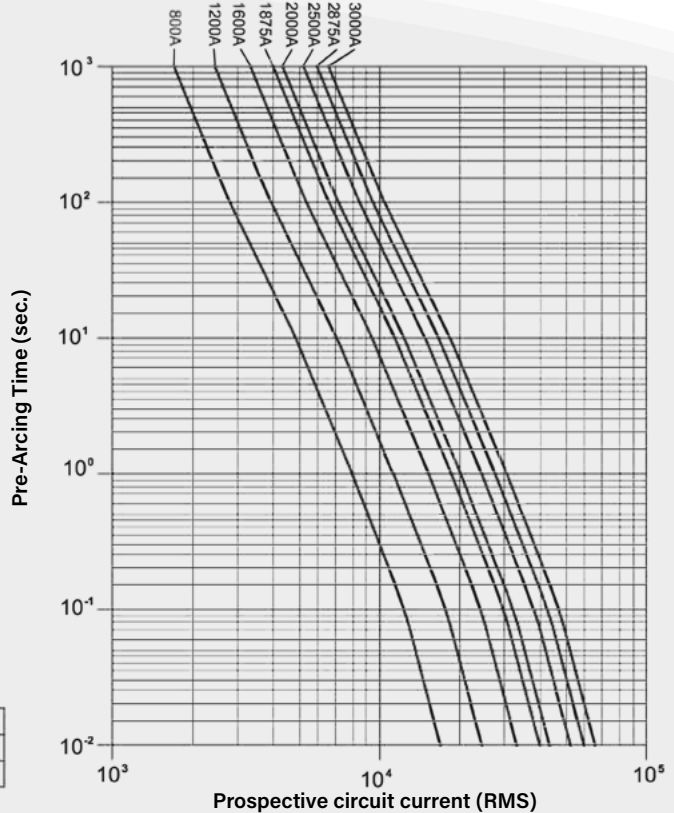
- Voltage 600VAC Max
- Interrupting rating 200kA
- Ampere ratings 800 - 3000A

Features and Benefits

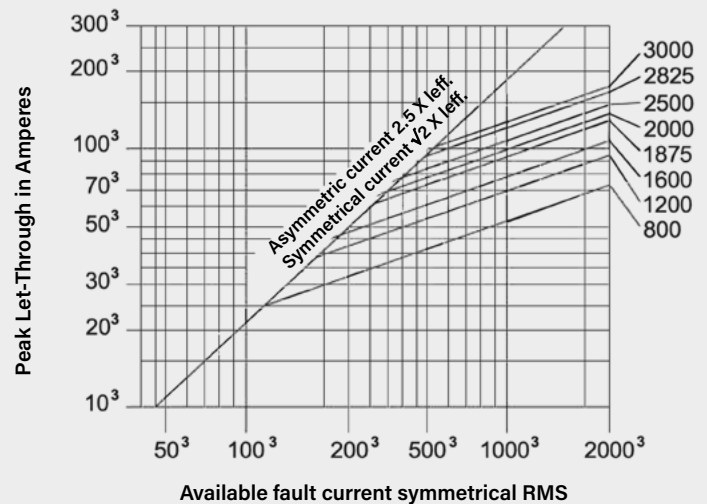
- High breaking capacity
- Low power dissipation
- High current limiting
- Low switching voltage
- Silver element design
- Excellent performance

Amperage	EATON	Ferraz Shawmut/ ETI	DENCO Fuses
2825-2500	140D318G02	317-2825 - 00	KTU-5216/4
3000	140D318G06	317-3000 - 00	KTU-5216/5

Melting time-current

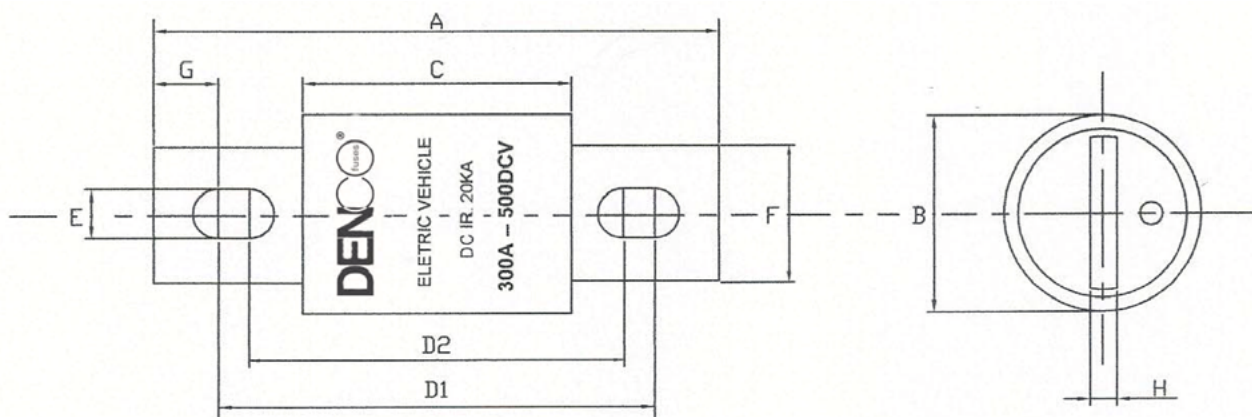


Peak Let-Through Curves



Electrical Vehicle Power Fuses

20kA I.R.



500VDC

Dimension - (mm)

Nr.	Amp range	A	B	C	D1	D2	E	F	G	H	
D5864	50 - 150	82	21	40	66	57	8.8	15.8	7,7	3.3	
D5865	100 - 250	92	25	53	76	68	8.8	19.0	7,7	3.3	
D5866	200 - 400	92	32	53	75	68	8.8	25.4	9.0	4.8	

700VDC

Nr.	Amp range	A	B	C	D1	D2	E	F	G	H	
D5867	50 - 150	92	33	50	77	67	10.3	25.4	---	4.8	
D5868	100 - 250	92	39	53	76	68	10.3	32.0	---	6.4	
D5869	200 - 400	92	45	53	75	68	10.3	38.0	---	6.4	

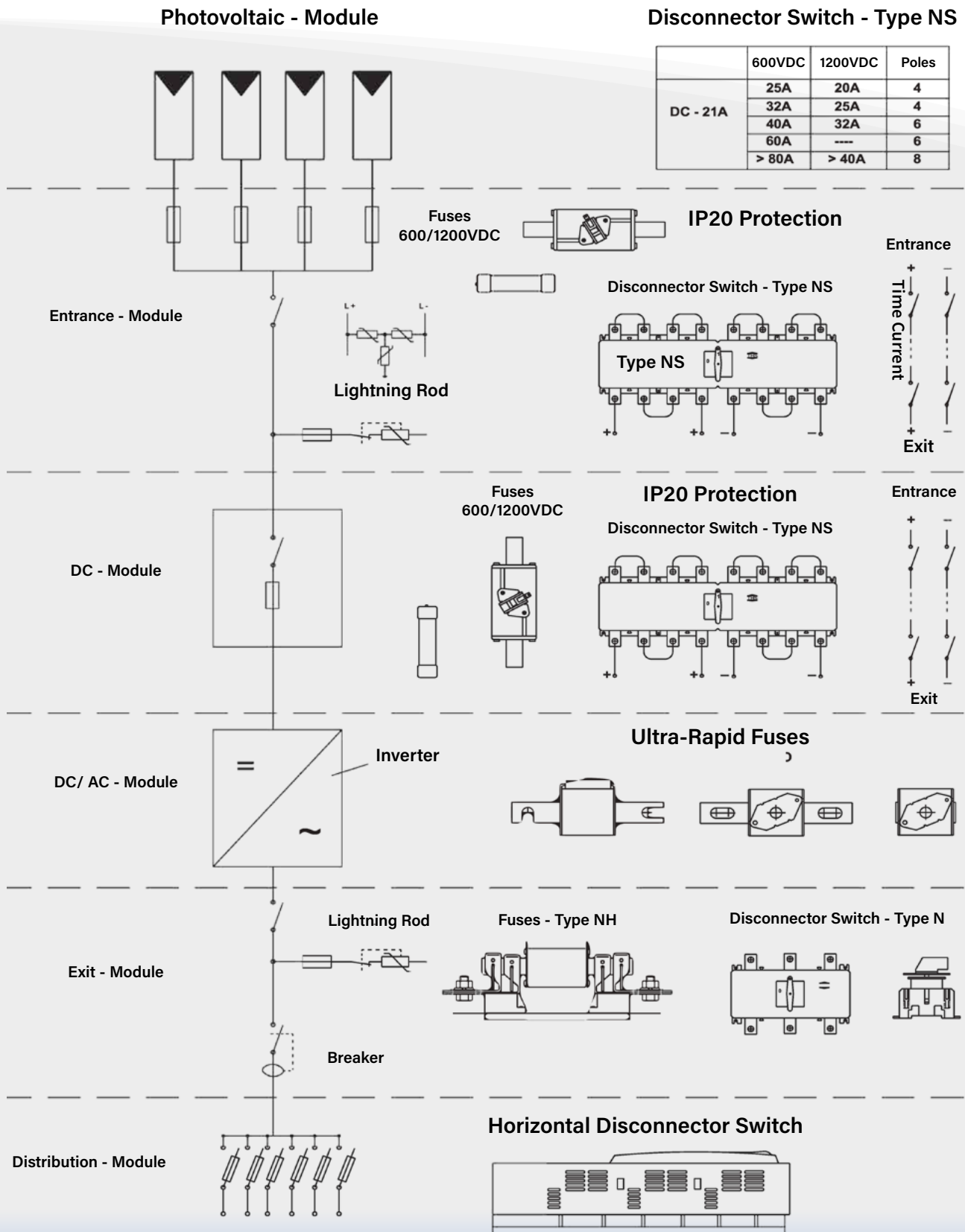
1000VDC

Nr.	Amp range	A	B	C	D1	D2	E	F	G	H	
D5870	50 - 150	122	39	80	109	98	10.3	32.0	---	4.8	
D5871	100 - 250	130	45	85	114	104	10.3	38.0	---	6.4	
D5872	200 - 400	130	51	85	114	104	10.3	44.2	---	6.4	

1500VDC

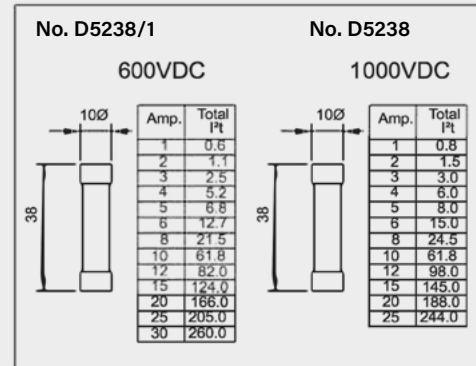
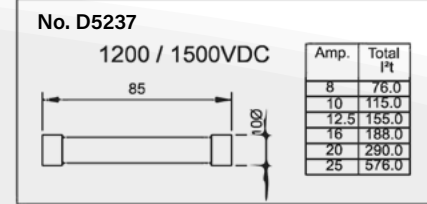
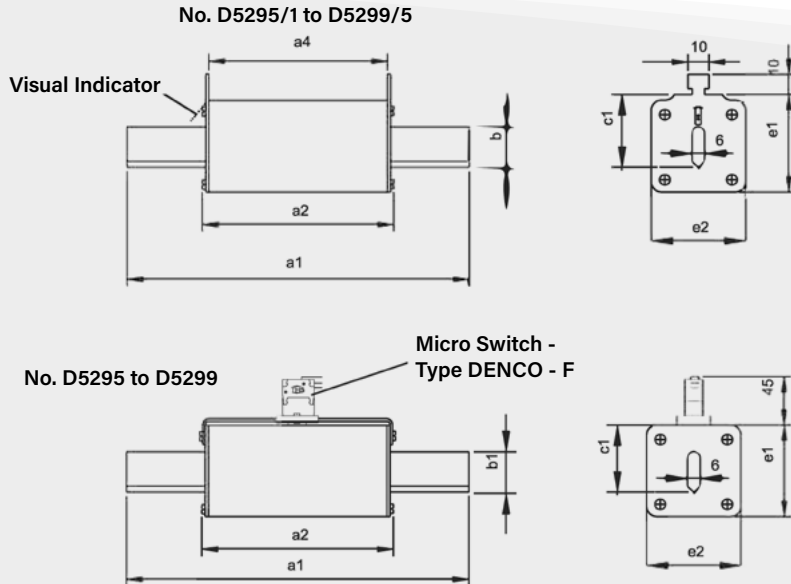
Nr.	Amp range	A	B	C	D1	D2	E	F	G	H	
D5873	50 - 150	122	39	80	66	57	10.3	32.0	---	4.8	
D5874	100 - 250	124	45	85	76	68	10.3	38.0	---	6.4	
D5875	200 - 400	124	51	85	75	68	10.3	44.2	---	6.4	

Working Schematic with Photovoltaic



Photovoltaic Fuses 600 to 1100VDC

IEC 60269-1 & IEC 60269-6, DIN VDE 0636-2

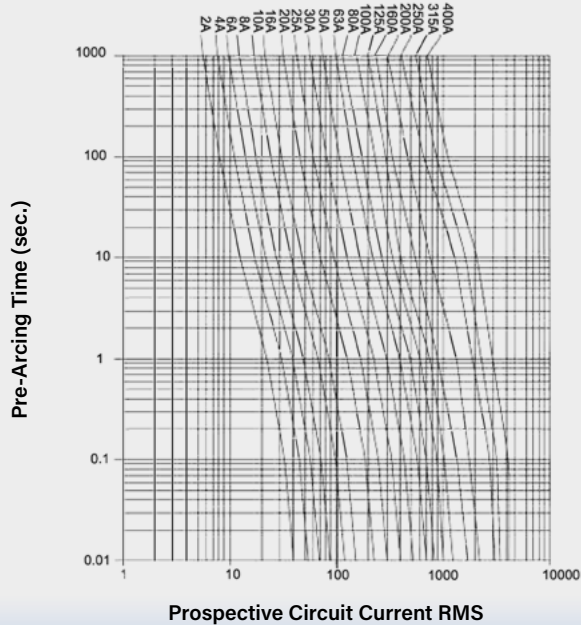


Dimensions

No.	No.	Size	Current	Voltage	a1	a2	a4	b1	c1	e1	e2
5295/1	5295	1	63 - 160	1100 VDC	195	128	124	20	40	45	45
5296/2	5296	2	200 - 250	1100 VDC	204	128	124	25	48	58	58
5297/3	5297	3	315 - 400	1100 VDC	204	128	126	35	60	72	72
5298/4	5298	1	20 - 160	750/1000 VDC	135	72	62	20	40	45	45
5299/5	5299	00	2 - 100	600 VDC	78	28	45	16	35	45	---

Dimensions in mm.

Time / Current Curve for gPV Fuses cont. 1Ee 0535121



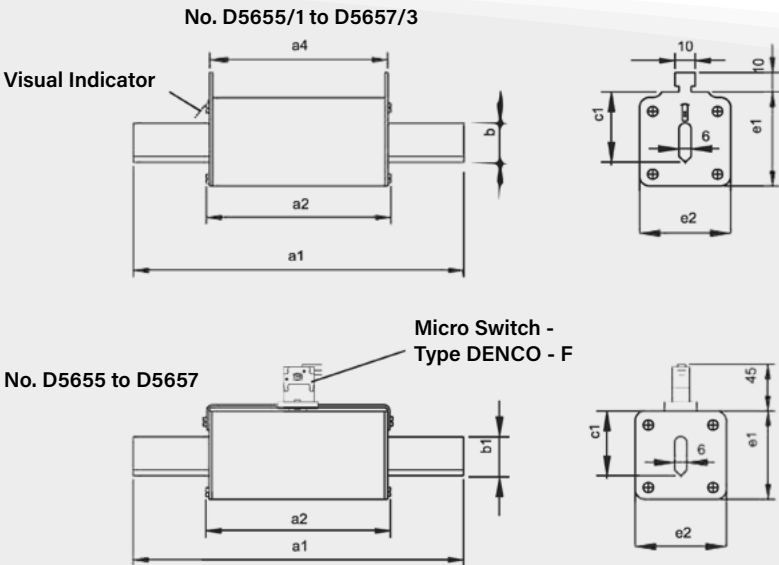
L/R = 2ms.

I²t Fuse Values for 1100VDC

Size	Current	I² t (A² s.)		Watts
		Pre-arc	Total Clearing	
1	63	420	2250	16
	80	950	4990	18
	100	1200	6400	21
	125	2200	11800	23
2	160	5000	18750	25
	200	9400	42800	28
3	250	13000	68200	37
	315	38000	112500	40
	400	59000	179000	50

Photovoltaic Fuses 1500VDC

In accordance with IEC 60269-1 and IEC 60269-6, DIN VDE 0636-2



Fuses I²t values for 1500VDC

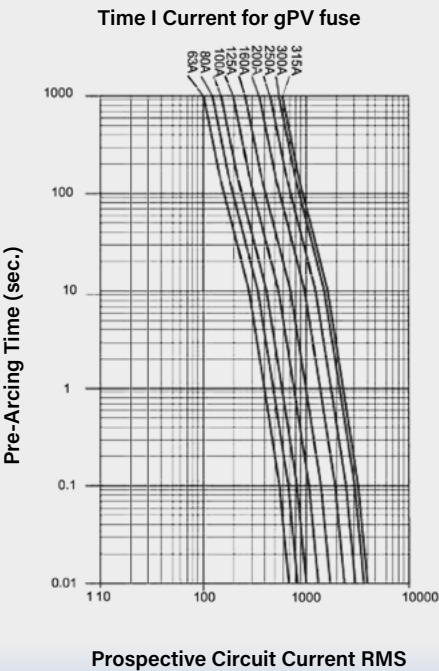
Size	Current	I² t (A² s.)		Watts
		Pre-arc	Clearing	
1	63	1480	6000	14
	80	5430	14000	18
	100	10000	26400	22
	125	14000	40000	28
	160	21000	50000	32
2	200	40000	70000	35
	250	71000	130000	42
3	315	69000	185500	50
	400	137000	210000	56

Dimensions

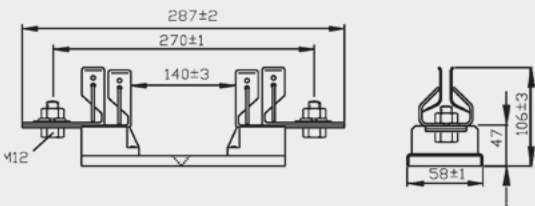
No.	No.	Size	Current	Voltage	a1	a2	a4	b1	c1	e1	e2
5655/1	5655	1	63 - 160	1500 VDC	192	130	125	20	40	45	45
5656/2	5656	2	200 - 250	1500 VDC	208	130	126	25	48	58	58
5657/3	5657	3	315 - 400	1500 VDC	208	130	126	35	60	72	72

Conf. IEC 0636/21

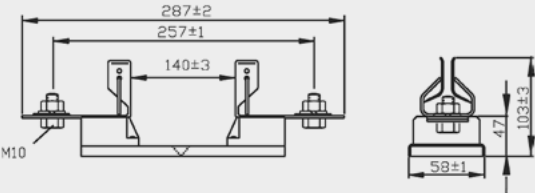
L/R = 2ms.



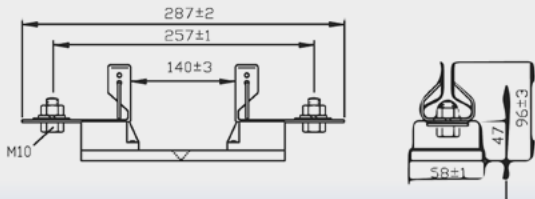
Bases for Photovoltaic fuses from 63 to 630A, 1100 / 1500VCC



Basic measures NH-2, 400A, 1500VCC, No. 5223



Basic measures NH-1, 250A, 1500VCC, No. 5223



Didn't find the fuse you're looking for?
Get In Touch

DENCO®
fuses

YOUR SPECS • OUR FUSES • BEST PRICES

www.dencofuses.com

Phone: +1 (305) 273.6226 • Toll-Free: 1.800.305.FUSE (3873) • Fax +1 (305) 273.4335