

# Limitor<sup>®</sup>- P Back-up Fuses

without Controlled Power Dissipation

## HIGH VOLTAGE IEC FUSES

## DIN HV BACK-UP FUSES FOR TRANSFORMERS



Mersen HV fuse-links have been used for reliable protection in high-voltage switchgear and controlgear and high-voltage systems for decades.

Limitor<sup>®</sup>-P HV fuses are back-up fuses as defined in the IEC 60282-1 standard and dedicated to protect transformers against effects of short-circuit currents.

To guarantee high quality, Mersen uses the best materials: fuse-elements are in pure silver, caps are in copper coated with silver and bodies are in ceramic.

## TECHNICAL DATA

	<b>3/7,2kV</b> 192 mm	<b>6/12kV</b> 292 mm 442 mm	<b>10/17,5kV</b> 367 mm	<b>10/24kV</b> 442 mm 537 mm	<b>20/36kV</b> 537 mm
Rated current	2 ... 200 A	1 ... 250 A	6.3 ... 100 A	1 ... 200 A	2 ... 4 A
Rated voltage range $U_n$	3/ 7.2 kV	6/12kV	10/17,5 kV	10/24 kV	30/36 kV
Rated voltage of transformer	6 kV	10 kV	15 kV	20 kV	30 kV
Package	1	1	1	1	1

## FEATURES & BENEFITS

- High breaking capacity
- High current limitation
- Low switching voltage
- Quick breaking
- Medium striker 80N/30mm
- Indoor and outdoor applications
- Energy efficiency
- New cap design for a better compatibility with all types of clips and easier assembly
- Coordination with IEC 60787, IEC 62271-105, IEC/TR 62655

## APPLICATIONS

- HV Transformer protection

## STANDARDS

- IEC 60282-1
- VDE 0670 part 4
- DIN 43625



# Limitor®- P Back-up Fuses

without Controlled Power Dissipation

## PRODUCT RANGE



45DB72V2P

### Limitor- P, Rated voltage 3 / 7,2 kV

Catalog number	Item number	Rated current $I_n$	Clearing $I^2t$ at Rated Voltage	Breaking capacity $I_b$	Minimum breaking current $I_3 = I_{min}$	Cold resistance R20 (+/-10%)	Power dissipation at $I_n$	Package	Weight
<b>Ø56mm, length 192mm</b>									
45DB72V2P	N1000098	2 A	0.6 kA <sup>2</sup> s	63 kA	15 A	290 mΩ	1.8 W	1	1.2 kg
45DB72V4P	P1000099	4 A	0.8 kA <sup>2</sup> s	63 kA	20 A	270 mΩ	5 W	1	1.2 kg
<b>Ø65mm, length 192mm</b>									
45DB72V63P	B209301	63 A	85 kA <sup>2</sup> s	63 kA	220 A	8.75 mΩ	60 W	1	1.5 kg
45DB72V80P	C209302	80 A	140 kA <sup>2</sup> s	63 kA	300 A	6.25 mΩ	85 W	1	1.5 kg
45DB72V100P	D209303	100 A	230 kA <sup>2</sup> s	63 kA	350 A	5 mΩ	96 W	1	1.5 kg
<b>Ø88mm, length 192mm</b>									
45DB72V160P	R1000101	160 A	540 kA <sup>2</sup> s	63 kA	435 A	3 mΩ	75 W	1	2.6 kg
45DB72V200P	S1000102	200 A	690 kA <sup>2</sup> s	63 kA	610 A	2.5 mΩ	200 W	1	2.9 kg

### Limitor- P, Rated voltage 6 /12 kV

Catalog number	Item number	Rated current $I_n$	Clearing $I^2t$ at Rated Voltage	Breaking capacity $I_b$	Minimum breaking current $I_3 = I_{min}$	Cold resistance R20 (+/-10%)	Power dissipation at $I_n$	Package	Weight
<b>Ø56mm, length 292mm</b>									
45DB120V1P	T1000103	1 A	0.11 kA <sup>2</sup> s	63 kA	14 A	1500 mΩ	1.6 W	1	1.7 kg
45DB120V2P	V1000104	2 A	0.4 kA <sup>2</sup> s	63 kA	16 A	510 mΩ	2 W	1	1.7 kg
45DB120V4P	W1000105	4 A	0.55 kA <sup>2</sup> s	63 kA	22 A	338 mΩ	6 W	1	1.7 kg
45DB120V6,3P	F209305	6.3 A	0.8 kA <sup>2</sup> s	63 kA	30 A	190 mΩ	8 W	1	1.7 kg
45DB120V10P	G209306	10 A	1.4 kA <sup>2</sup> s	63 kA	42 A	139 mΩ	16 W	1	1.7 kg
45DB120V16P	H209307	16 A	1.8 kA <sup>2</sup> s	63 kA	54 A	107 mΩ	38 W	1	1.7 kg
45DB120V20P	J209308	20 A	3.7 kA <sup>2</sup> s	63 kA	73 A	71 mΩ	38 W	1	1.7 kg
45DB120V25P	K209309	25 A	5.5 kA <sup>2</sup> s	63 kA	93 A	52 mΩ	46 W	1	1.7 kg
45DB120V32P	L209310	31.5 A	9 kA <sup>2</sup> s	63 kA	105 A	43 mΩ	65 W	1	1.7 kg
45DB120V40P	M209311	40 A	29 kA <sup>2</sup> s	63 kA	125 A	22.5 mΩ	54 W	1	1.7 kg
45DB120V50P	N209312	50 A	40 kA <sup>2</sup> s	63 kA	160 A	18 mΩ	70 W	1	1.7 kg
45DB120V63P	P209313	63 A	65 kA <sup>2</sup> s	63 kA	230 A	12 mΩ	85 W	1	1.7 kg
<b>Ø65mm, length 292mm</b>									
45DB120V80P	Q209314	80 A	115 kA <sup>2</sup> s	63 kA	350 A	10.6 mΩ	114 W	1	2.1 kg
<b>Ø78mm, length 292mm</b>									
45DB120V100P	R209315	100 A	200 kA <sup>2</sup> s	63 kA	500 A	8.5 mΩ	156 W	1	3.1 kg
<b>Ø88mm, length 292mm</b>									
45DB120V125P	X1000106	125 A	450 kA <sup>2</sup> s	63 kA	480 A	4 mΩ	117 W	1	3.7 kg
45DB120V160P	Y1000107	160 A	590 kA <sup>2</sup> s	63 kA	560 A	4 mΩ	217 W	1	3.7 kg
45DB120V200P	Z1000108	200 A	800 kA <sup>2</sup> s	63 kA	610 A	3.5 mΩ	333 W	1	3.7 kg
45DB120V250P	Y1014919	250 A	-	63 kA	740 A	3.7 mΩ	335 W	1	3.7 kg
<b>Ø63mm, length 442mm</b>									
45DB120V10P-3	G1006095	10 A	1.5 kA <sup>2</sup> s	31.5 kA	45 A	133.6 mΩ	15 W	1	2.3 kg
45DB120V40P-3	L1006099	40 A	12 kA <sup>2</sup> s	31.5 kA	160 A	27 mΩ	57 W	1	2.3 kg
45DB120V63P-3	N1006101	63 A	42 kA <sup>2</sup> s	31.5 kA	252 A	14.2 mΩ	78 W	1	2.3 kg
<b>Ø88mm, length 442mm</b>									
45DB120V80P-3	P1006102	80 A	120 kA <sup>2</sup> s	31.5 kA	320 A	9.4 mΩ	83 W	1	2.3 kg
45DB120V100P-3	Q1006103	100 A	220 kA <sup>2</sup> s	31.5 kA	400 A	6.55 mΩ	91 W	1	3.2 kg
45DB120V125P-3	R1006104	125 A	450 kA <sup>2</sup> s	31.5 kA	500 A	5.46 mΩ	130 W	1	4.2 kg
45DB120V160P-3	S1006105	160 A	530 kA <sup>2</sup> s	31.5 kA	640 A	4.07 mΩ	170 W	1	4.2 kg

# Limitor®- P Back-up Fuses

without Controlled Power Dissipation

## PRODUCT RANGE



45DB175V6,3P

### Limitor- P, Rated voltage 10 / 17,5

Catalog number	Item number	Rated current $I_n$	Clearing $I^2t$ at Rated Voltage	Breaking capacity $I_b$	Minimum breaking current $I_3 = I_{min}$	Cold resistance $R_{20}$ (+/-10%)	Power dissipation at $I_n$	Package	Weight
<b>Ø56mm, length 367mm</b>									
45DB175V6,3P	V1000564	6.3 A	1 kA <sup>2</sup> s	63 kA	30 A	245 mΩ	11 W	1	2.2 kg
45DB175V10P	W1000565	10 A	1.5 kA <sup>2</sup> s	63 kA	43 A	180 mΩ	22 W	1	2.2 kg
45DB175V16P	X1000566	16 A	2 kA <sup>2</sup> s	63 kA	54 A	150 mΩ	53 W	1	2.2 kg
45DB175V20P	Y1000567	20 A	4 kA <sup>2</sup> s	63 kA	73 A	102 mΩ	56 W	1	2.2 kg
45DB175V25P	Z1000568	25 A	6 kA <sup>2</sup> s	63 kA	93 A	78 mΩ	73 W	1	2.2 kg
45DB175V32P	A1000569	31.5 A	10 kA <sup>2</sup> s	63 kA	105 A	59 mΩ	95 W	1	2.2 kg
45DB175V40P	B1000570	40 A	30 kA <sup>2</sup> s	63 kA	125 A	33.8 mΩ	79 W	1	2.2 kg
45DB175V50P	C1000571	50 A	50 kA <sup>2</sup> s	63 kA	205 A	26 mΩ	106 W	1	2.2 kg
45DB175V63P	D1000572	63 A	100 kA <sup>2</sup> s	63 kA	280 A	18.4 mΩ	130 W	1	2.2 kg
<b>Ø65mm, length 367mm</b>									
45DB175V80P	E1000573	80 A	150 kA <sup>2</sup> s	63 kA	350 A	15 mΩ	180 W	1	2.6 kg
<b>Ø78mm, length 367mm</b>									
45DB175V100P	F1000574	100 A	200 kA <sup>2</sup> s	63 kA	500 A	13 mΩ	280 W	1	3.1 kg



45DB240V125P

### Limitor- P, Rated voltage 10 / 24 kV

Catalog number	Item number	Rated current $I_n$	Clearing $I^2t$ at Rated Voltage	Breaking capacity $I_b$	Minimum breaking current $I_3 = I_{min}$	Cold resistance $R_{20}$ (+/-10%)	Power dissipation at $I_n$	Package	Weight
<b>Ø56mm, length 442mm</b>									
45DB240V1P	A1000109	1 A	0.15 kA <sup>2</sup> s	63 kA	14 A	2170 mΩ	2.2 W	1	2.3 kg
45DB240V2P	B1000110	2 A	0.4 kA <sup>2</sup> s	63 kA	16 A	800 mΩ	3.4 W	1	2.3 kg
45DB240V4P	C1000111	4 A	0.6 kA <sup>2</sup> s	63 kA	23 A	545 mΩ	10 W	1	2.3 kg
45DB240V6,3P	S209339	6.3 A	0.75 kA <sup>2</sup> s	63 kA	30 A	297 mΩ	13 W	1	2.3 kg
45DB240V10P	T209340	10 A	1.1 kA <sup>2</sup> s	63 kA	43 A	220 mΩ	26 W	1	2.3 kg
45DB240V16P	V209341	16 A	1.8 kA <sup>2</sup> s	63 kA	60 A	197 mΩ	73 W	1	2.3 kg
45DB240V20P	W209342	20 A	3.5 kA <sup>2</sup> s	63 kA	76 A	132 mΩ	76 W	1	2.3 kg
45DB240V25P	X209343	25 A	5.2 kA <sup>2</sup> s	63 kA	93 A	96 mΩ	89 W	1	2.3 kg
45DB240V32P	Y209344	31.5 A	7 kA <sup>2</sup> s	63 kA	105 A	78 mΩ	127 W	1	2.3 kg
45DB240V40P	Z209345	40 A	22 kA <sup>2</sup> s	63 kA	130 A	45 mΩ	114 W	1	2.3 kg
45DB240V50P	A209346	50 A	45 kA <sup>2</sup> s	63 kA	205 A	35 mΩ	147 W	1	2.3 kg
45DB240V63P	B209347	63 A	65 kA <sup>2</sup> s	63 kA	280 A	24 mΩ	170 W	1	2.3 kg
<b>Ø65mm, length 442mm</b>									
45DB240V80P	C209348	80 A	100 kA <sup>2</sup> s	63 kA	360 A	20 mΩ	233 W	1	3.1 kg
<b>Ø78mm, length 442mm</b>									
45DB240V100P	D209349	100 A	125 kA <sup>2</sup> s	63 kA	430 A	18 mΩ	400 W	1	4.2 kg
<b>Ø88mm, length 442mm</b>									
45DB240V125P	D1000112	125 A	350 kA <sup>2</sup> s	40 kA	760 A	11.7 mΩ	340 W	1	4.3 kg
45DB240V160P	E1000113	160 A	540 kA <sup>2</sup> s	63 kA	600 A	9.45 mΩ	515 W	1	4.3 kg
45DB240V200P	F1000114	200 A	800 kA <sup>2</sup> s	63 kA	750 A	7 mΩ	740 W	1	4.3 kg
<b>Ø88mm, length 537mm</b>									
45DB240V80P-4	B1008551	80 A	120 kA <sup>2</sup> s	25 kA	360 A	17.5 mΩ	185 W	1	6.7 kg
45DB240V100P-4	C1008552	100 A	220 kA <sup>2</sup> s	25 kA	450 A	13.1 mΩ	234 W	1	6.7 kg

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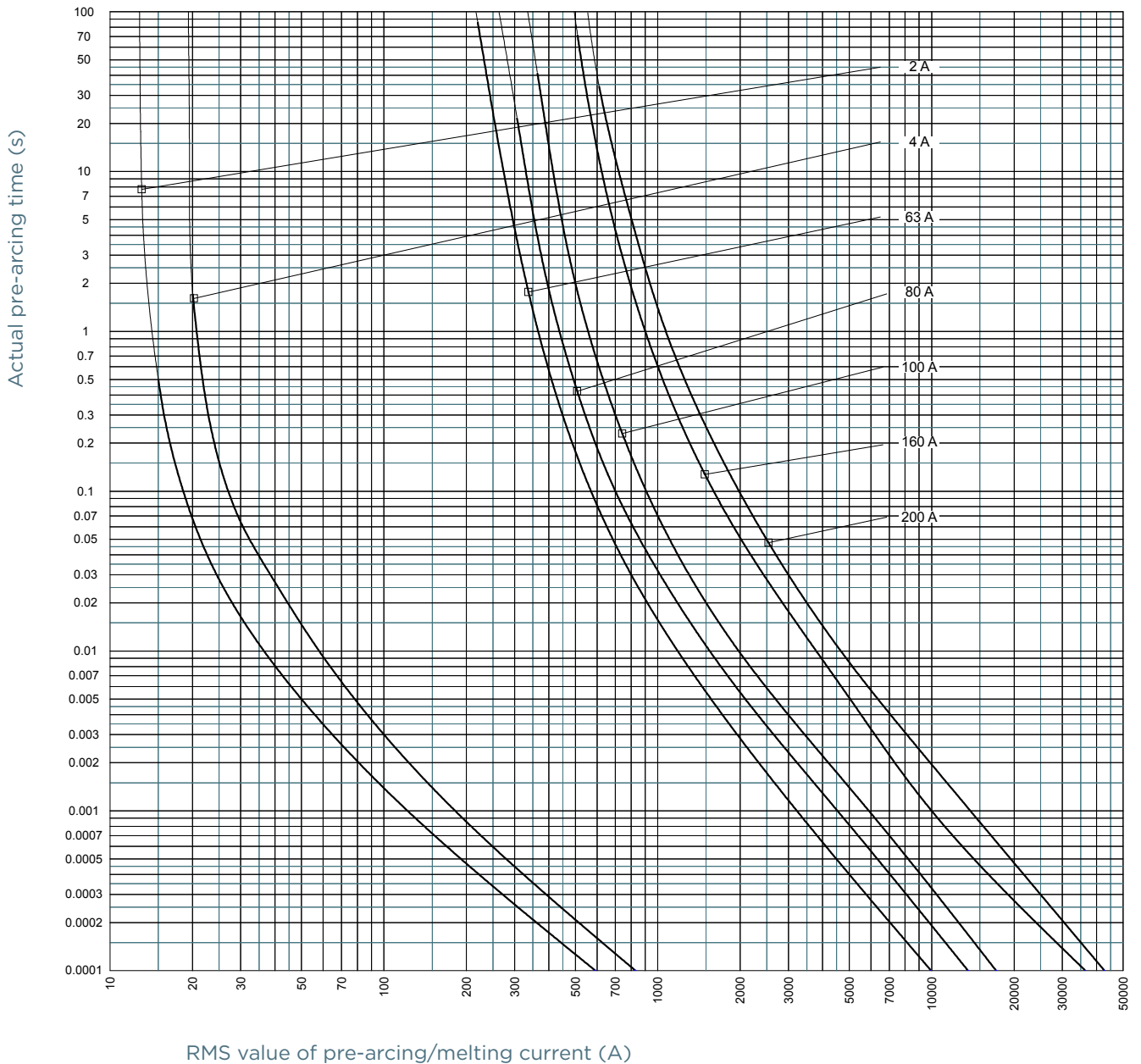
## PRODUCT RANGE

### Limiter-P, Rated voltage 20 / 36kV

Catalog number	Item number	Rated current I <sub>n</sub>	Pre-arcing I <sup>2</sup> t	Clearing I <sup>2</sup> t at Rated Voltage	Breaking capacity I <sub>b</sub>	Minimum breaking current I <sub>3</sub> = I <sub>min</sub>	Cold resistance R <sub>20</sub> (+/-10%)	Power dissipation at I <sub>n</sub>	Package	Weight
<b>Ø56mm, length 537mm</b>										
45DB360V2P	G1000115	2 A	-	0.6 kA <sup>2</sup> s	31.5 kA	15 A	950 mΩ	9 W	1	2.7 kg
45DB360V4P	H1000116	4 A	-	0.8 kA <sup>2</sup> s	31.5 kA	20 A	900 mΩ	32 W	1	2.7 kg

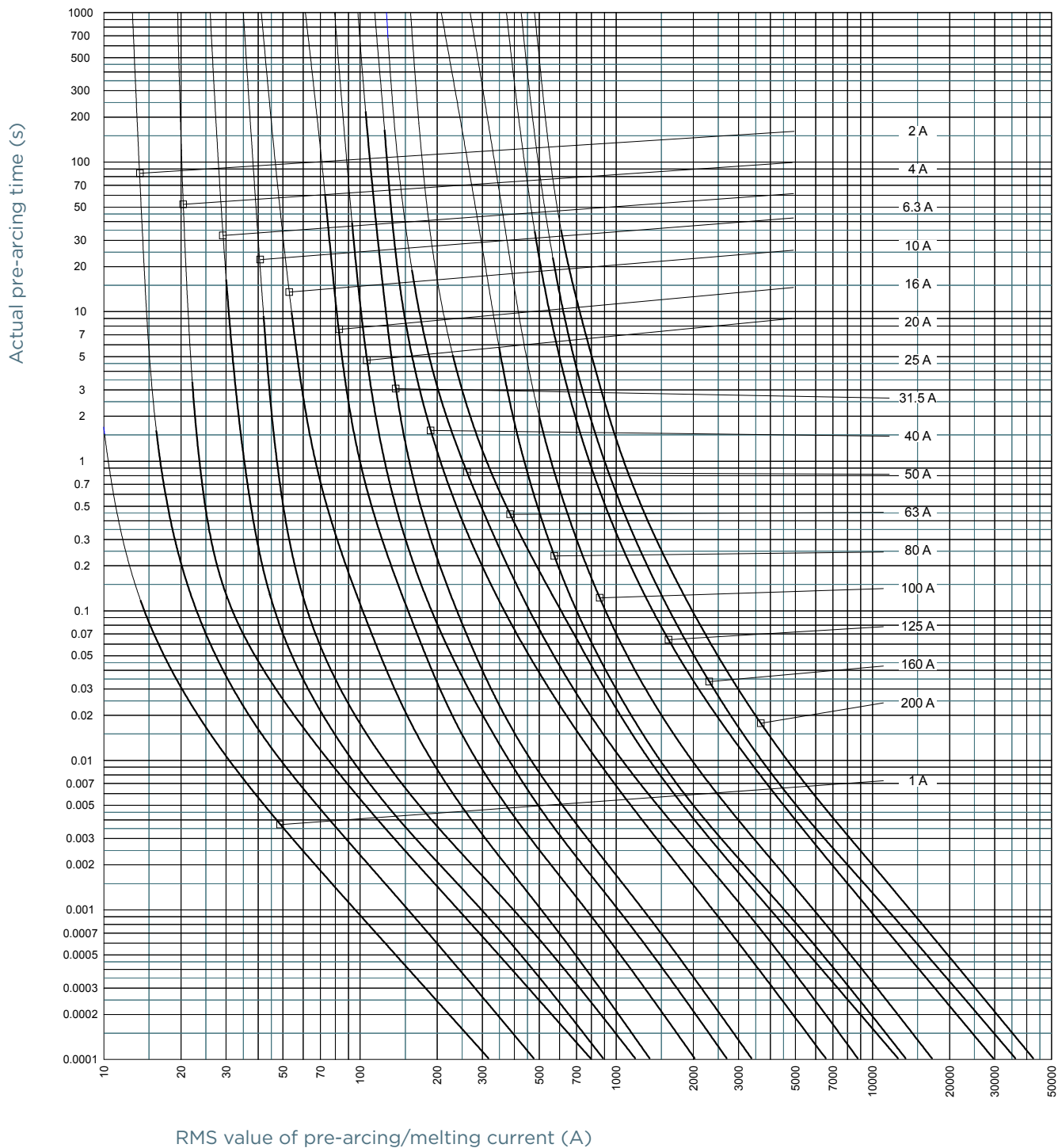
## TIME CURRENT CHARACTERISTIC CURVES

### Limiter<sup>®</sup> P 7,2kV 192mm



## TIME CURRENT CHARACTERISTIC CURVES

### Limitor<sup>®</sup> P 12kV 292mm

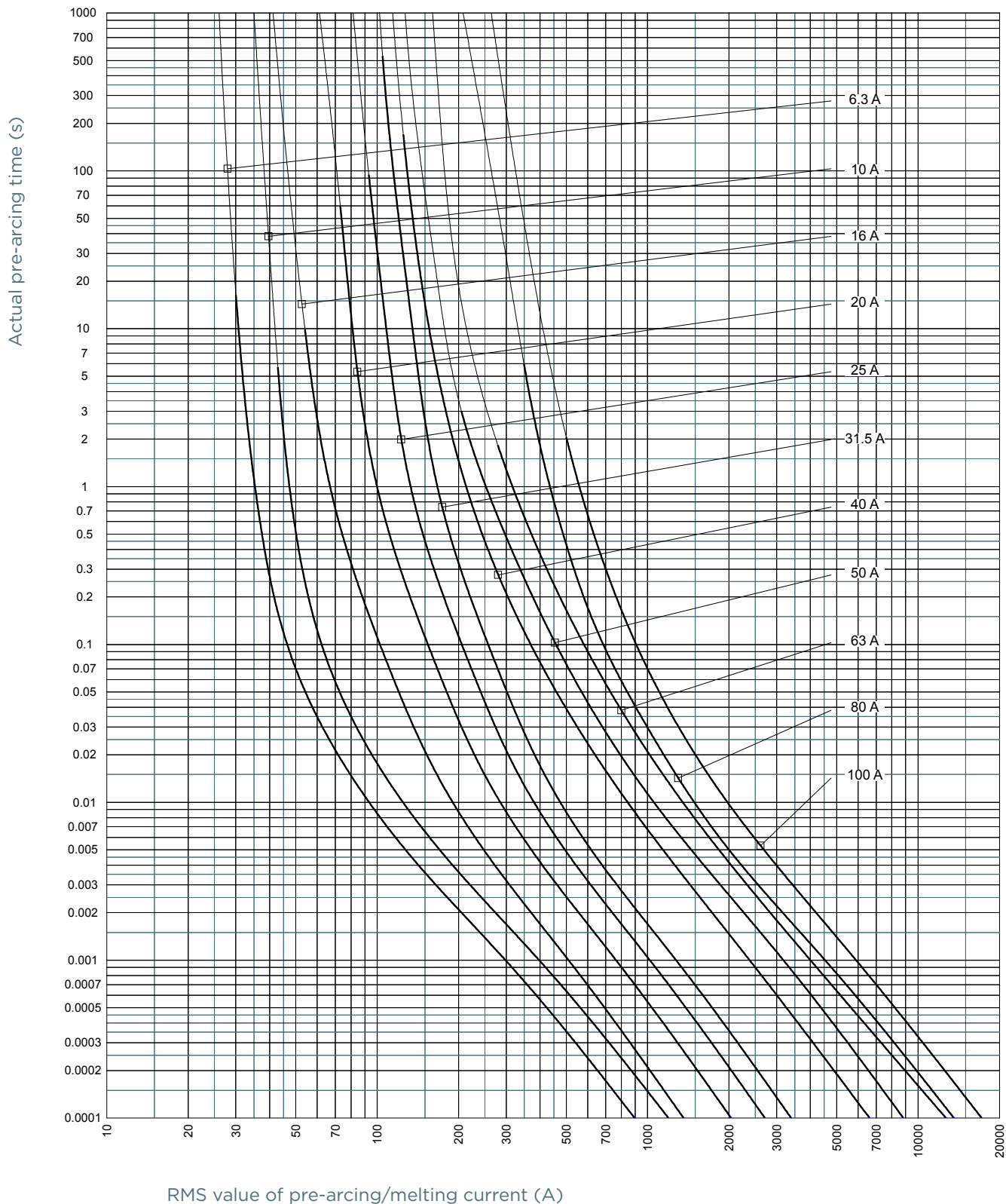


# Limitor<sup>®</sup>- P Back-up Fuses

without Controlled Power Dissipation

## TIME CURRENT CHARACTERISTIC CURVES

Limitor<sup>®</sup> P 17,5V 367mm

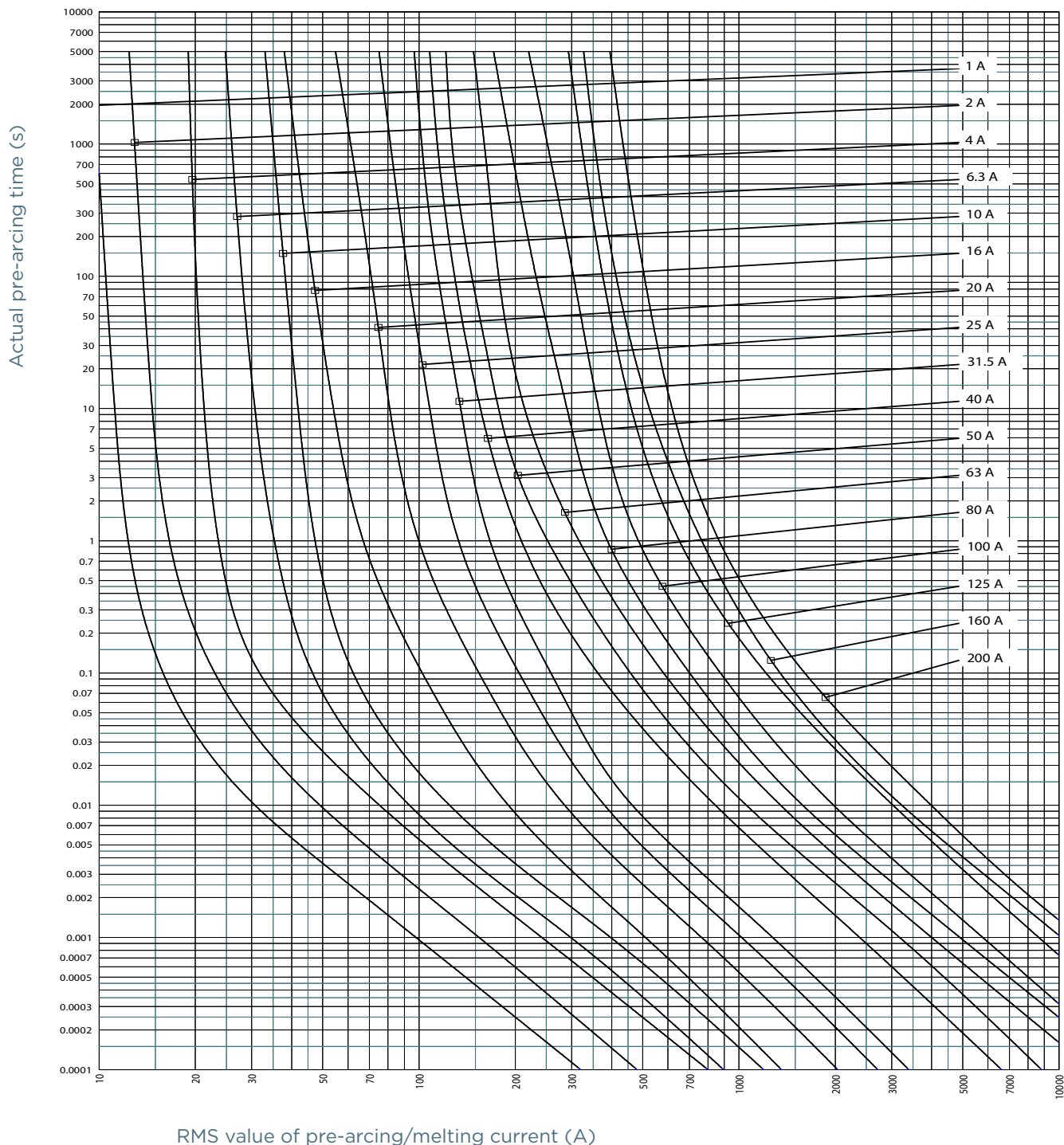


# Limitor<sup>®</sup>- P Back-up Fuses

without Controlled Power Dissipation

## TIME CURRENT CHARACTERISTIC CURVES

Limitor<sup>®</sup> P 24kV 442mm

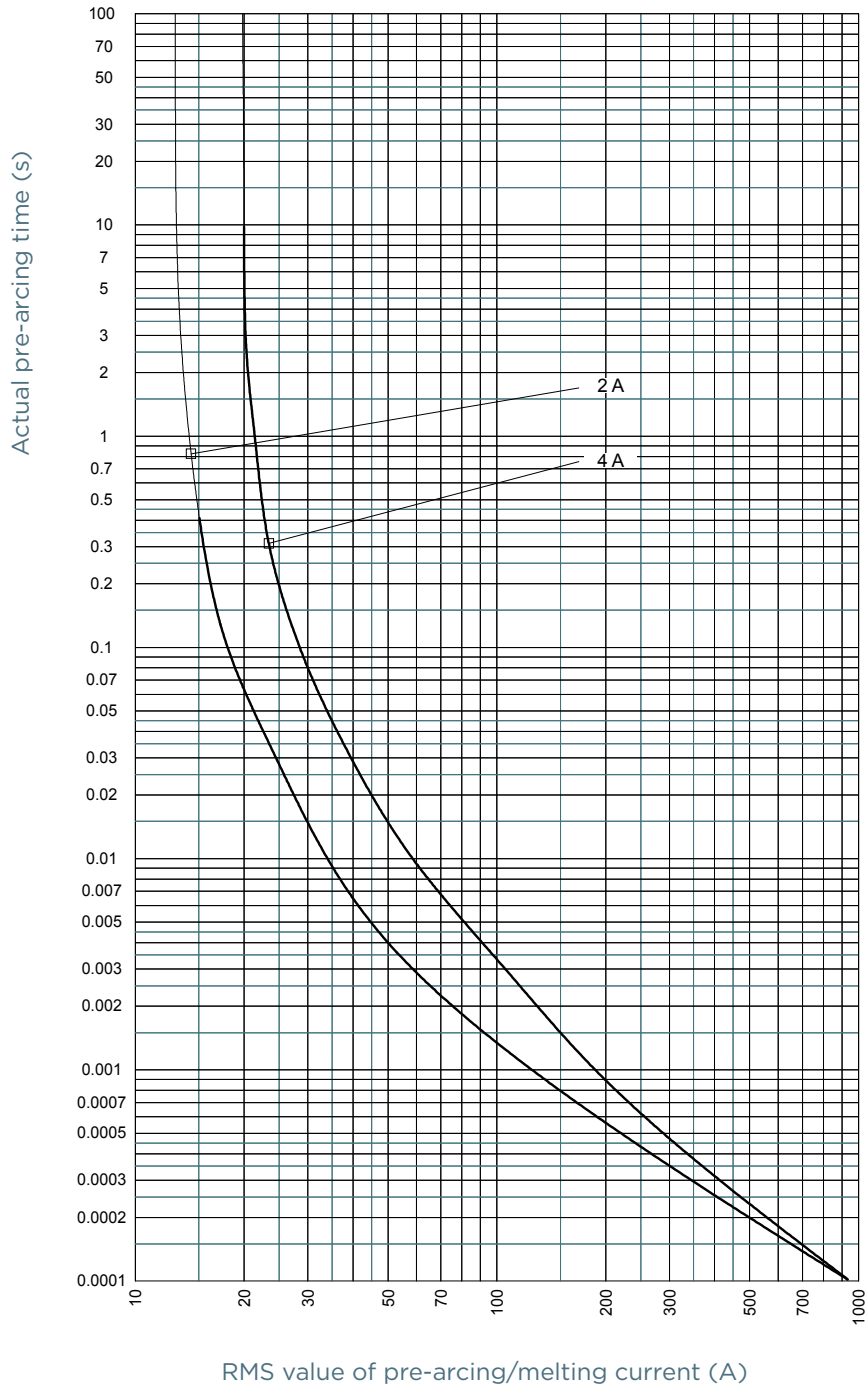


# Limitor<sup>®</sup>- P Back-up Fuses

without Controlled Power Dissipation

## TIME CURRENT CHARACTERISTIC CURVES

### Limitor<sup>®</sup> P 36kV 537mm



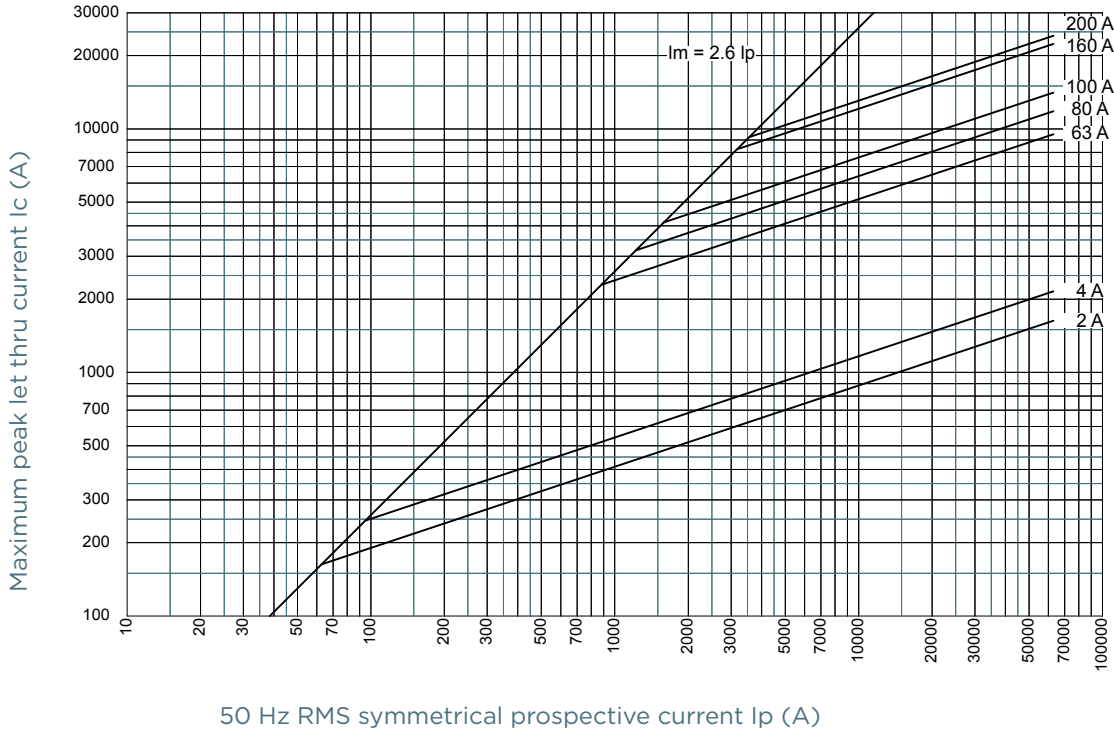


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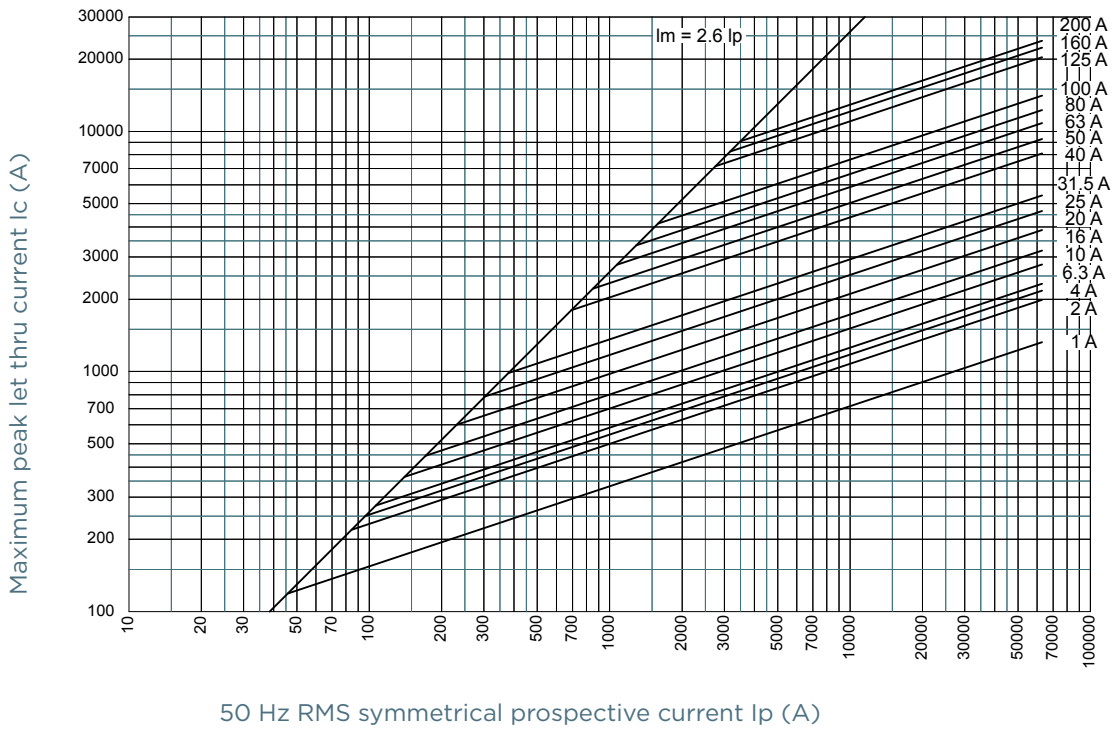
without Controlled Power Dissipation

## CUT-OFF CURRENT CHARACTERISTIC

### Limitor<sup>®</sup> P 7,2kV 192mm



### Limitor<sup>®</sup> P 12kV 292mm

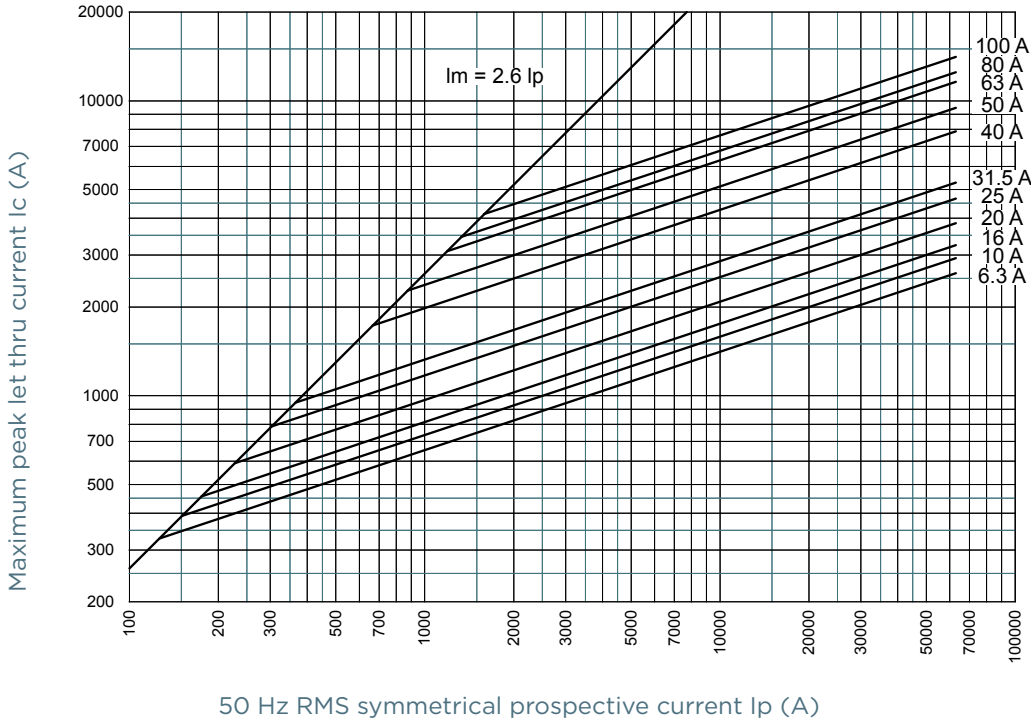


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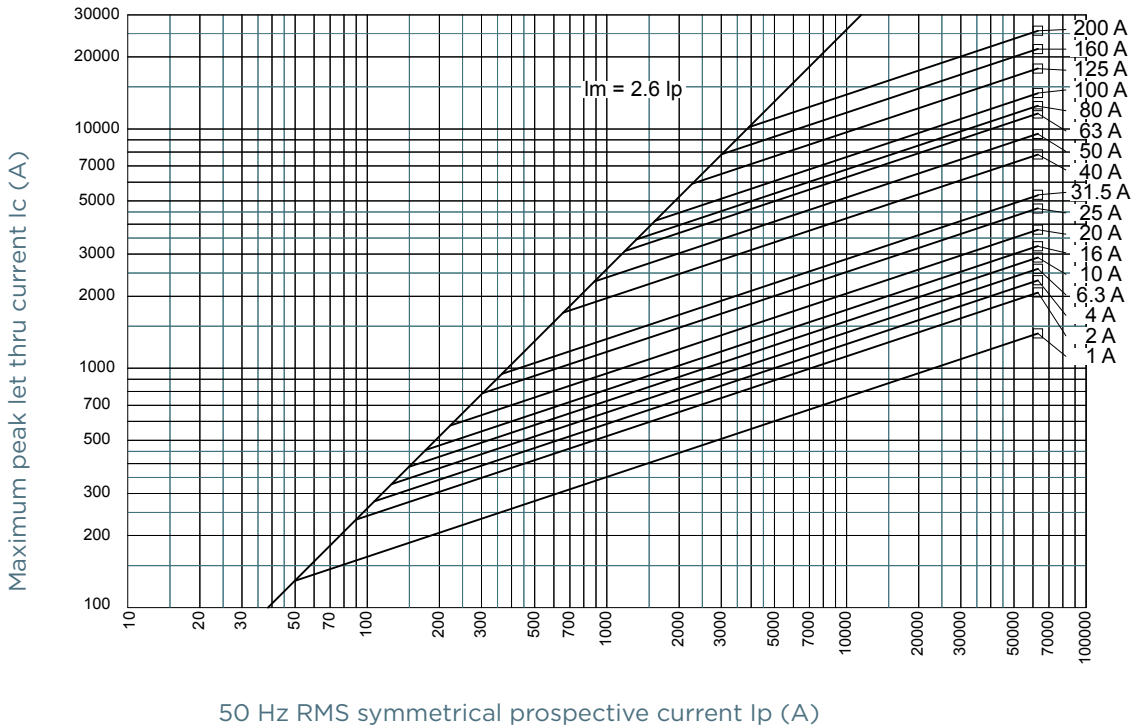
without Controlled Power Dissipation

## CUT-OFF CURRENT CHARACTERISTIC

### Limitor<sup>®</sup> P 17,5V 367mm



### Limitor<sup>®</sup> P 24kV 442mm

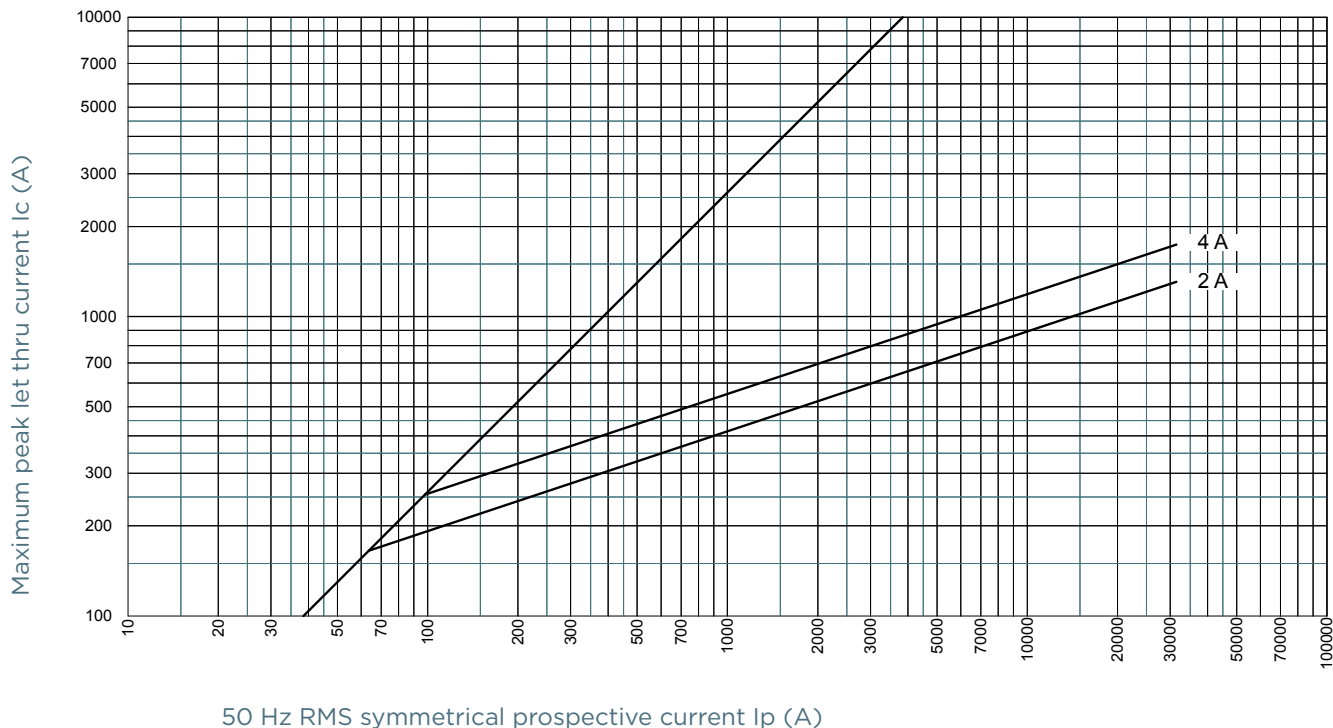


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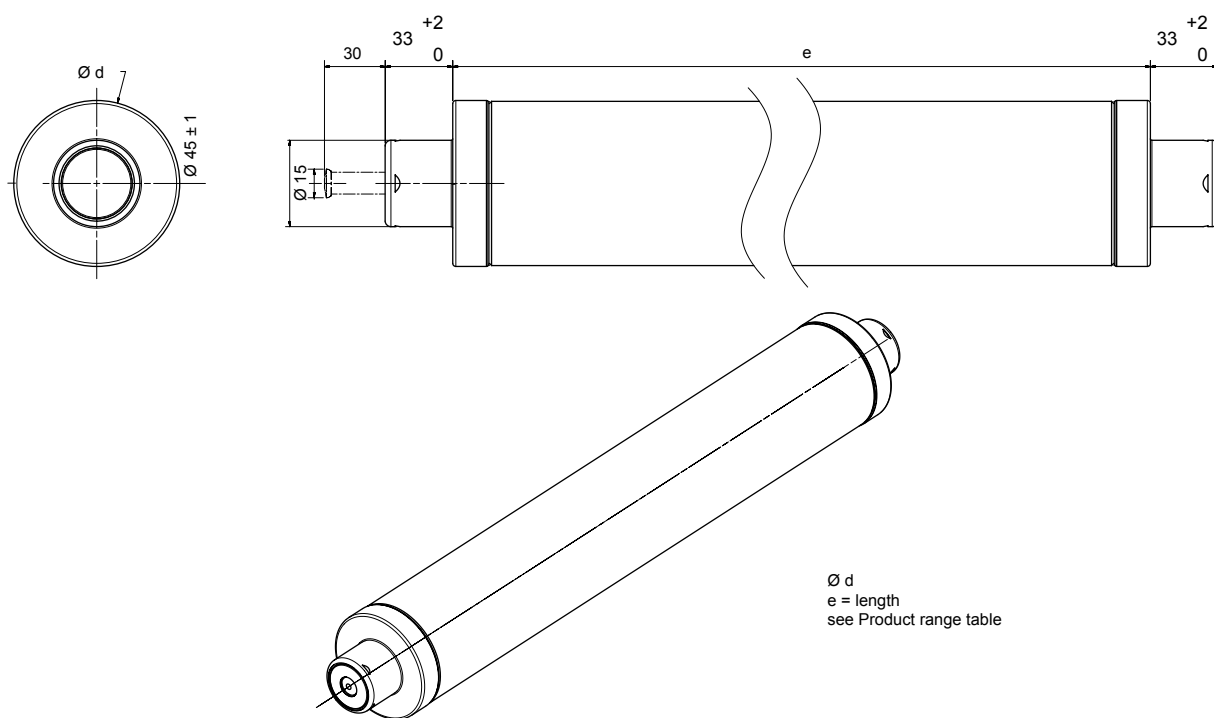
without Controlled Power Dissipation

## CUT-OFF CURRENT CHARACTERISTIC

### Limitor<sup>®</sup> P 36kV 537mm



## DIMENSIONS



Dimensions in mm

# Limitor®- P Back-up Fuses

without Controlled Power Dissipation

## SELECTION TABLE

Rated voltage range of fuse-link [kV]		3/7.2		6/12		10/24		20/36	
Service voltage of transformer [kV]		6		10		20		30	
Relative short-circuit voltage	Transformer output [kVA]	Transformer rated current [A]	Rated current of fuse-link [A]	Transformer rated current [A]	Rated current of fuse-link [A]	Transformer rated current [A]	Rated current of fuse-link [A]	Transformer rated current [A]	Rated current of fuse-link [A]
Uk = 4%	50	4.8	16-20	2.9	10	1.5	4	0.96	2-6.3
	100	9.6	20-31.5	5.8	16-20	2.9	10	1.9	6.3-10
	125	12	25-40	7.2	20-25	3.6	10-16	2.4	10
	160	15.4	31.5-50	9.2	20-31.5	4.6	16-20	3.1	10
	200	19.2	40-63	11.5	25-40	5.8	16-20	3.8	10-16
	250	24.1	40-80	14.4	31.5-50	7.2	20-25	4.8	16-20
	315	30.3	50-100	18.2	40-63	9.1	20-31.5	6.1	16-25
	400	38.5	63-125	23.1	40-80	11.5	25-40	7.7	20-25
	500	48.1	80-160	28.9	50-100	14.4	31.5-50	9.6	20-31.5
	630	60.6	100-200	36.4	63-100	18.2	40-63	12.1	25-40
Uk = 5%	800	77.1	125-200	46.2	80-125	23.1	40-63	15.4	31.5-40
	1000	96.3	125-160	57.7	100-160	28.9	50-80	19.2	40-50
Uk = 6%	1250	120.3	160-200	72.2	125-200	36.1	63-100	24.1	40-50
	1600	154	200	92.4	125-200	46.2	80-100	30.8	50-63