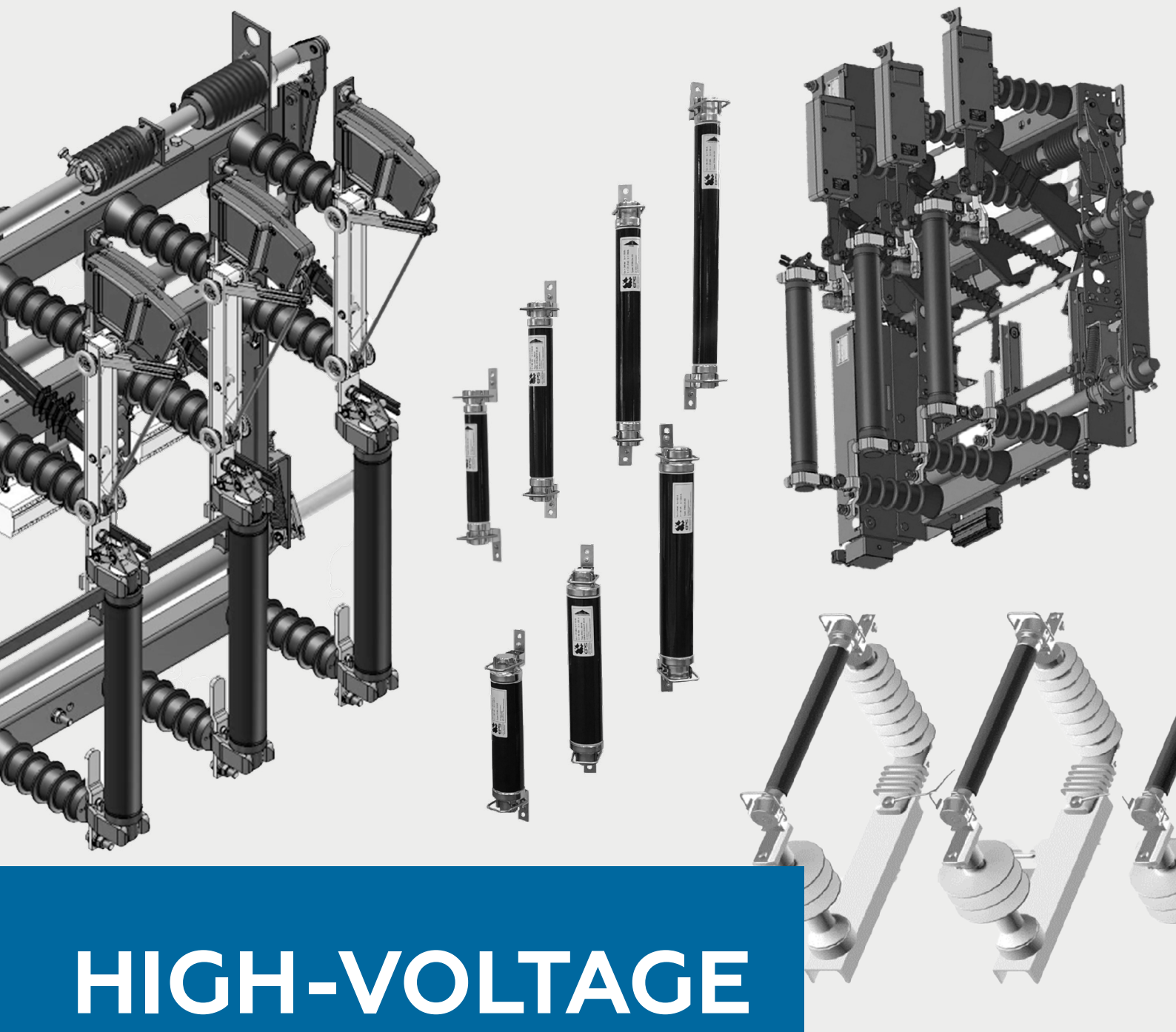




**EPS**  
ENERGIE GMBH



# HIGH-VOLTAGE FUSE-LINKS

optimal protection is our top priority

[www.epsenergie.de](http://www.epsenergie.de)

# GENERAL INFORMATION ON CURRENT-LIMITING FUSE-LINKS



The high-voltage back-up current-limiting fuse-links are designed for protection of systems which include transformers, against the destructive results of short-circuits and overloads, by limiting the thermal and electro-dynamic effects of the short-circuit currents.

The CNC fuse-links are complying with the industry standards - IEC 60282-1, DIN 43625 and IEC 60787 - and can be used both in outdoor and indoor applications.

## THE MAIN CHARACTERISTICS OF THE CNC FUSE-LINKS

- High breaking capacity - 50 kA
- Limitation of the short-circuit currents at low levels
- Reliable interruption of the critical currents
- Minimum breaking current is relatively low, < 4xI<sub>n</sub>
- Low switching voltage - lower than 60 kV

- Low level of the cut-off current
- Unlimited lifetime
- Low power dissipation - more energy savings and less heating
- Same design for both indoor and outdoor usage
- Reliable proofing against humidity penetration of the fuse-link interior
- Highly qualitative raw materials and components.

## CONSTRUCTION

The melting elements, having variable sections, are precisely wounded on a ceramic carrier, ending with copper terminal parts. Inside the cylindrical cavity of the carrier is a helical wire with the role of activating the striking system. The striker (thermal or not) is used to indicate the blown of the fuse-link and it also can activate other systems. There are also models without striker.

The carrier system is introduced in a ceramic tube, sealed at ends with protective caps of nickel-plated copper, which are also acting as contacts when mounting in the basement. The inside space of the tube is filled with material for extinguishing electrical

arcs, made of quartz sand with tight-controlled purity and granularity. Inside the fuse-link tube all the contacts are made through spot welding.

The cooper caps are mechanically attached to the ends of the tube and proofed against humidity penetration through the use of O-shaped seals of high-temperature resistant rubber.

The caps, which are the contact parts of the fuse-link, are of two types, according to specifications of DIN 43625 and IEC 60282-1:

- **Diameter of 45 mm (series: EA, EPA, EMA, EMPA/FA, FPA, FMA, FMPA)**
- **Diameter of 56 mm (series: EB, EPB, EMB, EMPB/FB, FPB, FMB, FMPB)**

## OPERATING

When the current is between the minimal breaking and the nominal breaking values the fuse element melts and evaporates, appearing the electrical arc. The arc is cooled and extinguished by the extinguishing element of the fuse-link, thus ensuring the protection of the main circuit against damages.

## PRODUCT SERIES

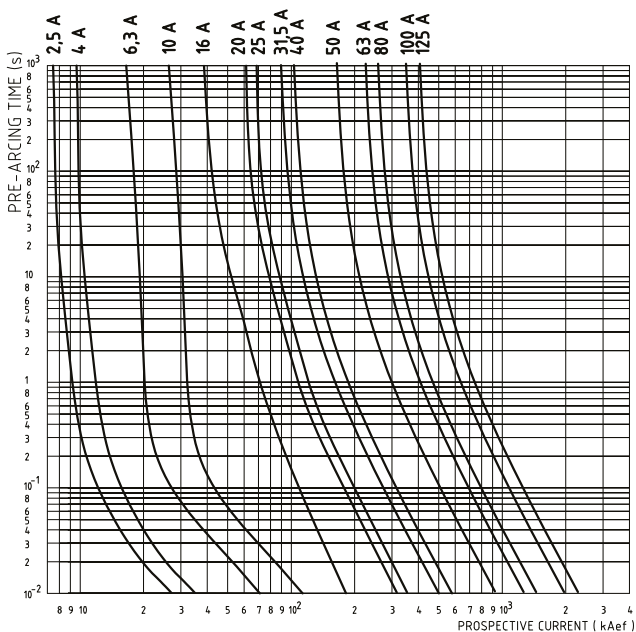
Contact Diameter	Tube Diameter	With Striker	With Striker
45 mm	53 mm	FPA (EPA)	FA (EA)
	75/85 mm	FMPA (EMPA)	FMA (EMA)
56 mm	53 mm	FPB (EPB)	FB (EB)
	75/85 mm	FMPB (EMPB)	FMB (EMB)

## Technical data

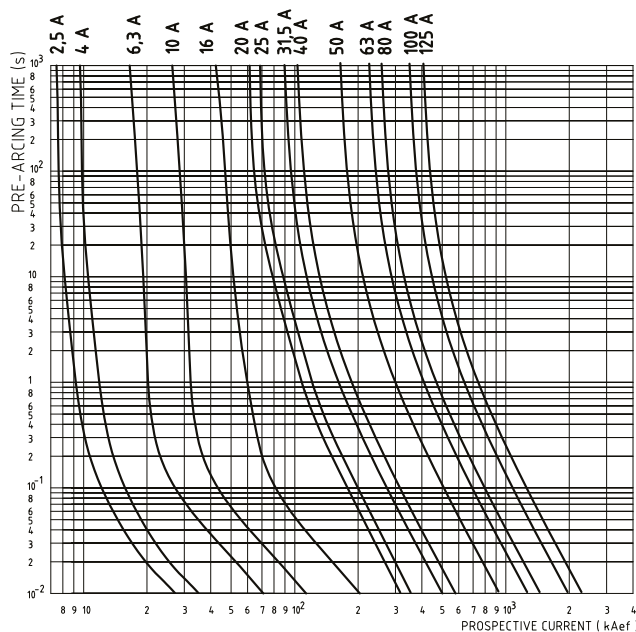
Product Code	Rated Voltage	Rated Current	Breaking Capacity	Breaking Current	Power Cold	Dissipation Resistance	Length	Total IH	Tube diameter	Weight
	Un (kV)	In (A)	11 (kA)	13 (A)	(W)	(mΩ)	(mm)	(A²s)	(mm)	(kg)
E(P)A/B-7,2-2,5	7,2	2,5	50	8	4,5	880	192	71	53	1,1
E(P)A/B-7,2-4	7,2	4	50	15	7,2	421	192	200	53	1,1
E(P)A/B-7,2-6,3	7,2	6,3	50	24	9,4	187	192	420	53	1,1
E(P)A/B-7,2-10	7,2	10	50	39	18,7	124	192	1920	53	1,1
E(P)A/B-7,2-16	7,2	16	50	63	20,9	52	192	2950	53	1,1
E(P)A/B-7,2-20	7,2	20	50	76	20,2	26	192	6200	53	1,1
E(P)A/B-7,2-25	7,2	25	50	98	21	24	192	6880	53	1,1
E(P)A/B-7,2-31,5	7,2	31,5	50	125	24,6	17,3	192	12600	53	1,1
E(P)A/B-7,2-40	7,2	40	50	150	32	13,8	192	22600	53	1,1
EM (P) A/B-7,2-50	7,2	50	50	190	39,7	9,7	192	39130	75	1,4
EM (P) A/B-7,2-63	7,2	63	50	243	40,9	5,4	192	68500	75	1,4
EM (P) A/B-7,2-80	7,2	80	50	316	45	4	192	152000	75	1,4
EM(P)A/B-7,2-100	7,2	120	50	395	65	3,8	192	263000	85	2,4
EM(P)A/B-7,2-125	7,2	125	50	595	45	3,3	192	308000	85	2,4
F(P)A/B-12-2,5	12	2,5	50	8	8	1443	292	71	53	1,6
F(P)A/B-12-4	12	4	50	15	11,4	715	292	200	53	1,6
F(P)A/B-12-6,3	12	6,3	50	24	16,9	315	292	420	53	1,6
F(P)A/B-12-10	12	10	50	39	30,9	210	292	1920	53	1,6
F(P)A/B-12-16	12	16	50	63	34,1	90	292	2950	53	1,6
F(P)A/B-12-20	12	20	50	76	25	55,6	292	6200	53	1,6
F(P)A/B-12-25	12	25	50	98	33	45	292	6880	53	1,6
F(P)A/B-12-31,5	12	31,5	50	125	41	35,8	292	12600	53	1,6
F(P)A/B-12-40	12	40	50	150	58	28	292	22600	53	1,6
FM(P)A/B-12-50	12	50	50	190	53	16,9	292	39130	75	2,1
FM(P)A/B-12-63	12	63	50	243	59	11,2	292	68500	75	2,1
FM(P)A/B-12-80	12	80	50	316	80	9,4	292	152000	75	2,1
FM(P)A/B-12-100	12	100	50	395	109	7,2	292	263000	85	3,7
FM(P)A/B-12-125	12	125	50	595	151	6,1	292	308000	85	3,7
F(P)A/B-24-2,5	24	2,5	50	8	18	2680	442	71	53	2,5
F(P)A/B-24-4	24	4	50	15	27	1430	442	200	53	2,5

Product Code	Rated Voltage	Rated Current	Breaking Capacity	Breaking Current	Power Cold	Dissipation Resistance	Length	Total IH	Tube diameter	Weight
	Un (kV)	In (A)	11 (kA)	13 (A)	(W)	(mΩ)	(mm)	(A <sup>2</sup> s)	(mm)	(kg)
<b>F(P)A/B-24-6,3</b>	24	6,3	50	24	29	613	442	420	53	2,5
<b>F(P)A/B-24-10</b>	24	10	50	39	63	414	442	1920	53	2,5
<b>F(P)A/B-24-16</b>	24	16	50	63	51	154	442	2950	53	2,5
<b>F(P)A/B-24-20</b>	24	20	50	76	54	103	442	6200	53	2,5
<b>F(P)A/B-24-25</b>	24	25	50	98	70	83	442	6880	53	2,5
<b>F(P)A/B-24-31,5</b>	24	31,5	50	125	91	66	442	12600	53	2,5
<b>F(P)A/B-24-40</b>	24	40	50	150	128	51	442	22600	53	2,5
<b>FM(P)A/B-24-50</b>	24	50	50	190	123	31	442	39130	75	4,6
<b>FM(P)A/B-24-63</b>	24	63	50	243	131	21	442	68500	75	4,6
<b>FM(P)A/B-24-80</b>	24	80	50	316	178	17	442	152000	75	4,6
<b>FM(P)A/B-24-100</b>	24	100	50	395	240	13	442	263000	85	5,7
<b>FM(P)A/B-24-125</b>	24	125	50	595	318	11	442	308000	85	5,7
<b>F(P)A/B-36-2,5</b>	36	2,5	25	8	22	3900	537	71	53	2,7
<b>F(P)A/B-36-4</b>	36	4	25	15	47	1995	537	200	53	2,7
<b>F(P)A/B-36-6,3</b>	36	6,3	25	24	54	920	537	420	53	2,7
<b>F(P)A/B-36-10</b>	36	10	25	39	114	621	537	1920	53	2,7
<b>F(P)A/B-36-16</b>	36	16	25	63	120	272	537	2840	53	2,7
<b>F(P)A/B-36-25</b>	36	25	25	98	123	123	537	6880	53	2,7
<b>FM(P)A/B-36-31,5</b>	36	31,5	25	125	133	83	537	12630	75	4,9
<b>FM(P)A/B-36-40</b>	36	40	25	150	206	66	537	22620	75	4,9

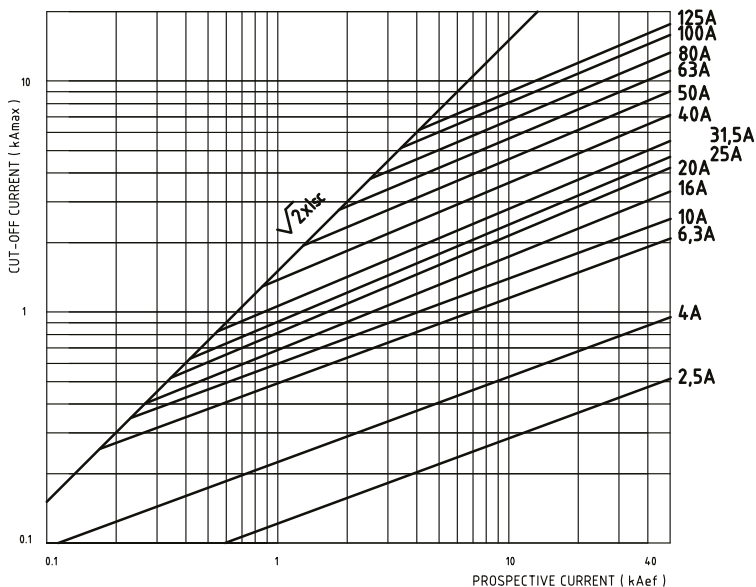
# Time-current characteristic and cut-off current diagram



**TIME-CURRENT CHARACTERISTIC  
7.2 kV AND 24 kV**



**TIME-CURRENT CHARACTERISTIC  
12 kV**

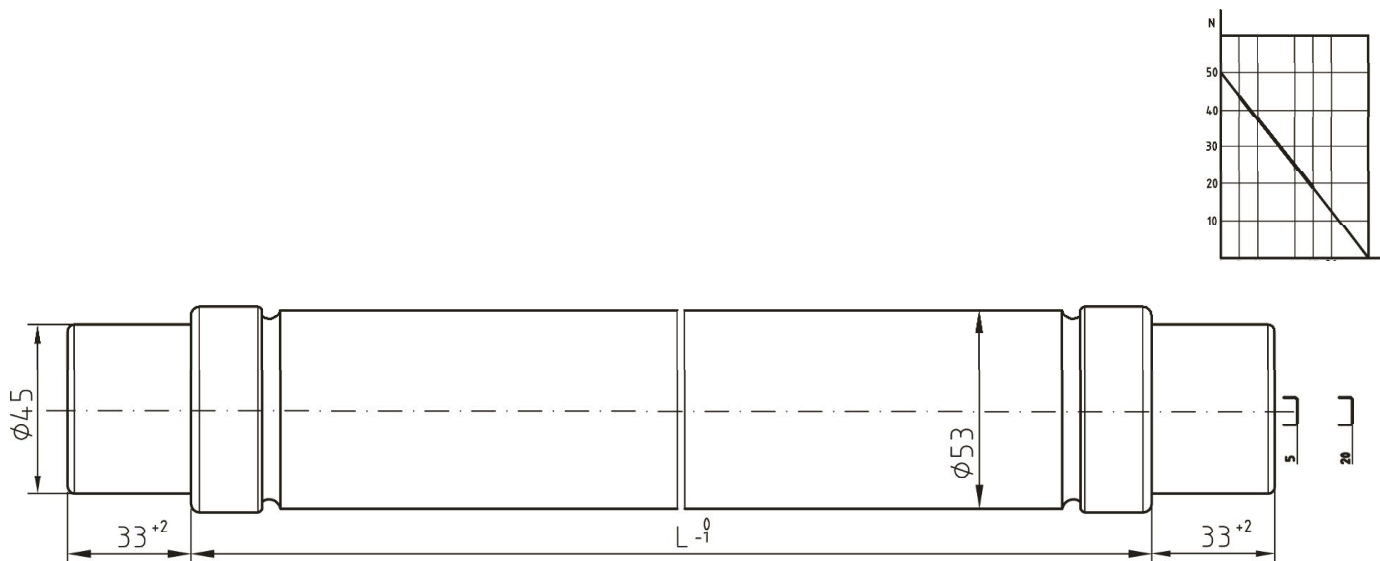


**CUT-OFF CHARACTERISTIC**

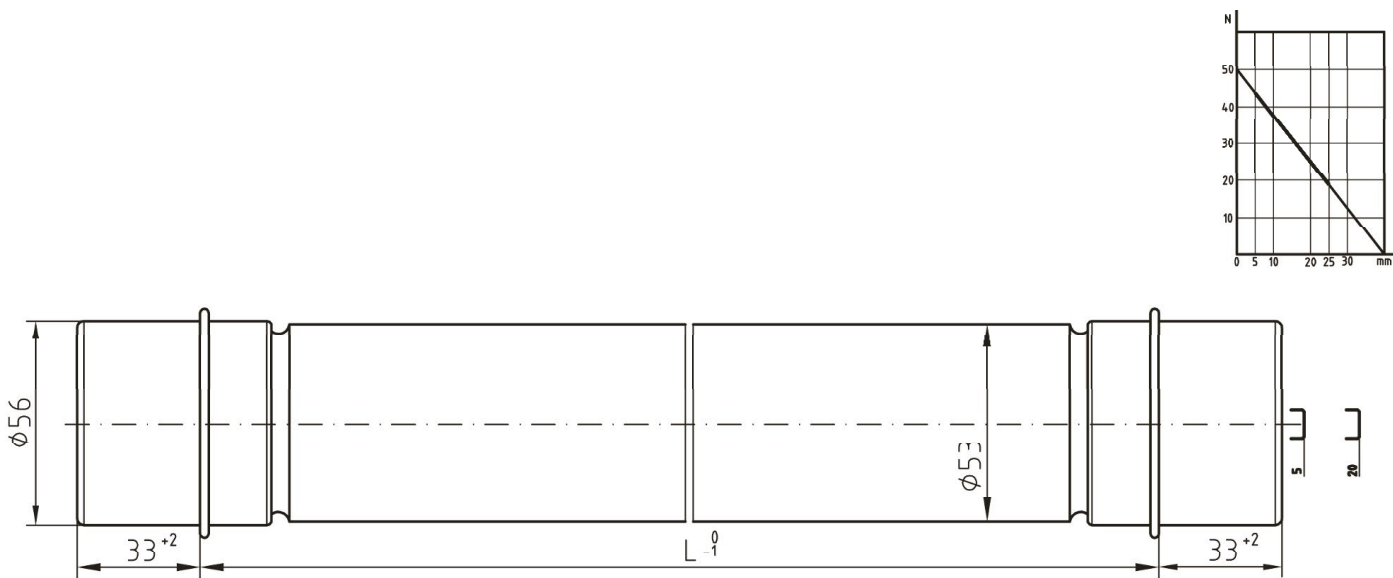
The time-current specifications are for a temperature of 15-20°C of the surrounding environment. If the fuse-link is to be used in closed environments with other

sources of heat, the user should contact the manufacturer for choosing the right models of fuse-link.

# DIMENSIONS - FPA, FPB (EPA, EPB)

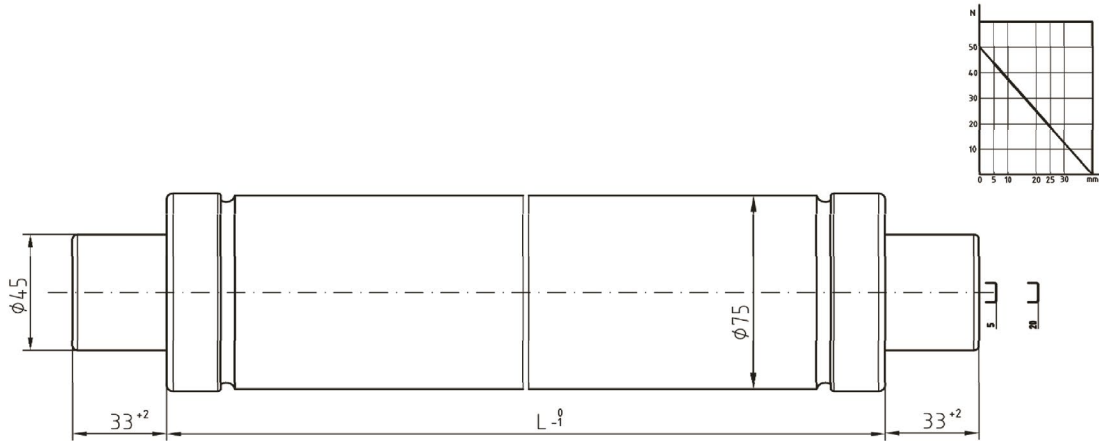


<b>Un (kV)</b>	7.2	12	24	36
<b>L (mm)</b>	192	292	442	537

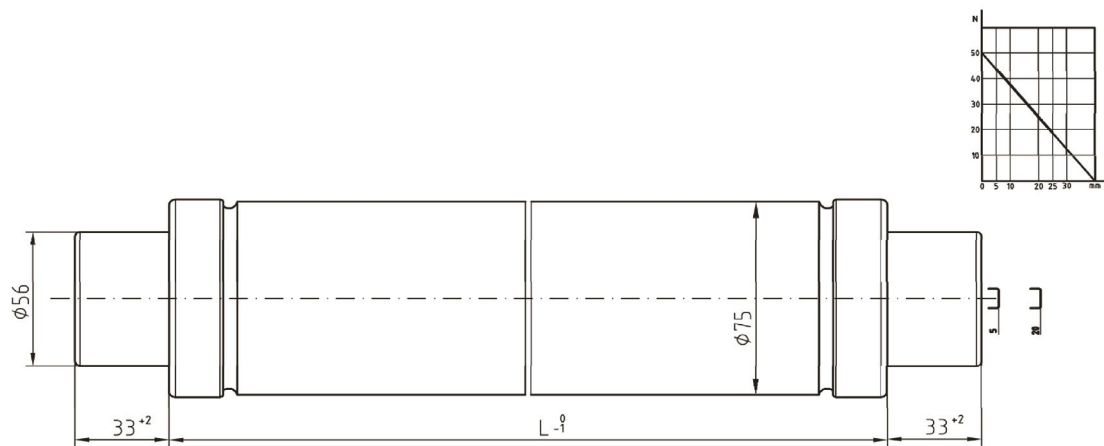


<b>Un (kV)</b>	7.2	12	24	36
<b>L (mm)</b>	192	292	442	537

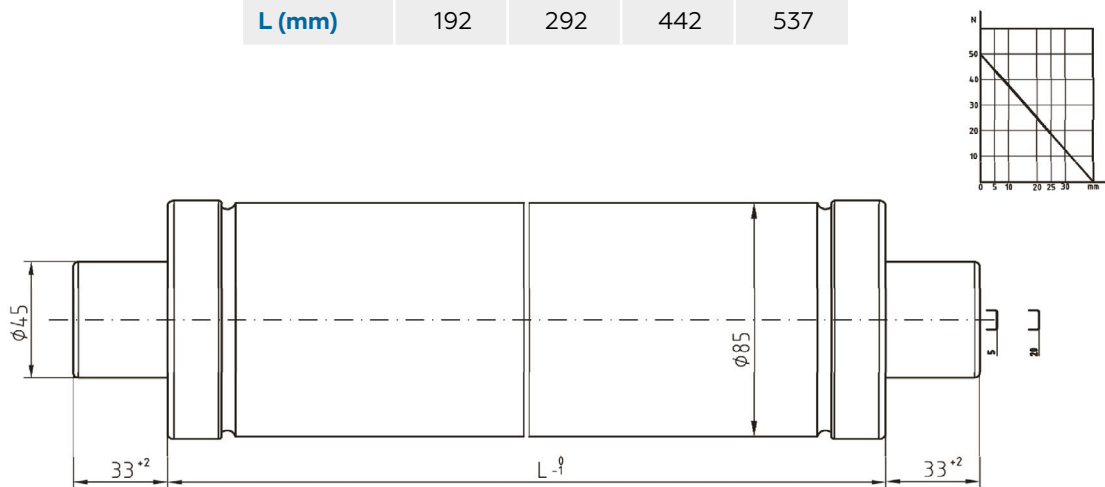
# DIMENSIONS - FPA, FPB (EPA, EPB)



<b>Un (kV)</b>	7.2	12	24	36
<b>L (mm)</b>	192	292	442	537



<b>Un (kV)</b>	7.2	12	24	36
<b>L (mm)</b>	192	292	442	537



<b>Un (kV)</b>	7.2	12	24	36
<b>L (mm)</b>	192	292	442	537

## HOW TO SELECT THE FUSE-LINK MODEL

According to the specifications of IEC 787 it is recommended the usage of the following fuse-links depending on the rated power of the transformers to be protected.

Un (KV)	Pn (KVA)	In (A)	Primary Short-circuit Voltage (%)	Group Connection	Rate Current of the Fuse-link	
					In (min) (A)	In (max) (A)
20	25	0,72	4	Yzn-5	4	4
20	40	1,15	4	Yzn-5	4	6,3
20	63	1,81	4	Yzn-5	6,3	10
20	100	2,88	4	Yzn-5	10	16
20	160	4,61	4	Yzn-5	16	16
20	250	7,21	6	Dyn-5	16	16
20	400	11,5	6	Dyn-5	25	25
20	630	18,18	6	Dyn-5	31,5	50
20	1000	28,8	6	Dyn-5	50	63
20	1600	46,1	6	Dyn-5	63	80
10	25	1,44	4	Yzn-5	6,3	10
10	40	2,31	4	Yzn-5	10	10
10	63	3,63	4	Yzn-5	10	16
10	100	5,76	4	Yzn-5	16	25
10	160	9,23	4	Yzn-5	25	31,5
10	250	14,43	6	Dyn-5	31,5	40
10	400	23,11	6	Dyn-5	40	50
10	630	36,37	6	Dyn-5	50	63
10	1000	57,6	6	Dyn-5	80	100
10	1600	92	6	Dyn-5	125	125
6	25	2,4	4	Yzn-5	6,3	10
6	40	3,85	4	Yzn-5	10	16
6	63	6,06	4	Yzn-5	16	16
6	100	9,62	4	Yzn-5	25	31,5
6	160	15,39	4	Yzn-5	31,5	40
6	250	24,05	6	Dyn-5	40	50
6	400	38,5	6	Dyn-5	50	63
6	630	60,6	6	Dyn-5	63	80
6	1000	96,2	6	Dyn-5	100	125



# OPERATION AND MAINTENANCE REQUIREMENTS

For indoor usage the fuse-links could be mounted either horizontally or vertically. For outdoor applications the fuse-links should be mounted only vertically with the strike system downwards.

Replacement of the blown fuse-links should be done only complying to the requirements of the work safety techniques and only by personnel trained and qualified

for working with high-voltage installations. The operations are forbidden if current is flowing in the circuit.

The blown fuse-links should be replaced only with new ones. In case of tri-phases circuitry, after burning one fuse-link the fuses for all phases should be replaced.

It is recommended to examine periodically the status of the protective coverings of the fuse-links' contacts.

# ORDERING INFORMATION

Un (kV)	In (A)	Diameter of Contact			
		45 mm		56 mm	
		With Striker	Without Striker	With Striker	Without Striker
36	2,5 4- 25	FPA-36-ln	FA-36-ln	FPB-36-ln	FB-36-ln
36	31,5 -r- 40	FM PA-36-1 n	FMA-36-ln	FMPB-36-ln	FMB-36-ln
24	2,5 -r- 40	FPA-24-ln	FA-24-ln	FPB-24-ln	FB-24-ln
24	50 4-125	FM PA-24-1 n	FMA-24-ln	FMPB-24-ln	FMB-24-ln
12	2,5 4- 40	FPA-12-ln	FA-12-ln	FPB-12-ln	FB-12-ln
12	50 125	FM PA-12-1 n	FMA-12-ln	FMPB-12-ln	FMB-12-ln
7,2	2,5 -r 40	EPA-7,2-ln	EA-7,2-ln	EPB-7,2-ln	EB-7,2-ln
7,2	50 v 125	EMPA-7,2-ln	EMA-7,2-ln	EMPB-7,2-ln	EMB-7,2-ln

## TESTING AND CERTIFICATIONS

The fuse-links could be tested according to IEC 60282-1, DIN 43625 and IEC 60787 in independent, internationally recognized laboratories. Test reports are available upon request.

The manufacturing company enjoys an outstanding reputation for the quality of its products. We have

implemented and we are maintaining the following ISO certifications:

- ISO 9001:2015 - Quality Management System.
- EN ISO 14001:2015 - Environmental Management System.
- BS OHSAS 18001:2008 - Occupational Health and Safety Management System.

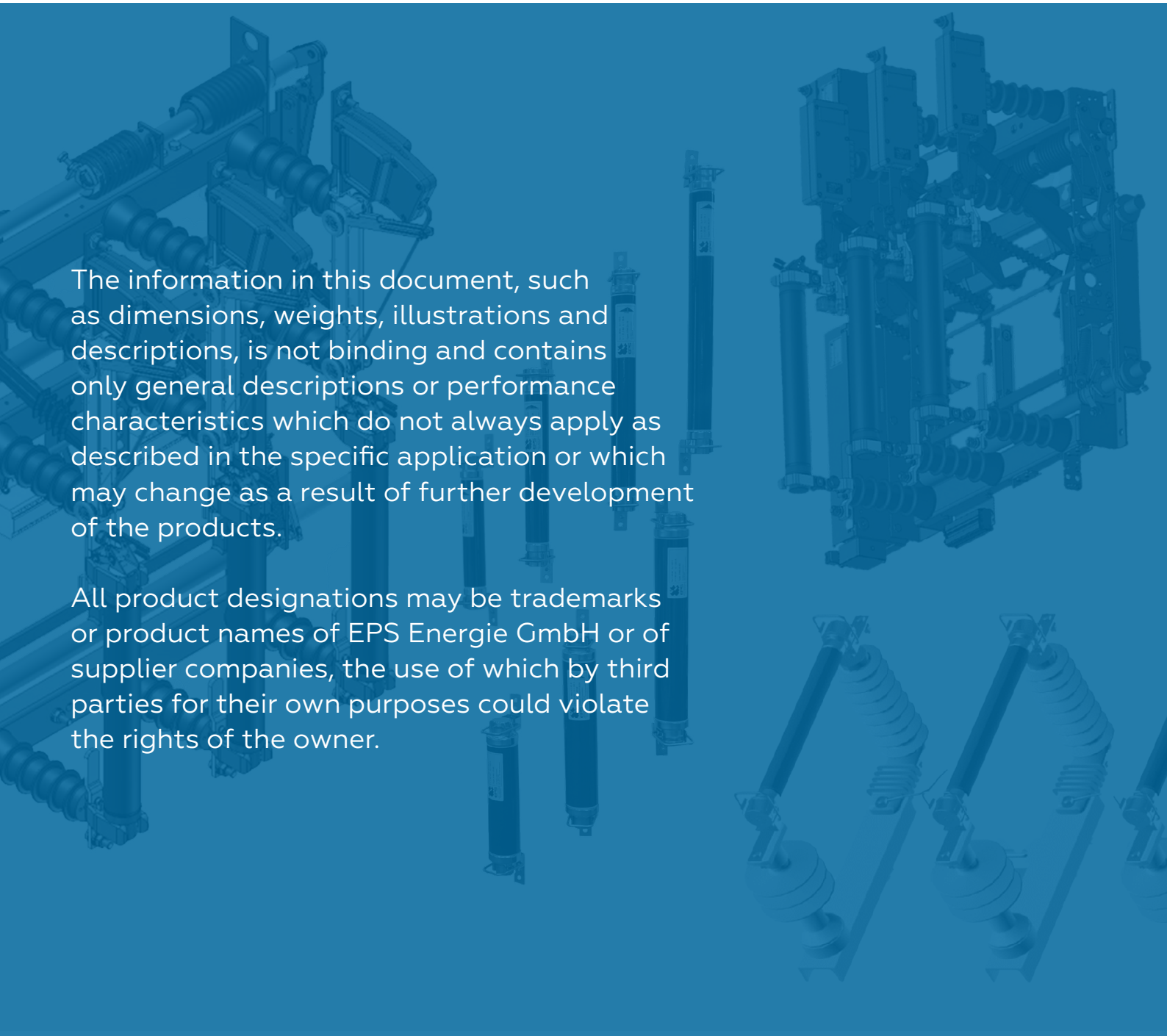
## REFERENCES

Since the foundation of the factory in 2000, nearly 1.5 Million fuse-links have been manufactured and supplied to both domestic and foreign customers. Eximprod is market leader in Romania and its portfolio of export customers is expanding.

Main customers of fuse-links include companies like:

- E.ON
- CEZ
- ENEL
- EFACEC
- SIEMENS



The background of the page is a solid blue color with a faint, semi-transparent image of various electrical components, including circuit breakers, insulators, and busbars, arranged in a grid-like pattern.

The information in this document, such as dimensions, weights, illustrations and descriptions, is not binding and contains only general descriptions or performance characteristics which do not always apply as described in the specific application or which may change as a result of further development of the products.

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