

# Limitor® - NF/UTE Back-up Fuses

7,2kV to 24kV - Type FR

## 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 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.

### Features Benefits

- Superior mechanical strength
- Outstanding withstand to operating stresses
- 100% synthetic structure
- Striker: minimum force 0,5 Joules for minimum stroke 20mm
- Back-up fuse links
- High breaking capacity
- High current limitation
- Low power losses
- EDF Approval which guarantees high performances and quality of fuses manufactured (24kV)
- In accordance with:
  - IEC 60271-105
  - 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

### 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 <sup>n</sup>	7.2 kV	12 kV	24 kV
Nominal voltage of transformer	6 kV	10 kV	20 kV
Breaking capacity I <sub>1</sub>	12.5 kA	12.5 kA	12.5 kA
Peak arc voltage	20 kV	34 kV	58 kV
Package	3	3	3



### Standards

IEC 60282-1

UTE C64-200

UTE C64-203

UTE C64-210

with striker - IEC 60420



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## Product range

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

Catalog number	Reference 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	Weight
<b>without striker</b>							
FR72V6,3	Z227584	7.2 kV	6.3 A	31.5 A	12 W	0.3 kA <sup>2</sup> s	2.1 kg
FR72V16	A227585	7.2 kV	16 A	80 A	26 W	1.6 kA <sup>2</sup> s	2.1 kg
FR72V32	B227586	7.2 kV	32 A	160 A	44 W	6 kA <sup>2</sup> s	2.1 kg
FR72V43	C227587	7.2 kV	43 A	215 A	61 W	12 kA <sup>2</sup> s	2.1 kg
FR72V63	D227588	7.2 kV	63 A	315 A	71 W	24 kA <sup>2</sup> s	2.1 kg
55AL72V80	H087982	7.2 kV	80 A	360 A	100 W	45 kA <sup>2</sup> s	2.1 kg
55AL72V100	K088927	7.2 kV	100 A	450 A	130 W	80 kA <sup>2</sup> s	2.1 kg
55AL72V125	N088953	7.2 kV	125 A	582 A	130 W	200 kA <sup>2</sup> s	2.1 kg

### with striker

FR72V6,3P	E227589	7.2 kV	6.3 A	31.5 A	12 W	0.3 kA <sup>2</sup> s	2.1 kg
FR72V16P	F227590	7.2 kV	16 A	80 A	26 W	1.6 kA <sup>2</sup> s	2.1 kg
FR72V32P	G227591	7.2 kV	32 A	160 A	44 W	6 kA <sup>2</sup> s	2.1 kg
FR72V43P	H227592	7.2 kV	43 A	215 A	61 W	12 kA <sup>2</sup> s	2.1 kg
FR72V63P	J227593	7.2 kV	63 A	315 A	71 W	24 kA <sup>2</sup> s	2.1 kg
55AL72V80P	J085453	7.2 kV	80 A	360 A	100 W	45 kA <sup>2</sup> s	2.1 kg
55AL72V100P	K085454	7.2 kV	100 A	450 A	130 W	80 kA <sup>2</sup> s	2.1 kg
55AL72V125P	M085456	7.2 kV	125 A	582 A	130 W	200 kA <sup>2</sup> s	2.1 kg

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

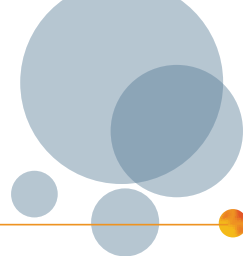
Catalog number	Reference number	EDF Number	Rated voltage AC (IEC)	Rated current $I_n$	Minimum breaking current $I_3 = I_{min}$	Power dissipation at $I_n$	Operating $I^2t$ at Rated Voltage	Weight
<b>without striker</b>								
FR120V6,3	X210240	-	12 kV	6.3 A	31.5 A	25 W	0.3 kA <sup>2</sup> s	2.1 kg
FR120V16	Y210241	73.02.136	12 kV	16 A	80 A	53 W	1.6 kA <sup>2</sup> s	2.1 kg
FR120V32	Z210242	73.02.137	12 kV	32 A	160 A	89 W	6 kA <sup>2</sup> s	2.1 kg
FR120V43	A210243	-	12 kV	43 A	215 A	123 W	12 kA <sup>2</sup> s	2.1 kg
FR120V63	B210244	73.02.138	12 kV	63 A	315 A	142 W	24 kA <sup>2</sup> s	2.1 kg
55AL120V80	K088973	-	12 kV	80 A	360 A	100 W	100 kA <sup>2</sup> s	2.1 kg
55AL120V100	L088974	-	12 kV	100 A	450 A	130 W	180 kA <sup>2</sup> s	2.1 kg

### with striker

FR120V6,3P	D210246	-	12 kV	6.3 A	31.5 A	25 W	0.3 kA <sup>2</sup> s	2.1 kg
FR120V16P	E210247	73.02.136	12 kV	16 A	80 A	53 W	1.6 kA <sup>2</sup> s	2.1 kg
FR120V32P	F210248	73.02.137	12 kV	32 A	160 A	89 W	6 kA <sup>2</sup> s	2.1 kg
FR120V43P	G210249	-	12 kV	43 A	215 A	123 W	12 kA <sup>2</sup> s	2.1 kg
FR120V63P	H210250	73.02.138	12 kV	63 A	315 A	142 W	24 kA <sup>2</sup> s	2.1 kg
55AL120V80P	Q085436	-	12 kV	80 A	360 A	100 W	100 kA <sup>2</sup> s	2.1 kg
55AL120V100P	R085437	-	12 kV	100 A	450 A	130 W	180 kA <sup>2</sup> s	2.1 kg

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## Product range



LOT-FR240V63P

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

Catalog number	Reference number	EDF Number	Rated voltage AC (IEC)	Rated current $I_n$	Minimum breaking current $I_s = I_{min}$	Power dissipation at $I_n$	Operating $I^2t$ at Rated Voltage	Weight
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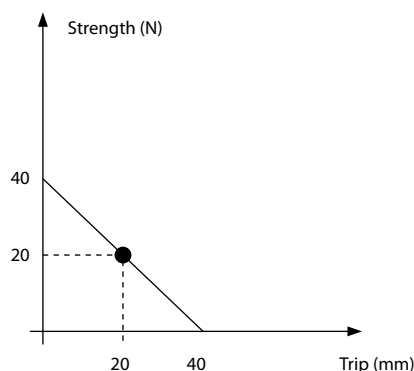
### without striker

LOT-FR240V6,3	A210795	73.02.132	24 kV	6.3 A	31.5 A	25 W	0.63 kA <sup>2</sup> s	2.1 kg
LOT-FR240V16	B210796	73.02.133	24 kV	16 A	80 A	53 W	3.3 kA <sup>2</sup> s	2.1 kg
LOT-FR240V32	G226234	-	24 kV	32 A	160 A	89 W	13 kA <sup>2</sup> s	2.1 kg
LOT-FR240V43	C210797	73.02.134	24 kV	43 A	215 A	123 W	25 kA <sup>2</sup> s	2.1 kg
LOT-FR240V63	D210798	73.02.135	24 kV	63 A	315 A	142 W	50 kA <sup>2</sup> s	2.1 kg

### with striker

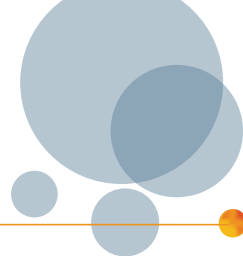
LOT-FR240V6,3P	G227430	73.02.132	24 kV	6.3 A	31.5 A	25 W	0.63 kA <sup>2</sup> s	2.1 kg
LOT-FR240V16P	H227431	73.02.133	24 kV	16 A	80 A	53 W	3.3 kA <sup>2</sup> s	2.1 kg
LOT-FR240V32P	J227432	-	24 kV	32 A	160 A	89 W	13 kA <sup>2</sup> s	2.1 kg
LOT-FR240V43P	K227433	73.02.134	24 kV	43 A	215 A	123 W	25 kA <sup>2</sup> s	2.1 kg
LOT-FR240V63P	L227434	73.02.135	24 kV	63 A	315 A	142 W	50 kA <sup>2</sup> s	2.1 kg

## Characteristics of trip indicator



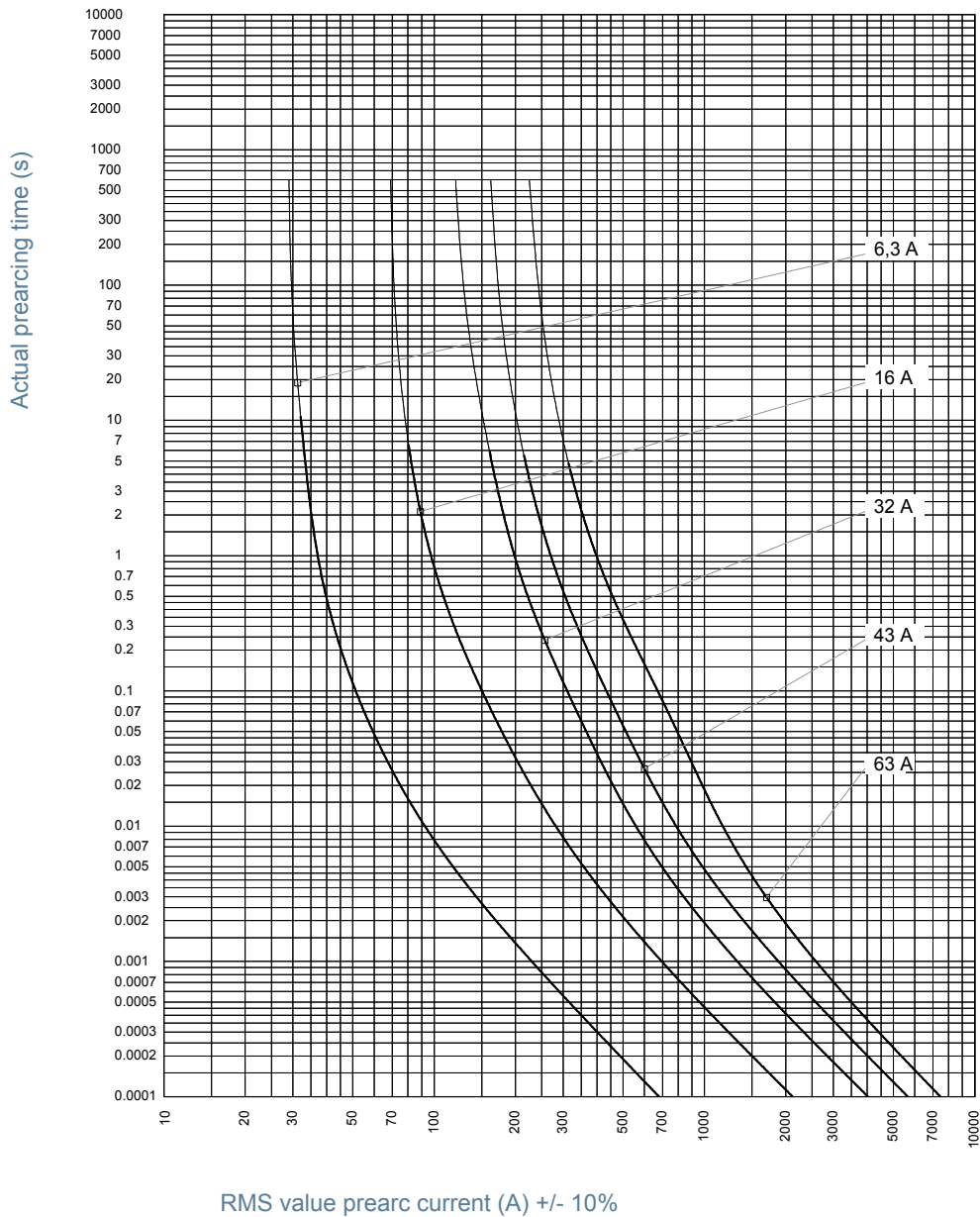
# Limitor<sup>®</sup> - NF/UTE Back-up Fuses

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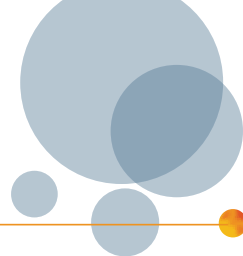
## Time current characteristic curves

Limitor<sup>®</sup> NF/UTE 7.2kV, 12kV, 24kV 6.3 - 63A without striker



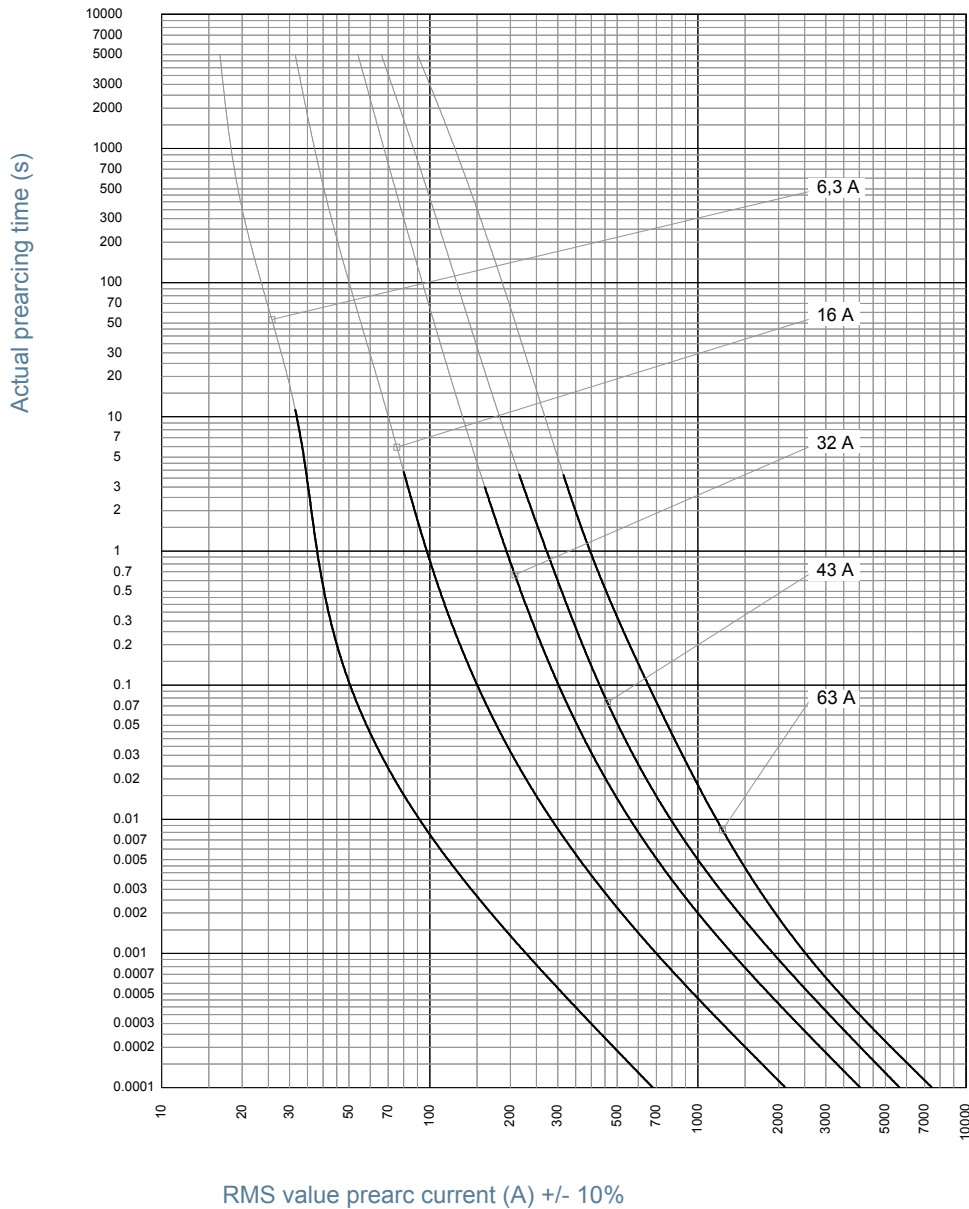
# Limitor® - NF/UTE Back-up Fuses

7,2kV to 24kV - Type FR



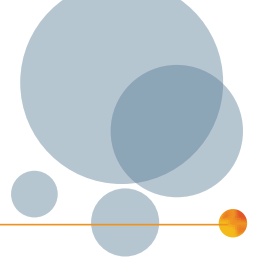
## Time current characteristic curves

Limitor® NF/UTE 7.2kV, 12kV, 24kV 6.3 - 63A with striker



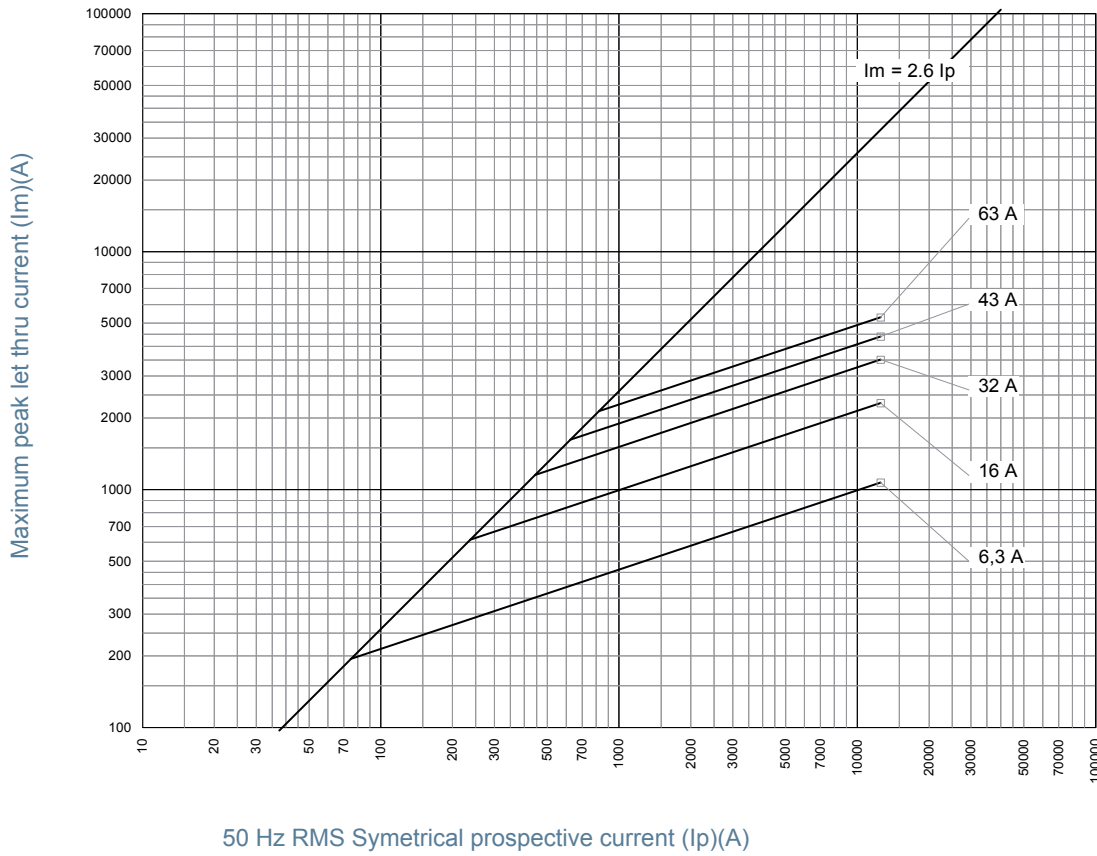
# Limitor<sup>®</sup> - NF/UTE Back-up Fuses

7,2kV to 24kV - Type FR



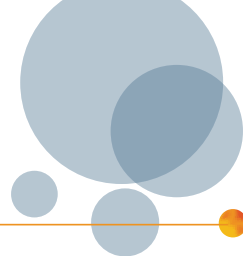
## Current limiting diagram

Limitor<sup>®</sup> NF/UTE 7.2kV, 12kV, 24kV 6.3 - 63A without striker



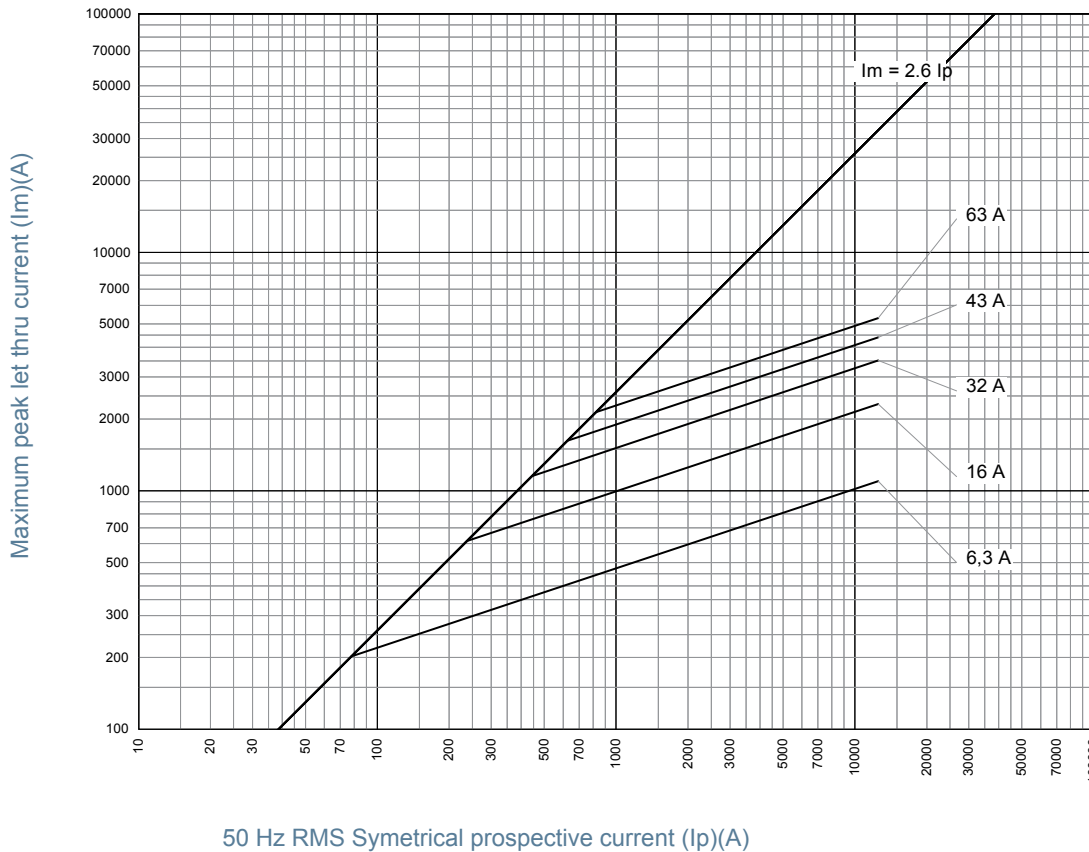
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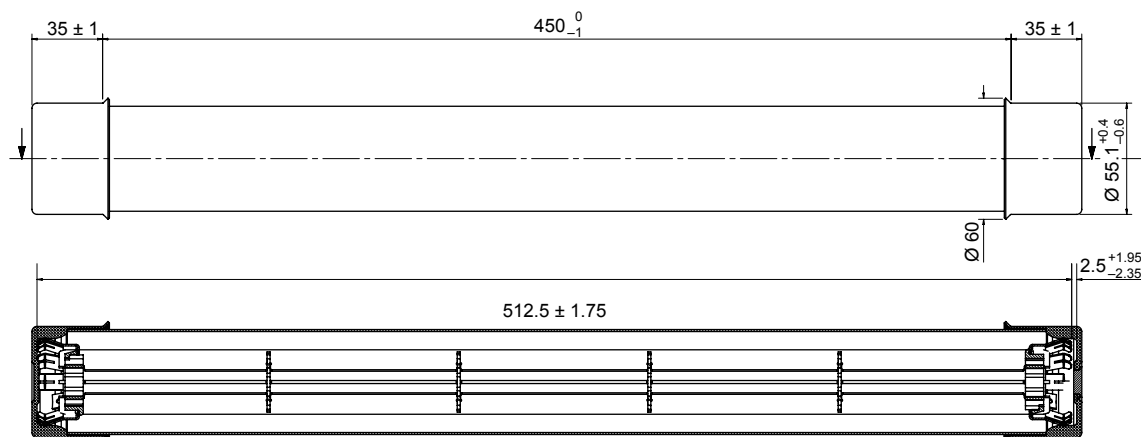
## Current limiting diagram

Limitor® NF/UTE 7.2kV, 12kV, 24kV 6.3 - 63A with striker



## Dimensions

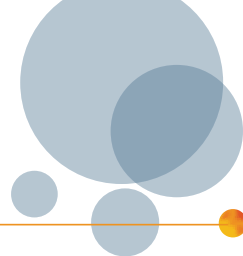
IEC HV fuse-link Limitor® NF/UTE Type FR  $\varnothing$  55mm (113500)



Dimensions in mm

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## 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	Transformer output [kVA]	Transformer rated current [A]	Rated current of fuses [A]	Transformer rated current [A]	Rated current of fuses [A]	Transformer rated current [A]	Rated current of fuses [A]	Transformer rated current [A]	Rated current of fuses [A]	Transformer 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
Uk = 5%	630	61	100	36	63	24	43	18	32	12	32
	800	77	125	46	80	31	63	23	43	15	32
	1000			58	100	38	63	29	63	19	32
	1250							36	63		