Limitor® - NF/UTE Back-up Fuses

7,2kV to 24kV - Type FR

HIGH VOLTAGE IEC FUSES

NF/UTE HV BACK-UP FUSES FOR TRANSFORMERS



FR-type fuses are designed to protect HV/LV power distribution transformers. Designed to be coordinated with other equipment, these current limiting fuse-links interrupt fault currents before they reach their peak. The fault current is interrupted inside the fuse-link body and although this is very fast, there is no sign of it outside.

The 24kV fuses were specially designed with very low power losses, for use in SF6-insulated or compact air-insulated fused switchgear combinations

The main elements in these fuses are: a barrel of class F insulating synthetic material, nickel plated aluminium end contacts, pure silver fuse elements and a composite material fuse element holder to withstand high temperatures.

Thanks to their structure, based on a synthetic material, FR fuse-links are the perfect answer to the stress involved in use inside HV bays and fuse-link chambers.

TECHNICAL DATA

	7,2kV 520mm	12kV 520mm	24kV 520mm
Rated current	6.3 ... 125 A	6.3 ... 100 A	6.3 ... 63 A
Rated voltage U^n	7.2 kV	12 kV	24 kV
Rated voltage of transformer	6 kV	10 kV	20 kV
Breaking capacity I_1	12.5 kA	12.5 kA	12.5 kA
Peak arc voltage	20 kV	34 kV	58 kV
Package	3	3	3

FEATURES & BENEFITS

- Superior mechanical strength
- Outstanding withstand to operating stresses
- 100% synthetic structure
- Reduce power losses by 30 to 40% (24kV)
- Average type striker: force 1 ±0.5 Joules
- High breaking capacity
- High current limitation
- EDF Approval which guarantees high performances and quality of fuses manifactured (24kV)
- In accordance with:
  IEC 62271-105
  IEC 62271-107
  IEC 60787
  IEC/TR 62655

APPLICATIONS

- HV Transformers protection
- Fused switch gear combination
- Best used in SF6 insulated switch gear and compact switch gear
- For indoor use
- Operating temperature: -25°C to +40°C

STANDARDS

- IEC 60282-1
- UTE C64-210

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PRODUCT RANGE



FR72V63

Rated voltage 7.2kV, length 520mm, Ø 55mm

Catalog number	Item number	Rated voltage AC (IEC)	Rated current I_n	Minimum breaking current $I_3 = I_{min}$	Power dissipation at I_n	Operating I^2t at Rated Voltage	Package	Weight
without striker								
FR72V6,3	Z227584	7.2 kV	6.3 A	31.5 A	12 W	0.3 kA²s	3	2.1 kg
FR72V16	A227585	7.2 kV	16 A	80 A	26 W	1.6 kA²s	3	2.1 kg
FR72V32	B227586	7.2 kV	32 A	160 A	44 W	6 kA²s	3	2.1 kg
FR72V43	C227587	7.2 kV	43 A	215 A	61 W	12 kA²s	3	2.1 kg
FR72V63	D227588	7.2 kV	63 A	315 A	71 W	24 kA²s	3	2.1 kg
55AL72V80	H087982	7.2 kV	80 A	360 A	100 W	45 kA²s	3	2.1 kg
55AL72V100	K088927	7.2 kV	100 A	450 A	130 W	80 kA²s	3	2.1 kg
55AL72V125	N088953	7.2 kV	125 A	582 A	130 W	200 kA²s	3	2.1 kg
with striker								
FR72V6,3P	E227589	7.2 kV	6.3 A	31.5 A	12 W	0.3 kA²s	3	2.1 kg
FR72V16P	F227590	7.2 kV	16 A	80 A	26 W	1.6 kA²s	3	2.1 kg
FR72V32P	G227591	7.2 kV	32 A	160 A	44 W	6 kA²s	3	2.1 kg
FR72V43P	H227592	7.2 kV	43 A	215 A	61 W	12 kA²s	3	2.1 kg
FR72V63P	J227593	7.2 kV	63 A	315 A	71 W	24 kA²s	-	2.1 kg
55AL72V80P	J085453	7.2 kV	80 A	360 A	100 W	45 kA²s	3	2.1 kg
55AL72V100P	K085454	7.2 kV	100 A	450 A	130 W	80 kA²s	3	2.1 kg
55AL72V125P	M085456	7.2 kV	125 A	582 A	130 W	200 kA²s	3	2.1 kg



FR120V63

Rated voltage 12kV, length 520 mm, Ø 55mm

Catalog number	Item number	EDF Number	Rated voltage AC (IEC)	Rated current I_n	Minimum breaking current $I_3 = I_{min}$	Power dissipation at I_n	Operating I^2t at Rated Voltage	Package	Weight
without striker									
FR120V6,3	X210240	-	12 kV	6.3 A	31.5 A	25 W	0.3 kA²s	3	2.1 kg
FR120V16	Y210241	73.02.136	12 kV	16 A	80 A	53 W	1.6 kA²s	3	2.1 kg
FR120V32	Z210242	73.02.137	12 kV	32 A	160 A	89 W	6 kA²s	3	2.1 kg
FR120V43	A210243	-	12 kV	43 A	215 A	123 W	12 kA²s	3	2.1 kg
FR120V63	B210244	73.02.138	12 kV	63 A	315 A	142 W	24 kA²s	3	2.1 kg
55AL120V80	K088973	-	12 kV	80 A	360 A	100 W	100 kA²s	3	2.1 kg
55AL120V100	L088974	-	12 kV	100 A	450 A	130 W	180 kA²s	3	2.1 kg
with striker									
FR120V6,3P	D210246	-	12 kV	6.3 A	31.5 A	25 W	0.3 kA²s	3	2.3 kg
FR120V16P	E210247	73.02.136	12 kV	16 A	80 A	53 W	1.6 kA²s	3	2.3 kg
FR120V32P	F210248	73.02.137	12 kV	32 A	160 A	89 W	6 kA²s	3	2.3 kg
FR120V43P	G210249	-	12 kV	43 A	215 A	123 W	12 kA²s	3	2.3 kg
FR120V63P	H210250	73.02.138	12 kV	63 A	315 A	142 W	24 kA²s	3	2.3 kg
55AL120V80P	Q085436	-	12 kV	80 A	360 A	100 W	100 kA²s	3	2.3 kg
55AL120V100P	R085437	-	12 kV	100 A	450 A	130 W	180 kA²s	3	2.3 kg

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PRODUCT RANGE

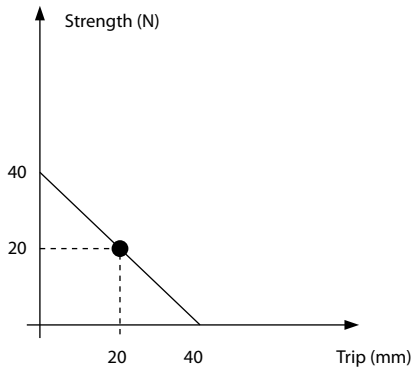


FRECO240V63

Rated voltage 24kV, length 520 mm, Ø 55mm

Catalog number	Item number	Rated voltage AC (IEC)	Rated current I_n	Minimum breaking current $I_3 = I_{min}$	Power dissipation at I_n	Operating I^2t at Rated Voltage	Package	Weight
without striker								
FR240V6,3	S1047965	24 kV	6.3 A	31.5 A	25 W	0.32 kA²s	3	2.1 kg
FRECO240V10	S1045205	24 kV	10 A	50 A	25 W	1.3 kA²s	3	2.1 kg
FRECO240V16	B1043534	24 kV	16 A	80 A	35 W	4.7 kA²s	3	2.1 kg
FRECO240V20	V1045207	24 kV	20 A	100 A	43 W	7.5 kA²s	3	2.1 kg
FRECO240V25	X1045209	24 kV	25 A	125 A	46 W	10.1 kA²s	3	2.1 kg
FRECO240V31,5	L1047361	24 kV	31.5 A	157.5 A	53 W	18.8 kA²s	3	2.1 kg
FRECO240V43	H1043540	24 kV	43 A	215 A	70 W	38 kA²s	3	2.1 kg
FRECO240V50	Z1045211	24 kV	50 A	250 A	91 W	39.3 kA²s	3	2.1 kg
FRECO240V63	Y1048384	24 kV	63 A	315 A	120 W	66.5 kA²s	3	2.1 kg
with striker								
FR240V6,3P	T1047966	24 kV	6.3 A	31.5 A	25 W	0.32 kA²s	3	2.1 kg
FRECO240V10P	T1045206	24 kV	10 A	50 A	25 W	1.3 kA²s	3	2.1 kg
FRECO240V16P	G1043539	24 kV	16 A	80 A	35 W	4.7 kA²s	3	2.1 kg
FRECO240V20P	W1045208	24 kV	20 A	100 A	43 W	7.5 kA²s	3	2.1 kg
FRECO240V25P	Y1045210	24 kV	25 A	125 A	46 W	10.1 kA²s	3	2.1 kg
FRECO240V31,5P	M1047362	24 kV	31.5 A	157.5 A	53 W	18.8 kA²s	3	2.1 kg
FRECO240V43P	L1043543	24 kV	43 A	215 A	70 W	38 kA²s	3	2.1 kg
FRECO240V50P	A1045212	24 kV	50 A	250 A	91 W	39.3 kA²s	3	2.1 kg
FRECO240V63P	Z1048385	24 kV	63 A	315 A	120 W	66.5 kA²s	3	2.1 kg

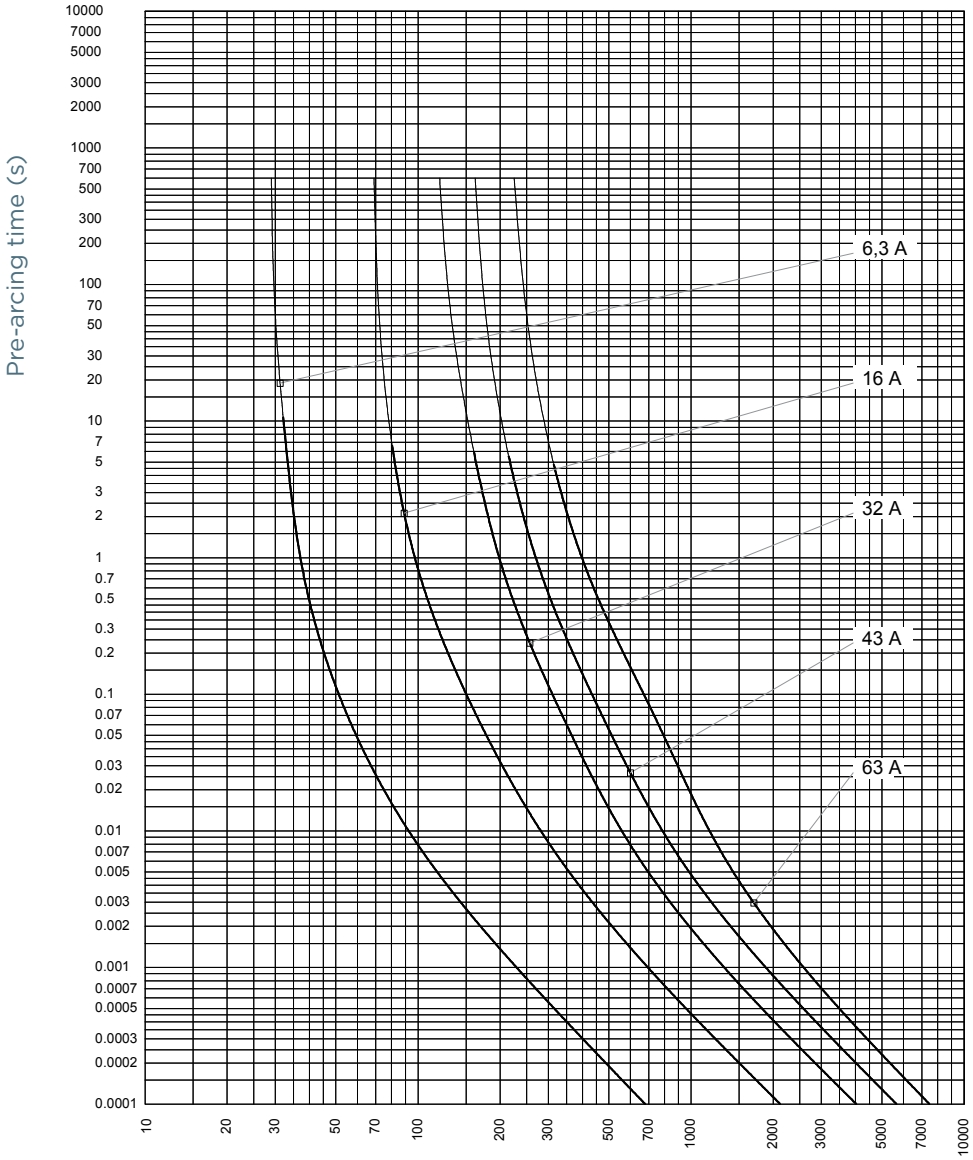
CHARACTERISTICS OF TRIP INDICATOR



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TIME CURRENT CHARACTERISTIC CURVES

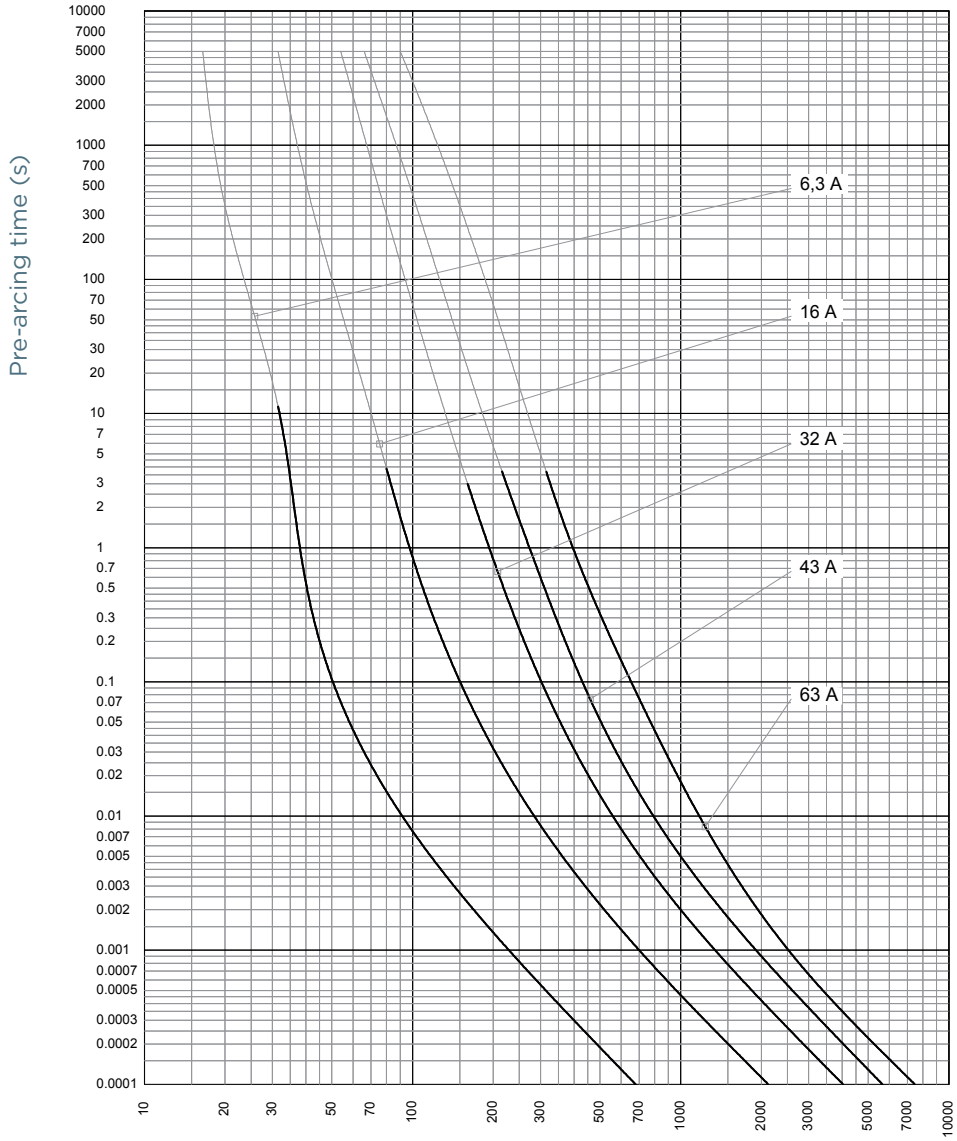
Limitor® NF/UTE 7.2kV, 12kV, 6.3 - 63A without striker



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TIME CURRENT CHARACTERISTIC CURVES

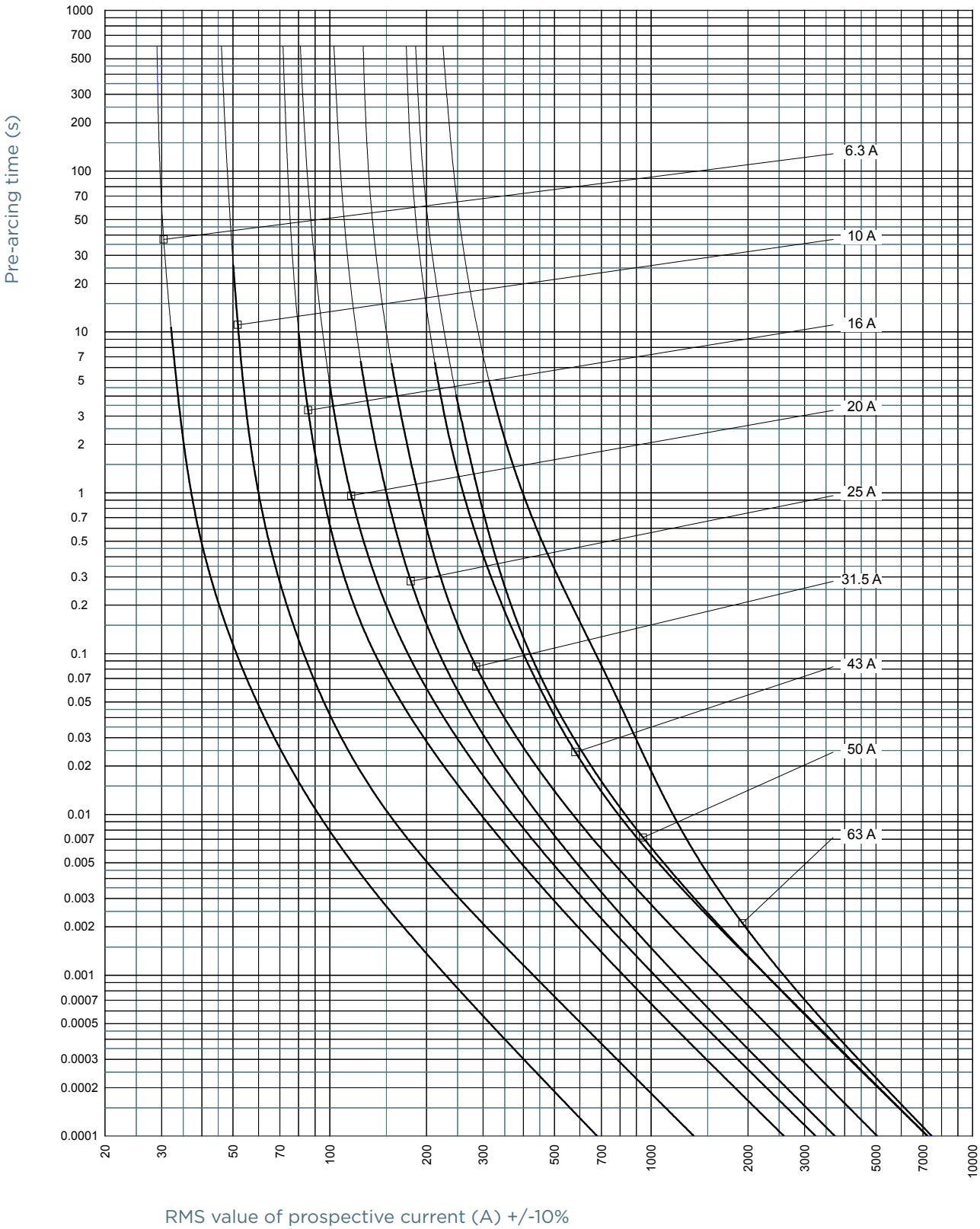
Limitor® NF/UTE 7.2kV, 12kV, 6.3 - 63A with striker



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TIME CURRENT CHARACTERISTIC CURVES

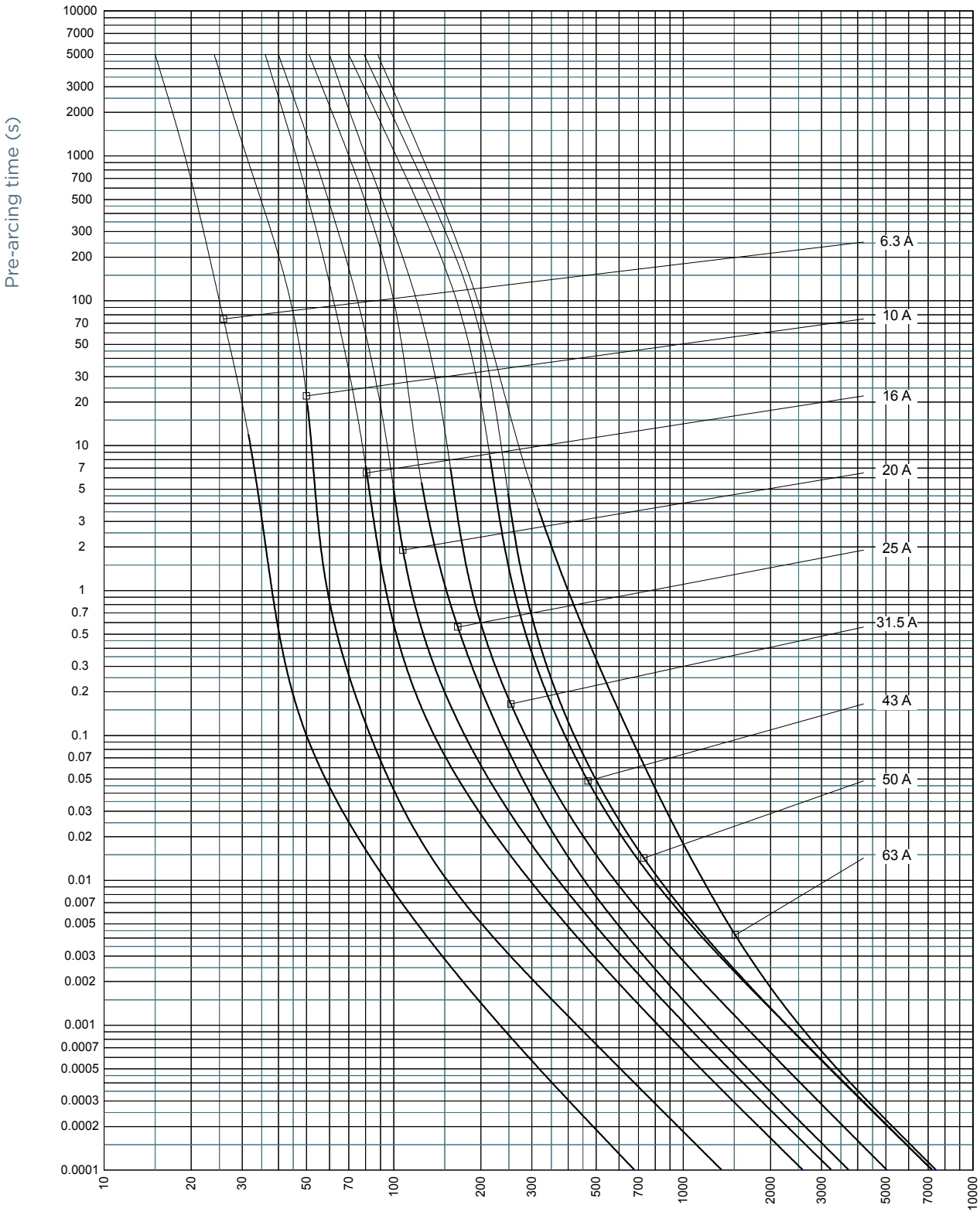
Limitor® NF/UTE 24kV 6.3 - 63A without striker



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TIME CURRENT CHARACTERISTIC CURVES

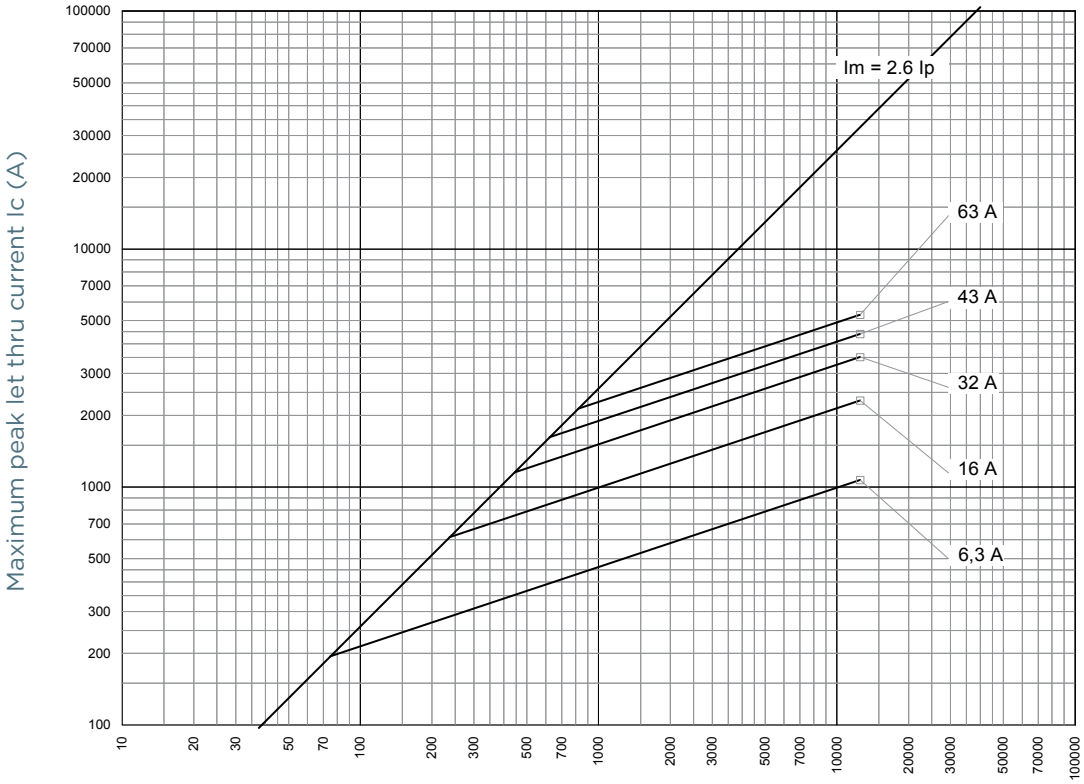
Limitor® NF/UTE 24kV 6.3 - 63A with striker



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CUT-OFF CURRENT CHARACTERISTIC

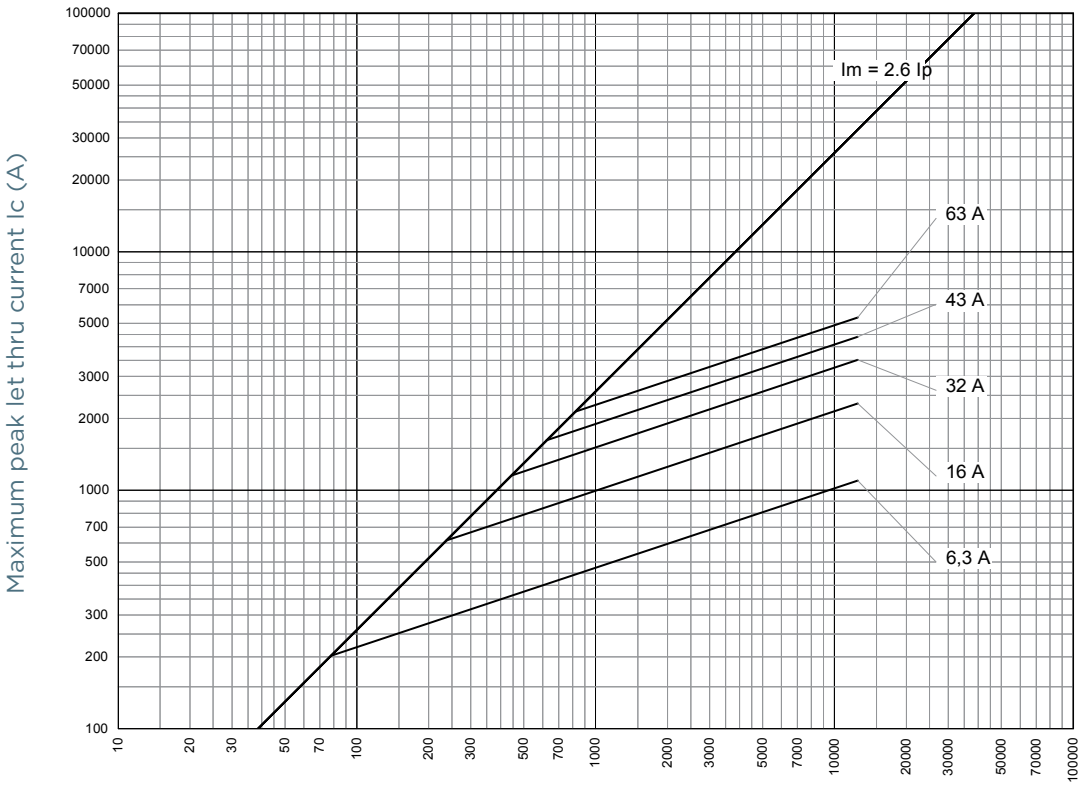
Limitor® NF/UTE 7.2kV, 12kV, 6.3 - 63A without striker



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CUT-OFF CURRENT CHARACTERISTIC

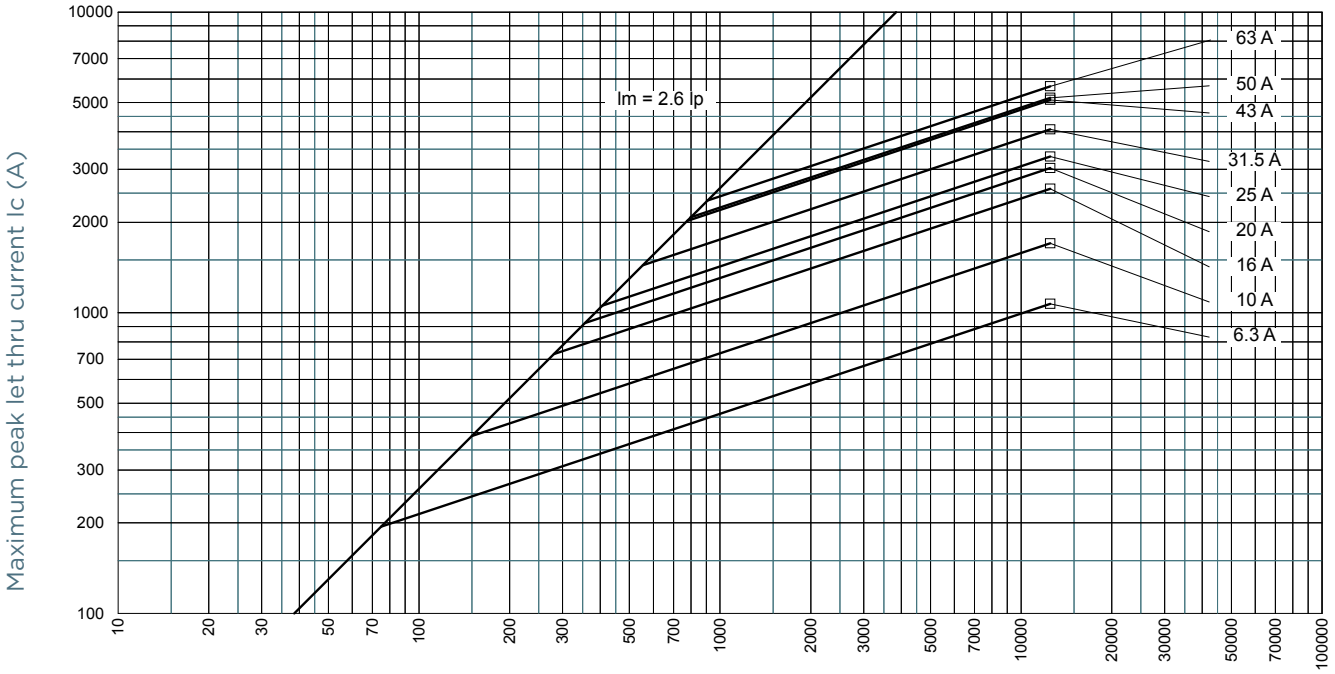
Limitor® NF/UTE 7.2kV, 12kV, 6.3 - 63A with striker



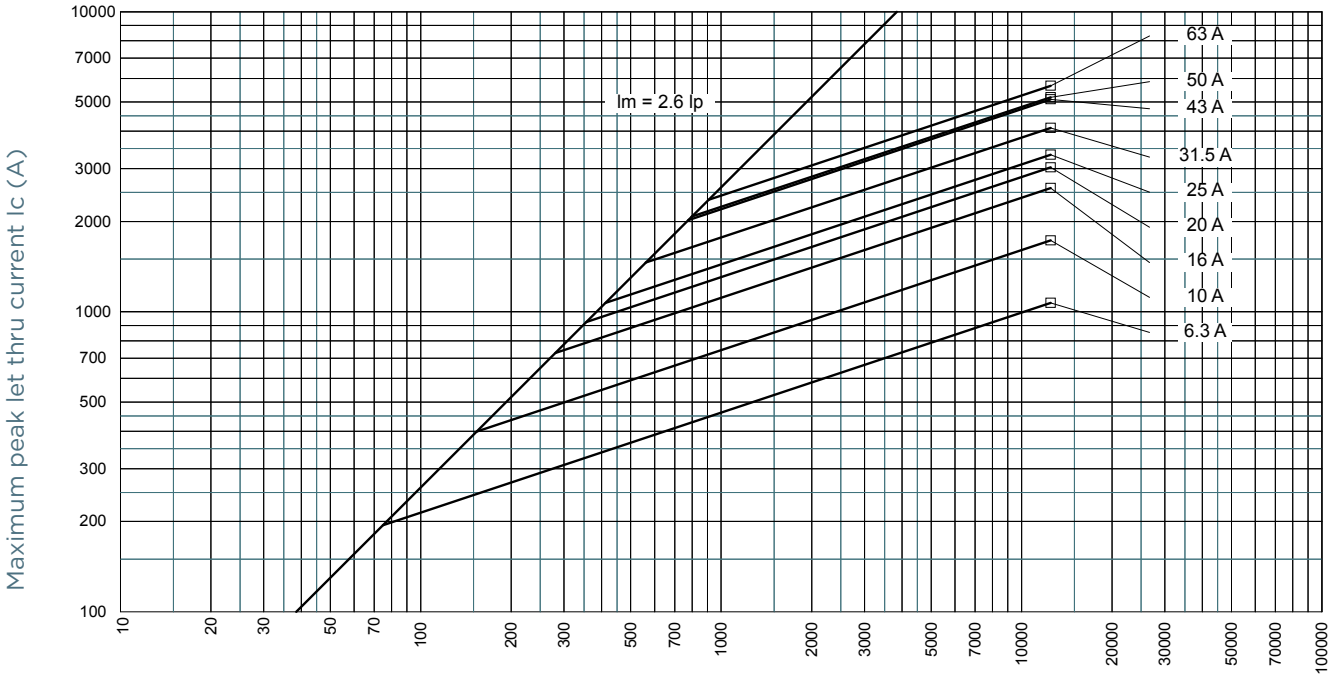
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CUT-OFF CURRENT CHARACTERISTIC

Limitor® NF/UTE 24kV 6.3 - 63A without striker



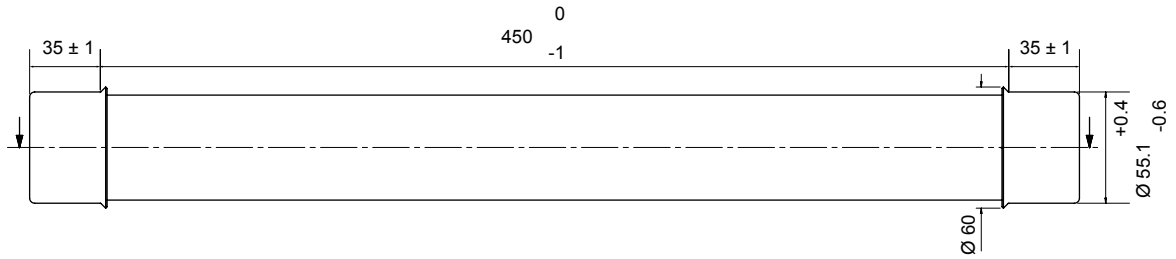
Limitor® NF/UTE 24kV 6.3 - 63A with striker



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DIMENSIONS

IEC HV fuse-link Limitor® NF/UTE Type FR ⌀55mm (113500)



Dimensions in mm

SELECTION TABLE

Rated voltage range of fuse-link [kV]		3/7.2		6/12		10/24		10/24		20/36	
Service voltage of transformer [kV]		6		10		15		20		30	
Relative short-circuit voltage	Trans-former output [kVA]	Trans-former rated current [A]	Rated current of fuses [A]	Trans-former rated current [A]	Rated current of fuses [A]	Trans-former rated current [A]	Rated current of fuses [A]	Trans-former rated current [A]	Rated current of fuses [A]	Trans-former rated current [A]	Rated current of fuses [A]
Uk = 4%	25	2	6.3	1	6.3	1	6.3	1	6.3		
	50	5	16	3	6.3	2	6.3	1	6.3	1	6.3
	63	6	16	4	16	2	6.3	2	6.3	1	6.3
	80	8	16	5	16	3	6.3	2	6.3	2	6.3
	100	10	16	6	16	4	6.3	3	6.3	2	6.3
	125	12	32	7	16	5	16	4	6.3	2	6.3
	160	15	32	9	16	6	16	5	16	3	6.3
	200	19	32	12	32	8	16	6	16	4	6.3
	250	24	43	14	32	10	16	7	16	5	16
	315	30	63	18	32	12	32	9	16	6	16
	400	38	63	23	43	15	32	12	32	8	16
	500	48	80	29	63	19	32	14	32	10	16
	630	61	100	36	63	24	43	18	32	12	32
Uk = 5%	800	77	125	46	80	31	63	23	43	15	32
	1000			58	100	38	63	29	63	19	32
	1250							36	63		

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