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COOPER Bussmann

Medium Voltage Fuse Links
Full Line Catalogue

COOPER Bussmann

Cooper Bussmann, a division of Cooper Industries, is the leading source of circuit protection solutions in the global marketplace. Cooper Bussmann products are approved for use around the world and meet agency requirements and international standards: IEC, VDE, DIN, UL, CSA, BS and others.

Cooper Bussmann global headquarters are in St Louis, Missouri (US) and the European headquarters are in Burton-on-the-Wolds, Leicestershire (UK).

Cooper Bussmann manufactures over 50,000 part numbers covering extensive circuit protection solutions for a wide range of applications: residential, industrial, motor protection, power conversion, distribution, telecommunications, electronics and automotive.

Cooper Bussmann has been a leading exponent in the design, development and manufacture of medium voltage fuse links and their associated accessories for more than 90 years and has supplied fuse links to more than 90 countries worldwide.

The Cooper Bussmann team of specialist engineers plays a leading role in international standardisation of medium voltage fuse links, offering comprehensive advice on selection and applications.

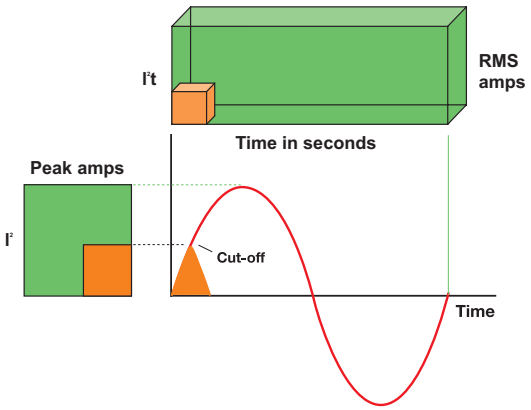
With a continual commitment to meet our customers' needs with innovative high quality products with ISO 9002 'approval systems,' Cooper Bussmann is the supplier of choice for medium voltage circuit protection solutions, today.

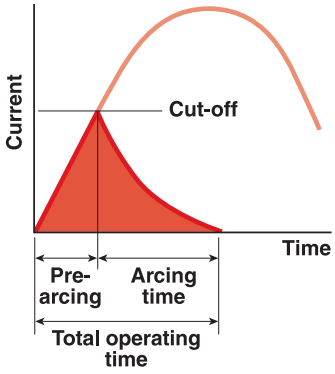
Table of Contents

Introduction to Medium Voltage Fuse Link Technology

Offering unparalleled short-circuit interruption capabilities, Medium Voltage (MV) current-limiting fuse links are the principle protection device used by electrical utilities and switchgear manufacturers throughout the world. Safe, reliable, environmentally friendly and cost effective, MV fuse links are the protection device of choice for distribution circuits due to their speed of operation and **current limiting** ability in the event of a short-circuit fault.

The diagram below shows the operation of a fuse link interrupting a short-circuit fault, achieving a current zero well within the first half-cycle of a fault. Energy let-through into the site of a fault maybe typically only **1/500th of that of any other type of switching device.**





The speed of operation reduces the effect of short-circuit currents, dramatically limiting the energy delivered to the faulted circuit, preventing the catastrophic results of high faults and disturbing voltage arcs. The fuse link operation significantly limits the arc-flash hazard at the fault location. Improved power supply quality also results from the use of fuse links. High fault currents are interrupted in a few milliseconds, minimising voltage dips in system supply voltage.

Glossary for Medium Voltage Fuse Links

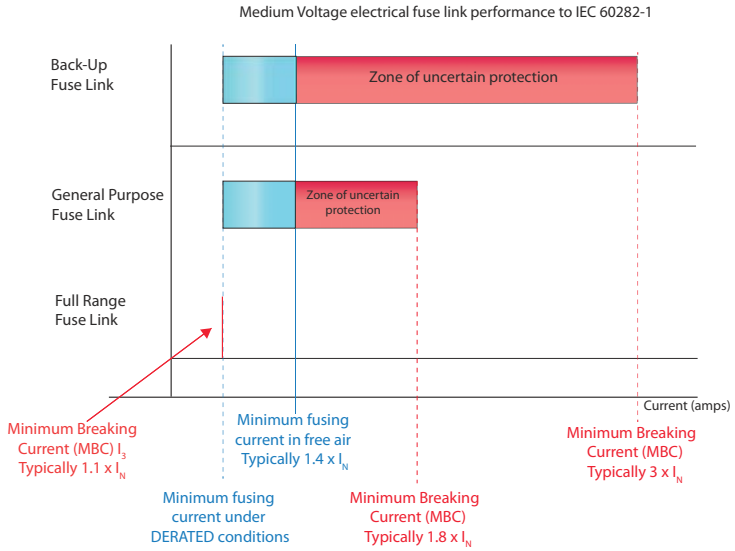
The following is a brief introduction to medium voltage fuse link technology. Some of the terms are also used in other areas of fuse technology.

- **Current rating/Rated current, I_n -** The rated current of the fuse link, given in amps.
- **Derating -** A reference to the fact that all MV fuse links must be derated once they are placed in a confined space, for example when mounted in switchgear. The fuse link must be derated to take into account the effect of heating on element resistance. Typically a fuse link is derated by between 5-20% depending on application.
- **Test Duty, TD -** A term used to refer to a specific type test within the IEC standard. Test Duty one **(TD1)**, short-circuit test, Test Duty two **(TD2)**, maximum arc energy test and Test Duty three **(TD3)**, low overcurrent test.
- **Minimum Breaking Capacity Current, MBC, I_3 -** The minimum current the fuse link can interrupt safely, without assistance from switchgear with instantaneous striker tripping.
- **Minimum Fusing Current (MFC) -** The minimum current which will cause the fuse link elements to **start to melt**.
- **I^2T -** The minimum value of pre-arcing and maximum value of total clearing energy a fuse link will allow to pass through it during short circuit operation, expressed as an amount of current (I^2), multiplied by time in seconds.
- **Watts Loss -** The power dissipation of the fuse link at a stated value of load current.
- **Breaking Capacity, I_1 -** The maximum short circuit current the fuse link has been tested to in accordance with test Duty one (TD1), expressed in kA.
- **Resistance -** The resistance of the fuse link in free air at (20°C), measured in mΩ.

Introduction to Medium Voltage Fuse Link Technology

The main standard covering Medium Voltage (MV) fuse links is IEC 60282-1, 2009. IEC defines **MV as from 1kV to 72.5kV**.

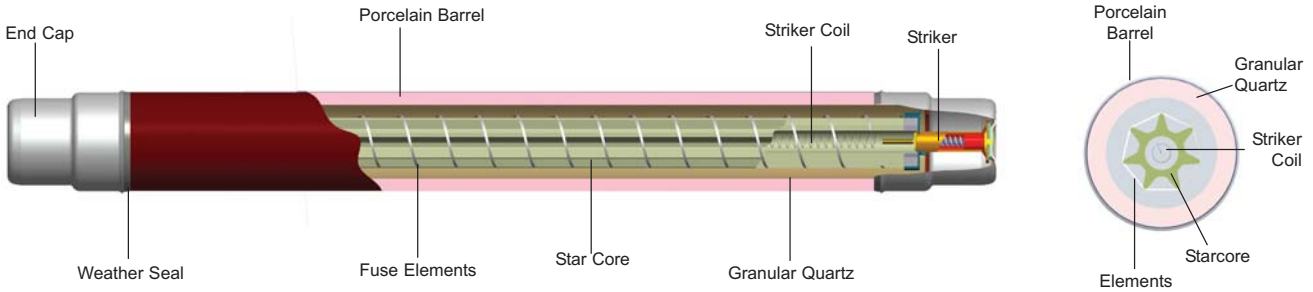
Current-limiting MV fuse links, split into three internationally recognised types: **Back-Up** (or sometimes called partial range), fuse links, which will interrupt any current from their rated breaking capacity down to a minimum breaking current, specified by the manufacturer. **General Purpose** MV fuse links will interrupt all currents that will melt the elements within one hour. **Full Range** MV fuse links can interrupt any current below the rated breaking capacity that melts the fuse elements satisfactorily.
The diagram below illustrates the three performance criteria in terms of their minimum breaking current I_3.



Current-limiting MV fuse links are similar in construction to Low Voltage (LV) cartridge types. Fuse elements do need to be much longer however to safely interrupt a medium voltage short-circuit. This is achieved by winding the elements round an internal core or holder, often called a star-core or spider; using this technique a one metre length element can be accommodated in a 250mm length body. The elements are surrounded by a pure, highly compacted granular quartz filler.

Like a LV fuse link, a MV fuse link has a ceramic body. Most current-limiting MV fuse links are also fitted with a striker mechanism. This is used to operate the trip bar or mechanism in a fuse-switch combination, fuse-switch or ring main unit (RMU) to achieve low overload fault interruption and three-phase disconnection.

Typically striker mechanisms are driven by a spring mechanism, triggered by a thin striker wire or striker coil running the length of the fuse link, connected in parallel to the fuse link elements. The striker coil is of much higher resistance than the fuse link elements, so a current only flows through the striker coil when the fuse link elements melt. The current heats up the striker coil and this in turn melts the wire retaining the spring, releasing it and pushing out the striker.



Introduction to Medium Voltage Fuse Link Technology

Non-Current Limiting

Essentially, non-current limiting fuse links have short elements and incorporate some means of lengthening the arc after the element melts, extinguishing the arc and preventing re-ignition. These are known as **expulsion fuse links.**
Expulsion fuse links are an effective way of protecting overhead distribution lines and transformers. They are designed for outdoor use only and comprise a tin or copper fuse element in series with a flexible braid in a tube. The tube forms one side of a triangle, with a latched connection at the top and a hinge at the bottom. The braid emerges from one end of the fuse link and is held in tension by a spring downwards under gravity. Under fault conditions, the fuse link swings downwards, the arc is lengthened, extinguished and prevented from restriking.

Thermal Effects of Low Overload Faults

During overload faults lasting a long time, it is possible for medium voltage (MV) elements to get very hot prior to actually melting. Given that silver has a melting temperature of 960ºC, for fuse links with no temperature limitation, this can result in a fuse barrel temperature of over 400ºC and 180ºC at the insulating surface surrounding the fuse. To prevent deterioration of the insulation and to the fuse link itself, all MV fuse links should incorporate some form of technology to limit the thermal stress-heating, that is possible under prolonged low overload faults, often referred to as temperature limiting technology.

Since the launch of its first MV fuse links almost half a century ago, Cooper Bussmann has employed **M-effect technology** to achieve **temperature limitation** throughout its MV fuse link range. A small mass of special low melting point alloy is added to each fuse element, this has the effect of drastically reducing the temperature of the MV fuse link during operation. The larger cross section of the fuse link elements, made possible by use of this feature, ensures cooler running and lower power dissipation under normal service conditions than comparable temperature limitation technology.

Other manufacturers employ a temperature-limiting (or thermal) striker to overcome their overheating problems. In general with this approach the maximum temperatures reached by the fuse link and its surrounding insulation are not as low as with the use of M-effect. Such a solution is no more effective than use of M-effect on the fuse link elements and moreover does not bring the additional advantages of lower watts loss, cooler running and greater withstand against transient surge currents.

When a Cooper Bussmann fuse link operates under low overload fault conditions the maximum temperature rise of the fuse link is such that the temperature of the surrounding synthetic insulation remains below the temperature limits for all insulated fuse switchgear. The fuse barrel therefore remains intact and the fuse carrier and its contacts remain unimpaired.

Typically a Cooper Bussmann MV fuse link of a given rating may **run 10-30ºC cooler than comparable fuse links** which do not employ M-effect. This advantage is particularly useful when the MV fuse link is used in totally enclosed all insulated switchgear, such as cast resin fuse-switches or compact SF6 insulated Ring Main Units (RMUs), or GIS HV switchgear, since less derating is required and hence a smaller rating of MV fuse link will do the same job as a higher rated MV fuse link from another manufacturer.

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

How to Order - Ordering Key

Symbol							Meaning
1	2	3	4	5	6	7	
x							Rated voltage of the fuse link in kV
	x						The type of fuse link given by a single letter
		x					Diameter of the fuse link barrel (in mm) denoted by a letter
			x				Length of the fuse link barrel (in mm) denoted by a letter
				x			Striker information: type of striker is denoted by a letter *
					x		Tag information: type denoted by a letter
						x	Current rating of the fuse link given in amperes

1 > Voltage

2 > Type designation letter

3 > Barrel diameter

4 > Barrel length

5 > Striker information*

6 > Tag information

*S = Spring striker 50N

* E = Spring striker 80N

* N = No striker fitted

* H or M = Pyrotechnic striker

Example: 12TDLEJ50

Ordering Code Information	Type Designation						
Rated voltage of the fuse link	**12**						
Type of fuse link		**T**					
Body diameter			**D**				
Body length				**L**			
Type of striker					**E**		
Type of tag						**J**	
Current rating							**50**
Complete part number	**12**	**T**	**D**	**L**	**E**	**J**	**50**

Part number **12TDLEJ50** represents an outdoor DIN fuse rated at **12kV** for use in **Air (T)** with a body diameter of **50.8mm (D)**, a barrel length of **292mm (L)**, a striker to **DIN 43625 80N (E)**, a tag arrangemenet to **DIN 43625 (J)** and an Amp rating of **50A.**

How to Order - Parts Referencing System

kV	1st Letter General Type	2nd Letter Barrel Diameter (mm)	3rd Letter Barrel Length (mm)	4th Letter Striker (mm)	5th/6th letter and or digit - termination or fixing	Amps A
	A, B, D, N = fuse links for use in air V, W = fuse links primarily for use in motor circuits F = fuse links with full range characteristics O = fuse links sealed for use in oil switches T = DIN outdoor range	M = 20.6 B = 25.4 D = 50.8 E, H, L = 63.5 F, I, K = 76.2 X = 88	U = 86 W = 142 O = 192 C = 195 D = 203 F = 254 L = 292 G = 359 N = 403 M = 442 Q = 537 I = 565 K = 914	S = Striker to DIN43625, form C 50N E = Striker to DIN43625, 80N H,M = Striker to BS2692-1 N = None fitted	A = No Tags. Ferrule diameter as the 2nd letter B = Offset tag, single bolt fixing C, D = Tags to BS2692-1 F = Offset tag, double bolt fixing J = Ferrule to DIN 43625 O = Tags to BS2692-1 6 = Tags to BS2692-1 22 = 5/16-BSW stud one end only 02, 03 = Double and triple barrel fuse link F2, F3 = Double and triple barrel fuse link	

Note:
Most of these fuse types are suitable for outdoor use. A variety of alternative tag arrangements are also available, details on request from Cooper Bussmann application engineers buletechnical@cooperindustries.com.

DIN Medium Voltage Fuse Links

Introduction to DIN Medium Voltage Fuse Links

- Fuse links comply with DIN dimensional standard DIN 43625.
- ‘F’ Range, high performance full range fuse links.
- ‘T’ Range, high performance back-up fuse links, with striker tripping.
- ‘A’ Range, including high current rating back-up fuse link.
- Comply with IEC 60282-1 and VDE 0670 part 4.
- Wide variety of ratings, 3.6kV to 36kV.
- ‘T’ Range is suitable for outdoor use.
- Motor circuit fuse link option, see motor fuse links section page 25.

Cooper Bussmann ‘T’ Range

The Cooper Bussmann ‘T’ range medium voltage current-limiting fuse links to dimensional standard DIN 43625, are one of the most advanced design of medium voltage fuse links available anywhere in the world today. Developed by Cooper Bussmann, they comply with the very latest requirements of IEC 60282-1, are lead and cadmium free (meeting the RoHS and WEE directives) and have been designed to meet current and future global electrical utility specifications.

The ‘T’ range offers **time-current characteristics** that are **optimised** to improve discrimation with upstream devices, giving fast clearance of earth faults in secondary terminal zones. The fuse links utilise Cooper Bussmann M-effect technology, ensuring low power consumption during operation, while at the same time providing **temperature limitation in the event of an overload fault.**

The fuse links are suitable for both indoor and outdoor applications and are fitted with a spring striker. This gives either an output force of 80N with a travel of 30mm in the case of fuse links with part number sequence **‘E’**, or in the case of part number referring to **‘S’**, a spring striker with an output force of 50N and a maximum travel of 26mm.

Cooper Bussmann ‘F’ Range

The ‘F’ range fuse links have ‘full range’ clearing capability. Cooper Bussmann ‘F’ fuse links types are designed to clear low overloads right down to the fuse links’ rated current in accordance with latest IEC 60282-1 requirements. They are thus suitable for use as a sole form of protection. ‘F’ range time-current characteristics are especially advantageous for transformer protection applications.

Cooper Bussmann ‘A’ Range

This earlier, well proven, design has values of minimum breaking current between the ‘T’ and ‘F’ range including higher current ratings.

Applications

MV DIN fuse links are suitable for primary side transformer protection, fuse switch combination unit, fuse bases and fuse switches.

Features & Benefits

Certification. The Cooper Bussmann Medium Voltage (MV) DIN range of fuse links has been fully tested and certified. Interrupting performance has been certified at the world class independent test laboratories of KEMA. All other performance requirements such as temperature-rise, time-current characteristics, weather sealing etc. have been thoroughly tested to ASTA approval procedures.

All Cooper Bussmann medium voltage DIN fuse links exhibit **cool running and low power dissipation** during normal operation in service. The use of **M-effect (as already explained), drastically reduces the temperature of the fuse link during operation**. The larger cross section of the fuse link elements made possible by using M-effect ensures cooler running and low power dissipation under normal service conditions. **This ensures maximum levels of network efficiency by reducing unnecessary power loss** and minimizing switchgear wear and tear due to the fact the fuse link is running much cooler during its service life.

Cool operation. When Cooper Bussmann MV fuse links operate under low fault conditions, the maximum temperature rise of the fuse link is well within the temperature limits for all switchgear due to the use of M-effect, ensuring fuse carrier contacts remain unimpaired, thereby **increasing the life cycle of the substation** and so **reducing capital and maintenance costs**.

Silver elements. All Cooper Bussmann Back-Up MV fuse links use 99.8% pure silver in their elements, ensuring high conductivity and **low power (revenue) loss, maximising network efficiency.**

Reduced nuisance operation due to surge currents. The use of M-effect allows a larger element cross section for a given current rating, **improving withstand capability** against transient overcurrents due to transformer magnetizing inrush current, reducing mal operation. **This improves system reliability reducing maintenance costs**.

Low arc voltages during short-circuit operation. Cooper Bussmann MV fuse links are designed to produce low levels of arc voltage, allowing fuse link **to be used down to half their rated voltage**, so during short-circuit operation, the switchgear and cables are not unduly stressed by being exposed to high arc voltages, thereby **prolonging the life of the switchgear and improving asset utilization.**

Additionally, **stock holdings and part numbers can be reduced**, as a 24kV Cooper Bussmann MV DIN fuse link can be used on a 12kV system. Utilities that run a mixed voltage network (say 24, 15.5, 13.8 12 and 10 kV) can **standardise on one type of switchgear** with one type of fuse link, **reducing costs** and **removing the need for an additional fuse extension and inventory**.

Construction. All electrical connections within the Cooper Bussmann MV fuse link are made by welded or brazed joints. This firstly ensures a **very mechanically robust fuse link** and secondly, greatly **reduces the risk of poor intermittent internal contacts, improving substation reliability.**

X-Ray. All Cooper Bussmann MV fuse links are X-rayed during production. Element alignment, M-effect position, etc are all checked by trained operators. This process ensures defects that would not normally be detected by purely visual or electrical based quality systems, to be captured during production.

Element Design. Unlike many other medium voltage fuse link manufacturers, Cooper Bussmann medium voltage fuse elements employ a “neck” or ‘notch’ design principle as opposed to a perforated element design principle, see diagram below.

Cooper Bussmann

Other Medium Voltage fuse links designs

This element design insures that even the smallest degree of accidental element damage is easily detected during testing, as part of the manufacturing process thus avoids the possibility of such imperfect fuses being put into service. This is far more difficult to achieve with perforated element designs.

Lead and Cadmium Free. All Cooper Bussmann ‘T’ Ranges fuse links are lead and cadmium free and meet with the latest WEEE and RoHS directives. RoHS is less than 1000Vac.

Recycling Scheme. Cooper Bussmann operates a recycling scheme for all medium voltage fuse links, please contact buletechnical@cooperindustries.com for further information.

General Guide to the Selection of DIN Back-Up Fuse Links

Back-Up Fuse Links

- Selection guide using Low Voltage fuse links operating class gG/gL on low voltage side for **individual cable exit protection** see figure 1.

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

- Selection guide using Low Voltage fuse links operation class gG/gL on low voltage side for **overload protection of the transformer,** see figure 2.

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

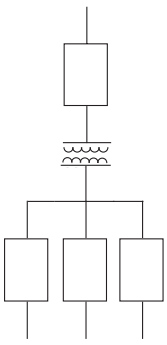


Figure 1

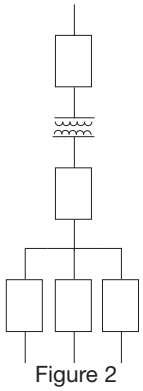


Figure 2

General Guide to the Selection of DIN Back-UP and Full Range Fuse Links

Back-Up Fuse Links

- Selection guide according to DIN VDE 0670 part 402 using LV fuse links operating class gTr on low voltage side for **overload current protection of the transformer (for German market only), see figure 2 opposite page.**

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

Full Range Fuse Links

- Selection guide using Low Voltage fuse links operating class gG/gL on low voltage side for **individual cable exit protection, see figure 1 opposite page.**

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

- Selection guide using Low Voltage fuse links operating class gG/gL on low voltage side for **overload protection of the transformer, see figure 2 opposite page**

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

General Guide to the Selection of DIN Full Range Fuse Links

Full Range Fuse Links

- Selection guide according to DIN VDE 0670 part 402 using Low Voltage fuse links operating class gTr on low voltage side for **overload protection of the transformer (for German market only), figure 2 page 12**

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

- Selection of these MV fuse links has been based on the following:

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

2 - The fuse link should discrimate with the rating of the secondary fuse link stated or where only individual cable exit protection exists, the highest LV fuse link rating likely to be used.

3 - The fuse link should operate within two seconds for transformers complying with IEC 60076-5 in respect of impedance, voltage and short-circuit withstand current.

4 - The fuse link should operate reasonably quickly in the event of a transformer internal fault or an earth fault in the secondary terminal zone of the transformer.

5 - In the case where there is no secondary fuse link for overload protection, the minimum recommended MV fuse link rating applies to the use of fuse links in encapsulated enclosures where permissible continuous overload is generally limited to 120% of transformer full load current. However, if greater overload currents are permissible a higher rating of fuse link may be required. Where the fuse link is used in open air or conditions of unrestricted ventilation a higher permissible overload may be possible.

6 - In most cases more than one rating of MV fuse link is recommended for a particular transformer size. Choice of fuse link will then depend on which fuse link offers the best protection; e.g., having one fuse link for several transformer sizes.

Recommendations for other voltage are available on request, please email buletechnical@cooperindustries.com.

3.6kV - 'A & W' Range Current Limiting Back-Up Fuse Links

Specifications

Description: A range of medium voltage DIN fuse links, complete with striker, suitable for transformer protection. The fuse links can be used even when there is no secondary low voltage protection, provided they are used with fuse switches fitted with instantaneous striker tripping mechanism.

Ratings:
Rated Voltage: 3.6kV
Rated Current: 6.3 - 200A
Breaking Capacity: 40 - 50kA

Agency Information: Comply with DIN Dimensional standard DIN 43625, VDE 0670 part 4 and with IEC 60282-1 (2005).
Suitable for indoor use.

Time-Current Curves and Cut-Off Curves: see list page 120 and data on CD at the back of the catalogue.

Features and Benefits

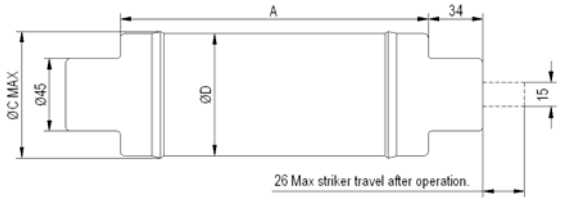
- *Cool running, low watts loss and power dissipation* thanks to the M-effect ensuring high levels of substation utilisation
- *Silver elements* ensuring high conductivity and low power (revenue) loss
- *100% X-ray,* all our Medium Voltage fuse links are X-rayed ensuring the highest possible standards are maintained

Typical Applications

- Primary side transformer protection
- Used in fuse switch combination unit
- Used in fuse bases
- Used in fuse switches

Dimensions (mm):

Fuse Reference	A	C	D	Weight (Kg)
ADLSJ	292	54	51	1.63
ADOSJ	192	54	51	1.1
WDOSJ	192	54	51	1.1
WFOSJ	192	76	76	2.1



Part Numbers

Part Number	Rated Current I_n (A)	Breaking Capacity I_1 (kA)	Minimum Breaking Current I_3 (A)	Cold Resistance & Watts Loss in Free Air		Joule Integral (I^2t)		Length mm	Diameter mm	Weight kg
				mΩ	W	Minimum Pre-Arcing	Maximum Operating			
3.6ADLSJ6.3	6.3	40	13	158	9	4.5×10^1	1.9×10^2	292	51	1.63
3.6ADLSJ10	10	40	13	95.6	13	1.3×10^2	5.4×10^2	292	51	1.63
3.6ADLSJ16	16	40	20	63.3	22	3×10^2	1.3×10^3	292	51	1.63
3.6ADLSJ20	20	40	31	45.9	25	6.3×10^2	2.7×10^3	292	51	1.63
3.6ADLSJ25	25	40	106	28.7	25	1.3×10^2	1.2×10^3	292	51	1.63
3.6ADLSJ31.5	31.5	40	106	19.1	26	2.9×10^2	2.7×10^3	292	51	1.63
3.6ADLSJ40	40	40	106	11.4	25	8×10^2	7.5×10^3	292	51	1.63
3.6ADOSJ6.3	6.3	40	13	158	9	4.5×10^1	1.9×10^2	192	51	1.1
3.6ADOSJ10	10	40	31	79.2	11	2.3×10^2	9.7×10^2	192	51	1.1
3.6ADOSJ16	16	40	49	50.8	18	5.5×10^2	2.4×10^3	192	51	1.1
3.6ADOSJ20	20	40	49	38.1	21	9.8×10^2	4.2×10^3	192	51	1.1
3.6ADOSJ25	25	40	106	28.9	25	1.3×10^2	1.2×10^3	192	51	1.1
3.6ADOSJ31.5	31.5	40	106	19.2	26	2.9×10^2	2.7×10^3	192	51	1.1
3.6ADOSJ40	40	40	106	11.6	26	8.0×10^2	7.5×10^3	192	51	1.1
3.6WDOSJ50	50	50	180	5.36	20	1.8×10^3	2.4×10^4	192	51	1.1
3.6WDOSJ63	63	50	225	3.68	21	3.8×10^3	4.5×10^4	192	51	1.1
3.6WDOSJ80	80	50	288	2.88	27	6.3×10^3	8.0×10^4	192	51	1.1
3.6WDOSJ100	100	50	360	2.16	31	9.8×10^3	1.1×10^5	192	51	1.1
3.6WDOSJ125	125	50	450	1.73	39	1.5×10^4	2.2×10^5	192	51	1.1
3.6WFOSJ160	160	50	600	1.28	47	3.1×10^4	6.2×10^5	192	76	2.1
3.6WFOSJ200	200	50	600	0.938	52	5.7×10^4	1.1×10^6	192	76	2.1

7.2kV - 'T' Range Current Limiting Back-Up Fuse Links

Specifications

Description: A range of medium voltage DIN fuse links complete with striker, suitable for transformer protection. The fuses can be used even when there is no secondary low voltage protection, provided they are used with fuse switches fitted with instantaneous striker tripping.

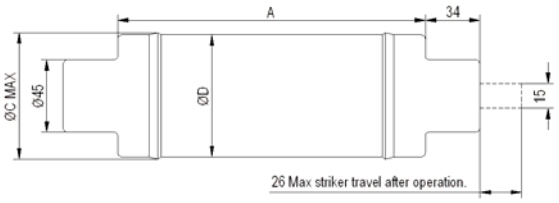
Ratings:
Rated Voltage: 3.0 - 7.2kV
Rated Current: 6.3 - 160A
Breaking Capacity: 40kA

Agency Information: Comply with DIN Dimensional standard DIN 43625, VDE 0670 part 4 and with IEC 60282-1 (2005). Suitable for indoor and outdoor use.

Time-Current Curves and Cut-Off Curves: see list page 120 and data on CD at the back of the catalogue.

Dimensions (mm):

Fuse Reference	A	C	D	Weight (Kg)
TDLSJ	292	54	51	1.63
TFLSJ	292	80	76	3.1



Features and Benefits

- *Cool running, low watts loss and power dissipation* thanks to the M-effect ensuring high levels of substation utilisation
- *Silver elements* ensuring high conductivity and low power (revenue) loss
- *100% X-ray,* all our Medium Voltage fuse links are X-rayed ensuring the highest possible standards are maintained

Typical Applications

- Primary side transformer protection
- Used in fuse switch combination unit
- Used in fuse bases
- Used in fuse switches

Part Numbers

Part Number	Rated Current I_n (A)	Breaking Capacity I_1 (kA)	Minimum Breaking Current I_3 (A)	Cold Resistance & Watts Loss in Free Air		Joule Integral (I^2t)		Length mm	Diameter mm	Weight kg
				mΩ	W	Minimum Pre-Arcing	Maximum Operating			
7.2TDLSJ6.3	6.3	40	20	205	11	4.8×10^1	6.5×10^3	292	51	1.63
7.2TDLSJ10	10	40	31	99.7	19	2.5×10^2	2.7×10^3	292	51	1.63
7.2TDLSJ16	16	40	49	65.1	23	5.5×10^2	8.2×10^3	292	51	1.63
7.2TDLSJ20	20	40	49	48.9	27	9.7×10^2	1.1×10^4	292	51	1.63
7.2TDLSJ25	25	40	80	32.6	28	5.7×10^2	8.0×10^3	292	51	1.63
7.2TDLSJ31.5	31.5	40	100	26.0	36	8.9×10^2	1.0×10^4	292	51	1.63
7.2TDLSJ40	40	40	114	16.0	36	2.0×10^3	2.2×10^4	292	51	1.63
7.2TDLSJ50	50	40	143	12.9	46	3.2×10^3	3.2×10^4	292	51	1.63
7.2TDLSJ63	63	40	180	8.14	45	8.0×10^3	7.5×10^4	292	51	1.63
7.2TFLSJ80	80	40	264	6.01	54	5.0×10^3	6.5×10^4	292	76	3.1
7.2TFLSJ100	100	40	338	4.65	64	9.1×10^3	1.1×10^5	292	76	3.1
7.2TFLSJ125	125	40	375	3.60	79	1.5×10^4	1.7×10^5	292	76	3.1
7.2TFLSJ160	160	40	525	2.73	97	3.0×10^4	3.1×10^5	292	76	3.1

12kV - 'F' Range Current Limiting Full Range Fuse Links

Specifications

Description: A range of medium voltage DIN fuse links, complete with sealed striker, suitable for transformer protection. Cooper Bussmann 'F' range provide full range protection.

Ratings:
Rated Voltage: 12kV
Rated Current: 6.3 - 100A
Breaking Capacity: 50kA

Agency Information: Comply with DIN Dimensional standard DIN 43625, VDE 0670 part 4, VDE 0670 part 402 and with IEC 60282-1 (2005)
Suitable for indoor use.

Time-Current Curves and Cut-Off Curves: see list page 120 and data on CD at the back of the catalogue.

Features and Benefits

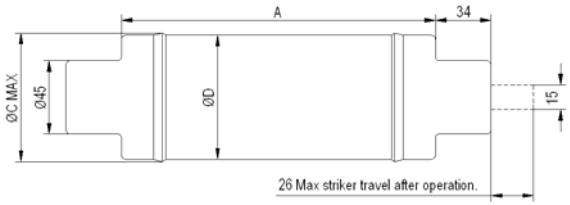
- *Cool running, low watts loss and power dissipation* thanks to the M-effect ensuring high levels of substation utilisation
- *Silver elements* ensuring high conductivity and low power (revenue) loss
- *100% X-ray,* all our Medium Voltage fuse links are X-rayed ensuring the highest possible standards are maintained
- Our Full Range MV fuse links can interrupt any current below the rated breaking capacity.

Typical Applications

- Primary side transformer protection
- Used in fuse switch combination unit
- Used in fuse bases without instantaneous striker tripping
- Used in fuse switches

Dimensions (mm):

Fuse Reference	A	C	D	Weight (Kg)
FDLSJ	292	54	51	1.63
FFLSJ	292	80	76	3.16
FXLSJ	292	92	88	4



Part Numbers

Part Number	Rated Current I_n (A)	Breaking Capacity I_1 (kA)	Minimum Breaking Current I_3 (A)	Cold Resistance & Watts Loss in Free Air		Joule Integral (I^2t)		Length mm	Diameter mm	Weight kg
				mΩ	W	Minimum Pre-Arcing	Maximum Operating			
12FDLSJ6.3	6.3	50	6.3	208	10	6.9×10^1	6.3×10^2	292	51	1.63
12FDLSJ10	10	50	10	116	15	2.2×10^2	2.1×10^3	292	51	1.63
12FDLSJ16	16	50	16	55.4	17	8.8×10^2	3.9×10^3	292	51	1.63
12FDLSJ20	20	50	20	39.6	20	1.7×10^3	7.6×10^3	292	51	1.63
12FDLSJ25	25	50	25	31.2	26	2.8×10^3	1.3×10^4	292	25.8	1.63
12FDLSJ31.5	31.5	50	31.5	26.4	36	2.6×10^3	1.3×10^4	292	51	1.63
12FFLSJ40	40	50	40	19.7	42	3.8×10^3	3.8×10^4	292	76.2	3.16
12FFLSJ50	50	50	50	14.8	51	6.8×10^3	5.6×10^4	292	76.2	3.16
12FFLSJ63	63	50	63	12.4	72	5.1×10^3	5.4×10^4	292	76.2	3.16
12FXLSJ80	80	50	80	7.94	72	2.2×10^4	1.1×10^5	292	88	4
12FXLSJ100	100	50	100	5.64	82	4.2×10^4	2×10^5	292	88	4

12kV - 'A' and 'T' Range Current Limiting Back-Up Range Fuse Links

Specifications

Description: A range of medium voltage DIN fuse links, complete with sealed striker, suitable for transformer protection. The fuse links can be used even when there is no secondary low voltage protection, provided they are used with fuse switches fitted with instantaneous striker tripping.

Ratings:
Rated Voltage: 6 - 12kV
Rated Current: 6.3 - 200A
Breaking Capacity: 50 - 63kA

Agency Information: Comply with DIN Dimensional standard DIN 43625, VDE 0670 part 4, VDE 0670 part 402 and with IEC 60282-1 (2005)
Suitable for indoor and outdoor use.

Time-Current Curves and Cut-Off Curves: see list page 120 and data on CD at the back of the catalogue.

Dimensions (mm):

Fuse Reference	A	C	D	Weight (Kg)
AILSJ	292	79	76	3.3
TDLEJ	292	54	51	1.7
THLEJ	292	67	64	2.6
TKLEJ	292	80	76	3.5
TXLEJ	292	88	88	3.7
TFMSJ	442	80	76	5.1

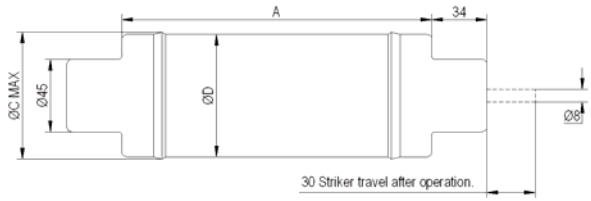
Features and Benefits

- *Cool running, low watts loss and power dissipation* thanks to the M-effect ensuring high levels of substation utilisation
- *Silver elements* ensuring high conductivity and low power (revenue) loss
- *100% X-ray,* all our high voltage fuse links are X-rayed ensuring the highest possible standards are maintained

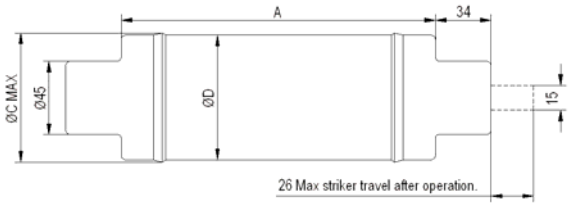
Typical Applications

- Primary side transformer protection
- Used in fuse switch combination unit
- Used in fuse bases
- Used in fuse switches

EJ Outline



SJ Outline



Part Number	Rated Current I_n (A)	Breaking Capacity I_1 (kA)	Minimum Breaking Current I_3 (A)	Cold Resistance & Watts Loss in Free Air		Joule Integral (I^2t)		Length mm	Diameter mm	Weight kg
				mΩ	W	Minimum Pre-Arcing	Maximum Operating			
12AILSJ100*	100	31.5	176	5.03	70	1.4×10^4	2×10^5	292	76	3.3
12TDLEJ6.3	6.3	63	23	222	10	9.8×10^1	1.0×10^3	292	51	1.7
12TDLEJ10	10	63	35	131	16	2.8×10^2	2.3×10^3	292	51	1.7
12TDLEJ16	16	63	53	54.6	16	2.6×10^2	3.9×10^3	292	51	1.7
12TDLEJ20	20	63	73	39.1	18	5.2×10^2	5.4×10^3	292	51	1.7
12TDLEJ25	25	63	87	31.2	24	8.1×10^2	8.4×10^3	292	51	1.7
12TDLEJ31.5	31.5	63	111	23.4	28	1.4×10^3	1.5×10^4	292	51	1.7
12TDLEJ40	40	63	143	17.2	36	2.4×10^3	2.5×10^4	292	51	1.7
12TDLEJ50	50	63	168	13.5	47	2.8×10^3	3.1×10^4	292	51	1.7
12TDLEJ63	63	63	235	10.6	60	4.3×10^3	4.7×10^4	292	51	1.7
12THLEJ80	80	63	272	7.81	72	7.9×10^3	9.1×10^4	292	64	2.6
12THLEJ100	100	63	388	5.74	85	2.0×10^4	1.4×10^5	292	64	2.6
12TKLEJ125	125	63	687	3.99	93	4.0×10^4	3.5×10^5	292	76	3.5
12TXLEJ160**	160	63	560	4.30	217	1.1×10^5	5.0×10^5	292	88	3.7
12TXLEJ200**	200	63	610	3.80	333	1.5×10^5	6.5×10^5	292	88	3.7
12THMEJ100	100	63	272	5.74	85	2.0×10^4	1.4×10^5	442	64	3.7
12TFMSJ160	160	50	485	3.65	139	5.0×10^4	3.5×10^5	442	76	5.1

* Not suitable for outdoor use / ** Not compliant with VDE 0670 part 402

Data Sheet for 'T' range 720104

17.5kV - 'A' and 'T' Range Current Limiting Back-Up Fuse Links

Specifications

Description: A range of medium voltage DIN fuse links, complete with sealed striker, suitable for transformer protection. The fuse links can be used even when there is no secondary low voltage protection, provided they are used with fuse switches fitted with instantaneous striker tripping.

Ratings:
Rated Voltage: 10 - 17.5kV
Rated Current: 6.3 - 125A
Breaking Capacity: 20 - 50kA

Agency Information: Comply with DIN Dimensional standard DIN 43625, VDE 0670 part 4, VDE 0670 part 402 and with IEC 60282-1 (2005).
'A' range is suitable for indoor use.
'T' range is suitable for indoor and outdoor use .

Time-Current Curves and Cut-Off Curves: see list page 120 and data on CD at the back of the catalogue.

Dimensions (mm):

Fuse Reference	A	C	D	Weight (Kg)
AILSJ	442	79	76	4.5
AIMSJ	442	79	76	4.5
TDLSJ	292	54	51	1.7
TFLSJ	292	80	76	3.1
TDMEJ	442	54	51	2.5
THMEJ	442	67	64	3.7
TKMEJ	442	80	76	5.1

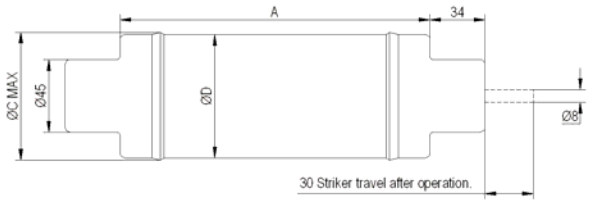
Features and Benefits

- *Cool running, low watts loss and power dissipation* thanks to the M-effect ensuring high levels of substation utilisation
- *Silver elements* ensuring high conductivity and low power (revenue) loss
- *100% X-ray,* all our high voltage fuse links are X-rayed ensuring the highest possible standards are maintained

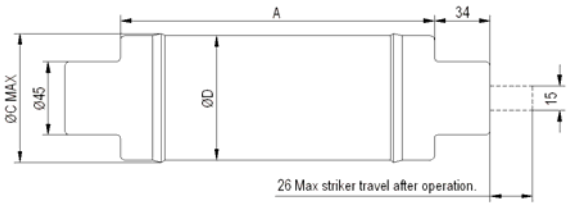
Typical Applications

- Primary side transformer protection
- Used in fuse switch combination unit
- Used in fuse bases
- Used in fuse switches

EJ Outline



SJ Outline



17.5kV - 'A' and 'T' Range Current Limiting Back-Up Fuse Links

Part Numbers

Part Number	Rated Current I_n (A)	Breaking Capacity I_1 (kA)	Minimum Breaking Current I_3 (A)	Cold Resistance & Watts Loss in Free Air		Joule Integral (I^2t)		Length mm	Diameter mm	Weight kg
				mΩ	W	Minimum Pre-Arcing	Maximum Operating			
17.5AILSJ40*	100	25	176	7.33	102	1.4 x 104	2 x 105	442	76	4.5
17.5AILSJ50*	50	20	137	29.5	102	1.8 x 103	2.9 x 104	442	76	4.5
17.5AILSJ63*	63	20	125	23.6	130	3.2 x 103	4.5 x 104	442	76	4.5
17.5AIMSJ100*	71	20	176	15.1	106	6.3 x 103	8.5 x 104	442	76	4.5
17.5TDLSJ6.3*	6.3	35.5	23	313	15	4.8×10^1	6.1×10^2	292	51	1.7
17.5TDLSJ10*	10	35.5	19	185	23	2.8×10^2	4.0×10^3	292	51	1.7
17.5TDLSJ16*	16	35.5	59	104	34	2.9×10^2	2.0×10^3	292	51	1.7
17.5TDLSJ20*	20	35.5	80	69.2	38	5.7×10^2	4.4×10^3	292	51	1.7
17.5TDLSJ25*	25	35.5	100	55.4	48	8.9×10^2	6.6×10^3	292	51	1.7
17.5TDLSJ31.5*	31.5	35.5	118	41.4	58	5.1×10^2	1.1×10^4	292	51	1.7
17.5TDLSJ40*	40	35.5	148	31.1	76	8.0×10^2	1.8×10^4	292	51	1.7
17.5TFLSJ50*	50	35.5	225	17.3	62	8.1×10^3	6.0×10^4	292	76	3.1
17.5TDMEJ6.3	6.3	50	25	324	14	9.8×10^1	1.0×10^3	442	51	2.5
17.5TDMEJ10	10	50	36	192	24	2.8×10^2	2.3×10^3	442	51	2.5
17.5TDMEJ16	16	50	55	79.6	23	2.6×10^2	3.9×10^3	442	51	2.5
17.5TDMEJ20	20	50	69	57.0	27	5.2×10^2	5.4×10^3	442	51	2.5
17.5TDMEJ25	25	50	87	45.5	34	8.1×10^2	8.4×10^3	442	51	2.5
17.5TDMEJ31.5	31.5	50	87	34.1	41	1.4×10^3	1.5×10^4	442	51	2.5
17.5TDMEJ40	40	50	111	25.0	53	2.4×10^3	2.5×10^4	442	51	2.5
17.5TDMEJ50	50	50	174	19.7	69	2.8×10^3	3.1×10^4	442	51	2.5
17.5TDMEJ63	63	50	200	15.4	89	4.3×10^3	4.7×10^4	442	51	2.5
17.5THMEJ80	80	50	270	11.5	108	7.9×10^3	9.1×10^4	442	64	3.7
17.5THMEJ100	100	50	376	8.38	127	2.0×10^4	1.4×10^5	442	64	3.7
17.5TKMEJ125	125	50	467	5.95	146	3.4×10^4	3.5×10^5	442	76	5.1

* Not suitable for outdoor use

** Not compliant with VDE 0670 part 402

Data sheet for 'T' range 720105

24kV - 'F' Range Current Limiting Full Range Fuse Links

Specifications

Description: A range of medium voltage DIN fuse links, complete with sealed striker, suitable for transformer protection. Cooper Bussmann 'F' range provide full range protection.

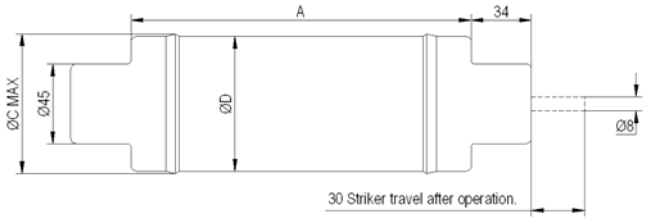
Ratings:
Rated Voltage: 24kV
Rated Current: 6.3 - 45A
Breaking Capacity: 35.5kA

Agency Information: Comply with DIN Dimensional standard DIN 43625, VDE 0670 part 4, VDE 0670 part 402 and with IEC 60282-1 (2005).
Suitable for indoor use.

Time-Current Curves and Cut-Off Curves: see list page 120 and data on CD at the back of the catalogue.

Dimensions (mm):

Fuse Reference	A	C	D	Weight (Kg)
FDMSJ	442	54	51	2.2
FFMSJ	442	67	76	4.5



Features and Benefits

- *Cool running, low watts loss and power dissipation* thanks to the M-effect ensuring high levels of substation utilisation
- *Silver elements* ensuring high conductivity and low power (revenue) loss
- *100% X-ray,* all our high voltage fuse links are X-rayed ensuring the highest possible standards are maintained
- Our Full Range MV fuse links can interrupt any current below the rated breaking capacity.

Typical Applications

- Primary side transformer protection
- Used in fuse switch combination unit
- Used in fuse bases without instantaneous striker tripping
- Used in fuse switches

Part Numbers

Part Number	Rated Current I_n (A)	Breaking Capacity I_1 (kA)	Minimum Breaking Current I_3 (A)	Cold Resistance & Watts Loss in Free Air		Joule Integral (I^2t)		Length mm	Diameter mm	Weight kg
				mΩ	W	Minimum Pre-Arcing	Maximum Operating			
24FDMSJ6.3	6.3	35.5	6.3	437	21	6.8×10^1	5.4×10^2	442	51	2.2
24FDMSJ10	10	35.5	10	218	29	2.7×10^2	2.1×10^3	442	51	2.2
24FDMSJ16	16	35.5	16	118	39	8.2×10^2	2.7×10^3	442	51	2.2
24FDMSJ20	20	35.5	20	82.2	43	1.6×10^3	5.1×10^3	442	51	2.2
24FDMSJ25	25	35.5	25	54.7	48	3.4×10^3	1.2×10^4	442	51	2.2
24FDMSJ31.5	31.5	35.5	31.5	48.6	71	3.2×10^3	1.2×10^4	442	51	2.2
24FFMSJ25	25	35.5	25	58.6	47	3.4×10^3	1.1×10^4	442	76.2	4.5
24FFMSJ31.5	31.5	35.5	31.5	48.8	70	4.7×10^3	1.5×10^4	442	76.2	4.5
24FFMSJ40	40	35.5	40	38.4	85	7.6×10^3	2.5×10^4	442	76.2	4.5
24FFMSJ45	45	35.5	45	31.4	92	7.2×10^3	3×10^4	442	76.2	4.5

24kV - 'A' and 'T' Range Current Limiting Back-Up Fuse Links

Specifications

Description: A range of medium voltage DIN fuse links, complete with sealed striker, suitable for transformer protection. The fuse links can be used even when there is no secondary low voltage protection, provided they are used with fuse switches fitted with instantaneous striker tripping.

Ratings:
Rated Voltage: 12 - 24kV
Rated Current: 6.3 - 160A
Breaking Capacity: 20 - 63kA

Agency Information: Comply with DIN Dimensional standard DIN 43625, VDE 0670 part 4, VDE 0670 part 402 and with IEC 60282-1 (2005).
'A' range is suitable for indoor use.
'T' range is suitable for indoor and outdoor use .

Time-Current Curves and Cut-Off Curves: see list page 120 and data on CD at the back of the catalogue.

Dimensions (mm):

Fuse Reference	A	C	D	Weight (Kg)
AFMSJ	442	79	76	4.5
AIMSJ	442	79	76	4.5
TDMEJ	442	54	51	2.5
THMEJ	442	67	64	3.7
TFMEJ	442	80	76	5.1
TXMEJ	442	91	88	5.9

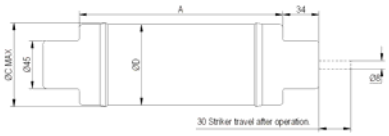
Features and Benefits

- *Cool running, low watts loss and power dissipation* thanks to the M-effect ensuring high levels of substation utilisation
- *Silver elements* ensuring high conductivity and low power (revenue) loss
- *100% X-ray,* all our Medium Voltage fuse links are X-rayed ensuring the highest possible standards are maintained

Typical Applications

- Primary side transformer protection
- Used in fuse switch combination unit
- Used in fuse bases
- Used in fuse switches

EJ Outline



SJ Outline

Part Numbers

Part Number	Rated Current I_n (A)	Breaking Capacity I_1 (kA)	Minimum Breaking Current I_3 (A)	Cold Resistance & Watts Loss in Free Air		Joule Integral (I^2t)		Length mm	Diameter mm	Weight kg
				mΩ	W	Minimum Pre-Arcing	Maximum Operating			
24AFMSJ50	50	20	137	29.5	102	1.8×10^3	2.9×10^4	442	76	4.5
24AFMSJ63	63	20	125	23.6	130	3.2×10^3	4.5×10^4	442	76	4.5
24AIMSJ71	71	20	176	15.1	106	6.3×10^3	8.5×10^4	442	76	4.5
24TDMEJ6.3	6.3	50	23	444	20	9.8×10^1	1.0×10^3	442	51	2.5
24TDMEJ10	10	50	34	262	32	2.8×10^2	2.3×10^3	442	51	2.5
24TDMEJ16	16	50	56	109	34	2.6×10^2	3.9×10^3	442	51	2.5
24TDMEJ20	20	50	73	78.2	38	5.2×10^2	5.4×10^3	442	51	2.5
24TDMEJ25	25	50	92	62.4	49	8.1×10^2	8.4×10^3	442	51	2.5
24TDMEJ31.5	31.5	50	92	46.8	59	1.4×10^3	1.5×10^4	442	51	2.5
24TDMEJ40	40	50	118	34.3	79	2.4×10^3	2.5×10^4	442	51	2.5
24TDMEJ50	50	50	185	27.0	98	2.8×10^3	3.1×10^4	442	51	2.5
24THMEJ63	63	50	217	21.1	127	4.3×10^3	4.7×10^4	442	64	3.7
24TFMEJ80	80	50	265	15.7	153	7.9×10^3	9.1×10^4	442	76	5.1
24TFMEJ100**	100	63	430	18.0	400	2.8×10^4	9.4×10^4	442	76	5.1
24TXMEJ125**	125	40	760	11.0	340	9.7×10^4	3.5×10^5	442	88	5.9
24TXMEJ160**	160	31.5	900	9.60	515	1.3×10^5	5.0×10^5	442	88	5.9

* Not suitable for outdoor use

** Not compliant with VDE 0670 part 402

Data sheet 720106

36kV - 'T' Range Current Limiting Back-Up Fuse-Links

Specifications

Description: A range of medium voltage DIN fuse links, complete with sealed striker, suitable for transformer protection. The fuse links can be used even when there is no secondary low voltage protection, provided they are used with fuse switches fitted with instantaneous striker tripping.

Ratings:
Rated Voltage: 18 - 36kV
Rated Current: 3.15 - 63A
Breaking Capacity: 20 - 35.5kA

Agency Information: Comply with DIN Dimensional standard DIN 43625, VDE 0670 part 4, VDE 0670 part 402 and with IEC 60282-1 (2005).
Suitable for indoor and outdoor use.

Time-Current Curves and Cut-Off Curves: see list page 120 and data on CD at the back of the catalogue.

Dimensions (mm):

Fuse Reference	A	C	D	Weight (Kg)
TDQSJ	537	54	51	2.9
TFQSJ	537	80	76	6.0
TXQEJ	537	88	88	6.5

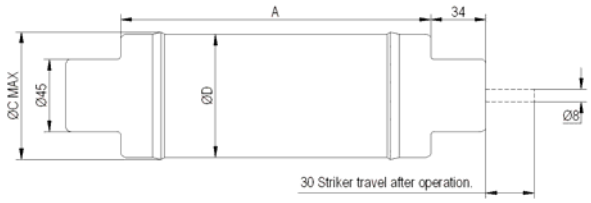
Features and Benefits

- *Cool running, low watts loss and power dissipation* thanks to the M-effect ensuring high levels of substation utilisation
- *Silver elements* ensuring high conductivity and low power (revenue) loss
- *100% X-ray,* all our Medium Voltage fuse links are X-rayed ensuring the highest possible standards are maintained

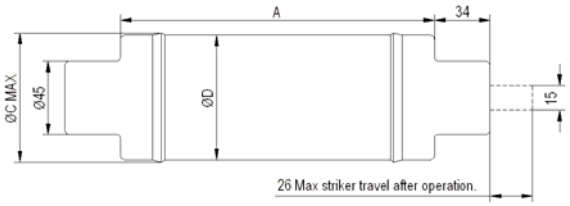
Typical Applications

- Primary side transformer protection
- Used in fuse switch combination unit
- Used in fuse bases
- Used in fuse switches

EJ Outline



SJ Outline



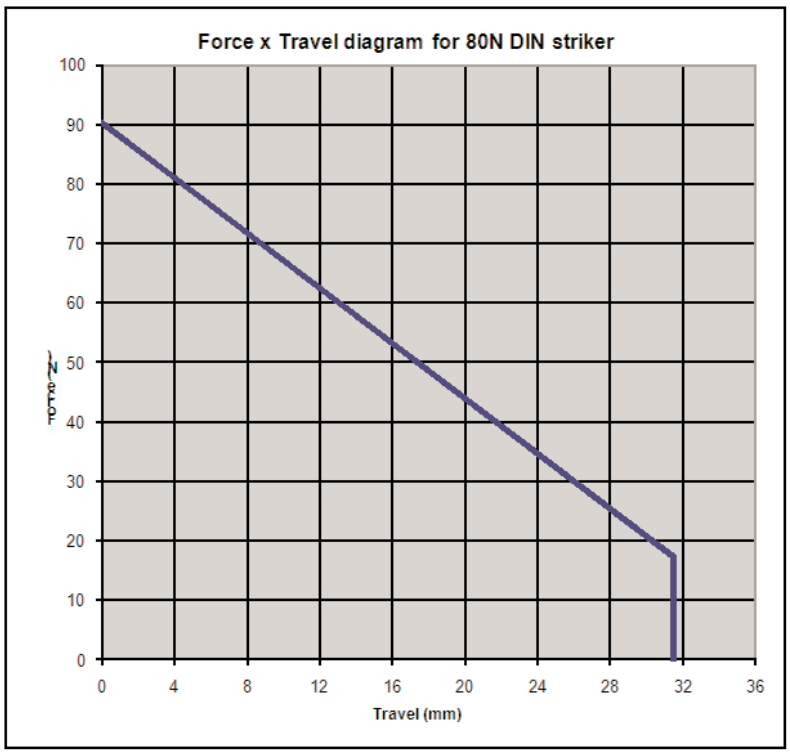
Part Numbers

Part Number	Rated Current I_n (A)	Breaking Capacity I_1 (kA)	Minimum Breaking Current I_3 (A)	Cold Resistance & Watts Loss in Free Air		Joule Integral (I^2t)		Length mm	Diameter mm	Weight kg
				mΩ	W	Minimum Pre-Arcing	Maximum Operating			
36TDQSJ3.15	3.15	20	23	1455	18	2.0×10^1	2.4×10^2	537	51	2.9
36TDQSJ6.3	6.3	35.5	23	684	34	1.0×10^2	1.2×10^3	537	51	2.9
36TDQSJ10	10	35.5	35	402	44	3.1×10^2	3.6×10^3	537	51	2.9
36TDQSJ16	16	35.5	70	165	52	4.6×10^2	5.1×10^3	537	51	2.9
36TDQSJ20	20	35.5	98	117	62	8.9×10^2	8.2×10^4	537	51	2.9
36TDQSJ25	25	35.5	112	98.0	85	1.2×10^3	1.5×10^4	537	51	2.9
36TFQSJ31.5	31.5	35.5	116	73.4	96	2.1×10^3	2.3×10^4	537	51	6.0
36TFQSJ40	40	35.5	178	52.4	116	4.1×10^3	3.9×10^4	537	76	6.0
36TFQSJ50	50	35.5	255	36.8	133	8.3×10^3	8.1×10^4	537	76	6.0
36TXQEJ63*	63	20	360	35.0	271	1.1×10^4	6.2×10^4	537	88	6.5

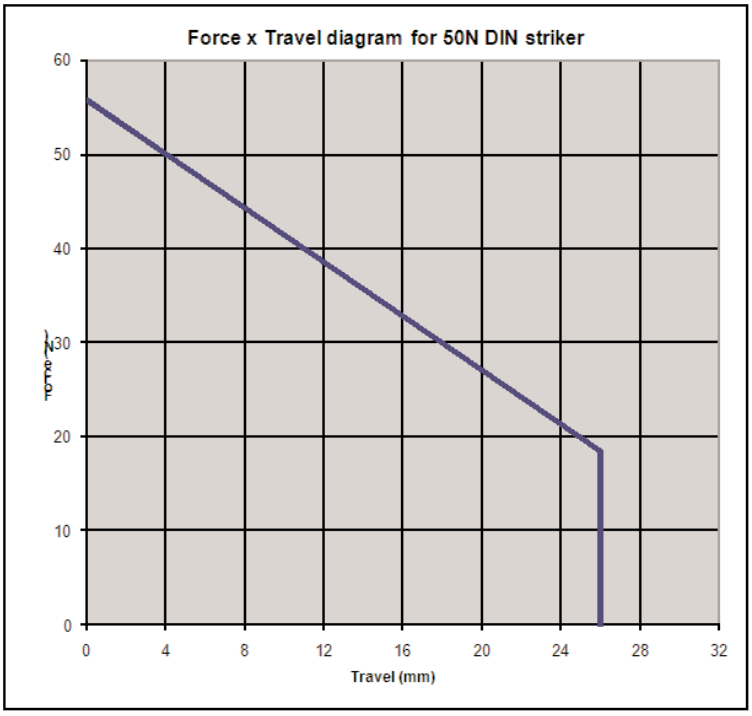
* Not compliant with VDE 0670 part 402

Striker Force Diagrams

E = Spring Striker 80N to DIN IEC 60282-1 Designation ‘Medium’



S = Spring Striker 50N to DIN 43625 and IEC 60282-1 Designation ‘Medium’



Medium Voltage Motor Fuse Links