

LV-HRC FUSE LINKS



Introduction

The VOLTRANO® Trademarked NH Fuse Links range uses the latest technology to provide class leading fuse link performance and reliable indication.

The range is fully compliant with IEC 60269 standards with VDE 0636-2 third party approval and complies with the dimensional requirements of DIN 43620 for ease of use.

Fuse

Device that by the fusing of one or more its specially designed and proportioned components opens the circuit in which it is inserted by breaking the current when this exceeds a given value for a sufficient time. The fuse comprises all the parts that from the complete device.

Fuse System Structure

The LV HRC Fuse System consists of fuse base, fuse links and the detachable operating handle. Non interchangeability of rated current and shock hazard protection are not given.

Related Standards

TS EN 60269-1 ,TS EN 60269-2-1

IEC 60269-1, IEC 60269-2-1

DIN EN 60269-1 (VDE 0636-1)

DIN VDE 0636-2 (VDE 0636-2)

Certificates



ISO 9001 Quality Management System Certificate



EC Declaration of Conformity



VDE Testing and Certification Institute Mark

Product Range

Product Range (Ampers)																				
500 V AC / 440 V DC gL/gG	NH	6	10	16	20	25	32	40	50	63	80	100	125	160	200	250	315	400	500	630
	000																			
	00										v	v	v	v	v					
	0																			
	01																			
	1										v	v	v	v	v					
	02																			
	2														v	v	v	v		
	3																			
		v	VDE marked products																	

VOLTRANO® Trademarked LV-HRC Fuse Links are produced in AC 500V, DC 440V 000-00-0-01-1-02-2 and size 3 according to the dimensions of the fuse link from 6A to 630A. LV HRC Fuse Links 500V AC are manufactured in the following sizes and with rated current.

Breaking range and utilization category

VOLTRANO® Trademarked HRC Fuse Links are “gG” utilization category. Fuses are categorized according to function and operational classes. The first letter defines the function class and the second the object to be protected:

1st letter; “g” fuse-links = Full range protection, Full-range breaking-capacity fuse link.

2nd letter; G = Cable and line protection (general applications)

The second letter shall indicate the utilization category; this letter defines with accuracy the time-current characteristics conventional time and currents gates:

“gG” indicates fuse-links with a full-range breaking capacity for the protection application;

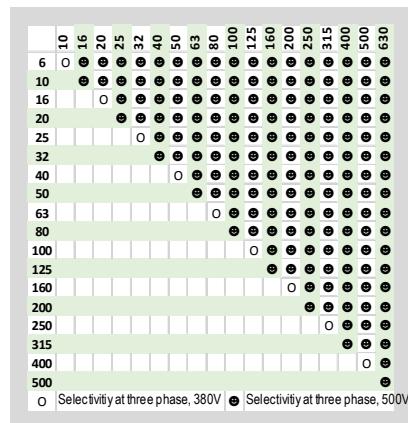
NOTE: At present “gG” fuse-link are often used for the protection of motor circuits, which is possible when their characteristics are suitable to be capable of withstanding the motor starting current.

Selectivity

Several fuses are usually connected in series in one system. And when things get serious, selectivity ensures that only the faulty electrical circuit of a system is switched off and not the entire operational process.

VOLTRANO® trademarked HRC Fuse Links are selective with all fuse links in the ratio of 1:1,6 which fulfill TS EN 60269-1, IEC 60269-1, VDE 0636 Part 10 operating class gG regardless of which systems are being considered.

VOLTRANO® trademarked HRC Fuse Links are selective with each other and, for mixed installation, also with fuse links (operating class gG) of other system by **VOLTRANO®** trademarked in the ratio 1:1,25 i.e. from rated current level to rated current level, Both fuse links should, however, be exposed to similar ambient influences when the staggering is so narrow.



Construction

VOLTRANO® Trademarked LV HRC Fuse Links are produced with a single indicator (normal) and double indicator (combi),

In the case of single-indicator fuse inserts, the red-painted indicator spring (indicator) is stretched straight onto the top plate. When the fuse is opened, the indicator spring discharges and lifts upwards. It is understood that the fuse was blown when the signal spring is raised.

In fuse inserts with double indicator indicator, the red painted indicator spring (indicator) on the top and the hole is stretched straight to the top plate and the end of the indicator spring is seen as red in the hole in the center of the body. When the fuse is opened, the indicator spring discharges and lifts upwards. The indicator spring is red on the top plate and is not visible because the spring is raised up. In this case, it is understood that the fuse has been operated. In order to determine whether the fuse is switched on or not, it is more appropriate to use double indicator (double indicator) fuse plugs in vertical and horizontal Fuse Disconnectors.

Time-Current Curves

The time/current characteristic curve specifies the virtual time (e.g. the melting time) as a function of the prospective current under specific operating conditions. Melting times of fuse links are shown in the time/current diagrams with logarithmic scale and depending on their currents. The melting time characteristic curve runs from the smallest melting current, which just about melts the fuse element, asymptotic to the I^2t lines of the same joule value in the range of the higher short-circuit currents, which specifies the constant melting heat value I^2t . To avoid over complication, the time/current characteristics diagrams omit the I^2t lines (c).

General representation of the time/current characteristic curve of a fuse link of gL/gG operational class

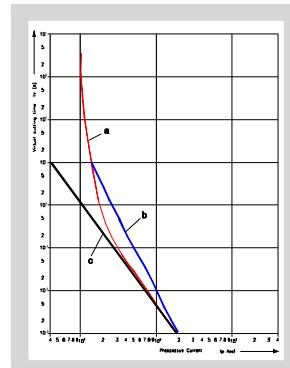
Imin: Smallest melting current

a: Melting time/current characteristic

b: OFF time characteristic curve

c: I^2t line

Time-Current Curves are given on the following pages for each size.

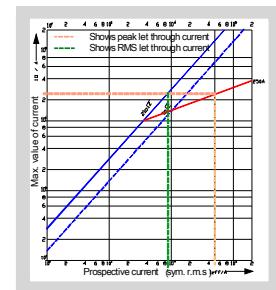


Cut-Off Curves (Current limitation)

As well as a failsafe rated breaking capacity, the current-limiting effect of a fuse link is of key importance for the cost effectiveness of a system. In the event of short-circuit breaking by a fuse, the breaking current continues to flow through the network until the fuse link is switched off. However, the breaking current is limited by the system impedance.

The simultaneous melting of all the bottle necks of a fuse element produce a sequence of tiny partial arcs that ensure a fast breaking operation with strong current limiting. The current limitation is also strongly influenced by the production quality of the fuse, which in the case of VOLTRANO® fuses is extremely high.

This strong current limitation provides constant protection for the system against excessive loads. Cut-off Curves are given on the following pages for each size.



Breaking Capacity

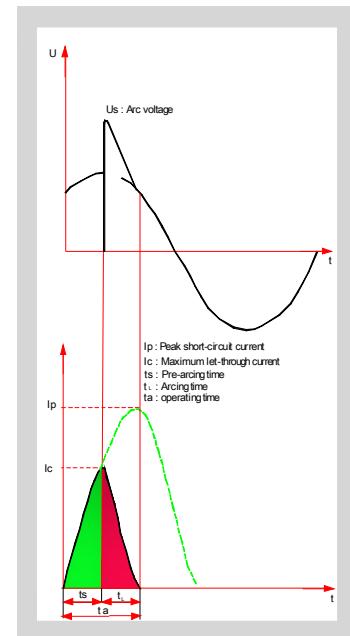
VOLTRANO® trademarked HRC fuse links have been tested for switching safety in the complete range of application. They efficiently overcome low over-currents with max. heat development, intermediate range short circuit currents with maximal arcing capacity and the highest short circuit currents with maximum pressure straining. 120 kA eff has been given as the breaking capacity.

The rated breaking capacity is the highest prospective short-circuit current I_p that the fuse link can blow under prescribed conditions.

A key feature of these fuses is their high rated breaking capacity with the smallest footprint. The basic demands and circuit data for tests – voltage, power factor, actuating angle etc.– are specified in both national (DIN VDE 0636) and international (IEC 60269) regulations.

However, for a constant failsafe breaking capacity, from the smallest non-permissible overload current through to the highest breaking current, a number of quality characteristics need to be taken into account when designing and manufacturing fuse links. These include the design of the fuse element with regard to dimensions and punch dimension and its position in the fuse body, as well as its compressive strength and the thermal resistance of the body. The chemical purity, particle size and the density of the quartz sand also play a key role.

Breaking capacity values are given on the following pages for each size.



Oscillograph of short-circuit current shutdown a fuse link

Co-ordination for cable and line protection

To ensure co-ordination of fuses with respect to cable and line protection during overload, according to DIN 0100 part 430,

the following conditions apply:

1- $I_B \leq I_N \leq I_z$ (Nominal current range), 2- $I_z \leq 1.45 \times I_N$ (Tripping range)

I_B : Operating current of the circuit

I_N : Nominal current of selected protective device

I_z : Permissible current loading capacity at given operating conditions for the cable or line

I_z : Tripping current of the protective device under determined conditions (large test current)

The factor 1.45 is an internationally accepted agreement between utilization and level of protection for a conductor, when considering the disconnection limits and the possible protective device (e.g. fuses).

Power Dissipation and Temperature Rise

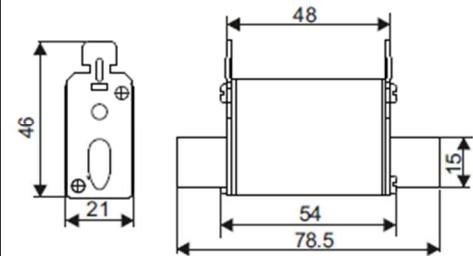
VOLTRANO® Trademarked HRC Fuse links have minimal internal power dissipation and low internal temperature rise. They are in compliance with the requirements of consumers for low-loss LV HRC Fuse Links and for the specifications DIN-VDE 0636 which resulted from these requests.

Power dissipation and Temperature size values are given on the following pages for each size and amperes.

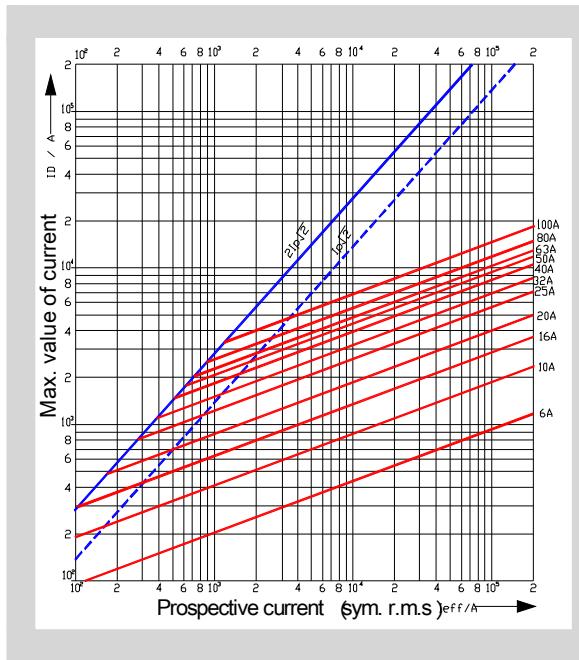
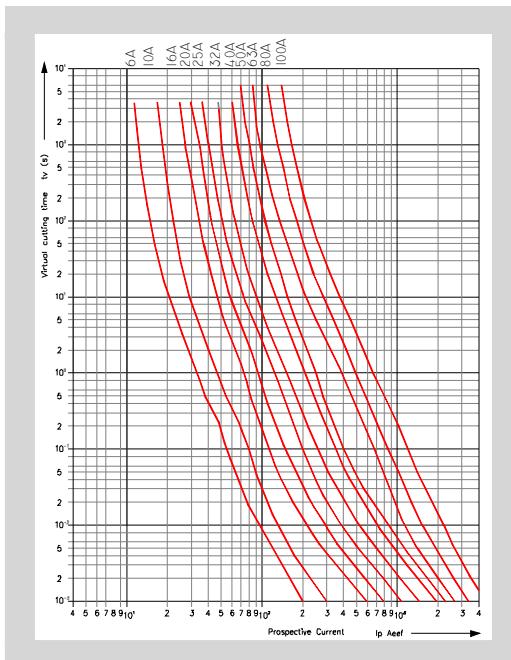
SIZE 000 COMPACT COMBI HRC FUSE-LINKS



Amps	VDE	Product No	Pcs/C	kg/Carton
6	23.0006.80	10	1,25	
10	23.0010.80	10	1,25	
16	23.0016.80	10	1,25	
20	23.0020.80	10	1,25	
25	23.0025.80	10	1,25	
32	23.0032.80	10	1,25	
40	23.0040.80	10	1,25	
50	23.0050.80	10	1,25	
63	23.0063.80	10	1,25	
80	23.0080.80	10	1,25	
100	23.0100.80	10	1,25	



Time-Current and Cut-off Current Characteristic Curves



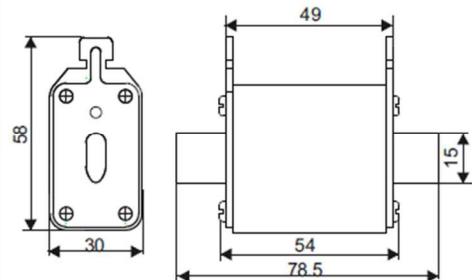
Power dissipation, temperature rise and I²t values table.

Product No	Product	I _n	P _v W max 7,5	Δθ K max 70°	I ² ta 1 ms A ² s	I ² ta 4 ms A ² s	I ₁ 120kA 500V AC A ² s
23.0006.80	NH 000-6A	6	1,3	8			
23.0010.80	NH 000-10A	10	1,3	10	83	102	500
23.0016.80	NH 000-16A	16	2,2	17	254	314	10
23.0020.80	NH 000-20A	20	3,2	22	332	500	2000
23.0025.80	NH 000-25A	25	3,5	23	746	950	3500
23.0032.80	NH 000-32A	32	3,8	23	2300	2800	8000
23.0040.80	NH 000-40A	40	4,2	25	3400	4200	18000
23.0050.80	NH 000-50A	50	6	23	5200	6400	24000
23.0063.80	NH 000-63A	63	6,5	27	7600	9800	35000
23.0080.80	NH 000-80A	80	7,3	30	11000	13500	55000
23.0100.80	NH 000-100A	100	7,5	33	25000	32000	100000

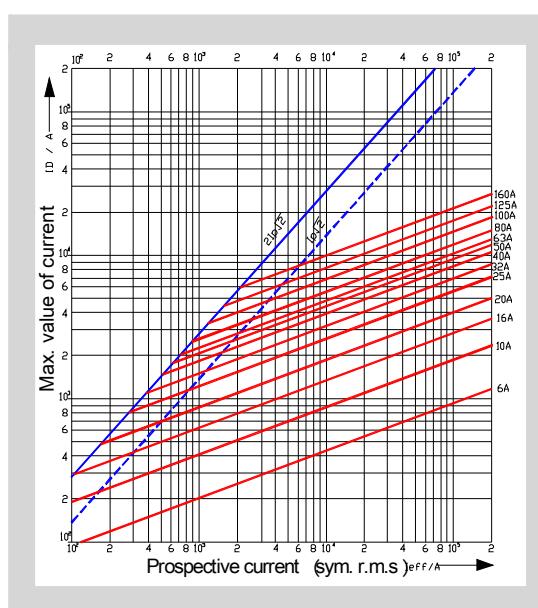
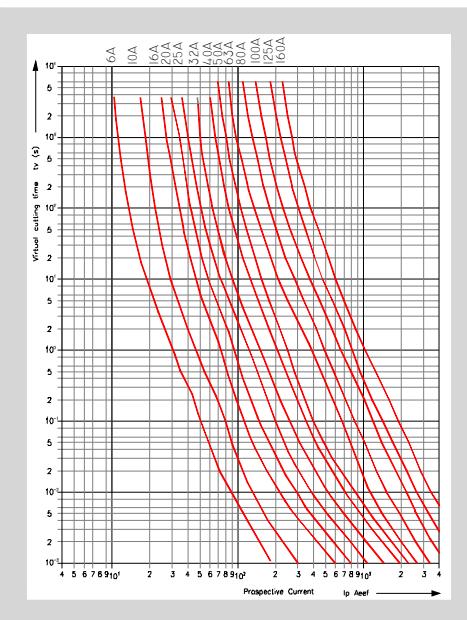
SIZE 00 COMBI HRC FUSE-LINKS



Amps	VDE	Product No	Pcs/C	kg/Carton
6		23.1006.80	10	1,85
10		23.1010.80	10	1,85
16		23.1016.80	10	1,85
20		23.1020.80	10	1,85
25		23.1025.80	10	1,85
32		23.1032.80	10	1,85
40		23.1040.80	10	1,85
50		23.1050.80	10	1,85
63	D/F/E	23.1063.80	10	1,85
80	D/F/E	23.1080.80	10	1,85
100	D/F/E	23.1100.80	10	1,85
125	D/F/E	23.1125.80	10	1,85
160	D/F/E	23.1160.80	10	1,85



Time-Current and Cut-off Current Characteristic Curves



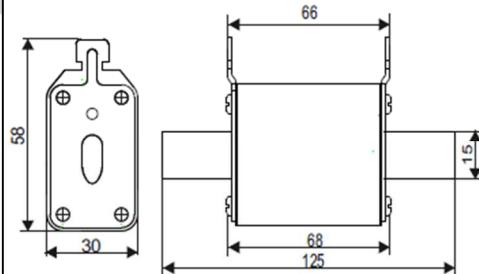
Power dissipation, temperature rise and I²t values table

Product No	Product	I _n	P _v W max 12	Δ θ K max 70°	I ² ta 1 ms A ² s	I ² ta 4 ms A ² s	I ₁ 120kA 500V AC A ² s
23.1006.80	NH 00-6A	6	1,3	8			
23.1010.80	NH 00-10A	10	1,3	10	83	102	500
23.1016.80	NH 00-16A	16	2,2	17	254	314	10
23.1020.80	NH 00-20A	20	3,2	22	332	500	2000
23.1025.80	NH 00-25A	25	3,5	23	746	950	3500
23.1032.80	NH 00-32A	32	3,8	23	2300	2800	8000
23.1040.80	NH 00-40A	40	4,2	25	3400	4200	18000
23.1050.80	NH 00-50A	50	6	23	5200	6400	24000
23.1063.80	NH 00-63A	63	6,5	27	7600	9800	35000
23.1080.80	NH 00-80A	80	7,3	30	11000	13500	55000
23.1100.80	NH 00-100A	100	7,5	33	25000	32000	100000
23.1125.80	NH 00-125A	125	11	35	36000	53000	160000
23.1160.80	NH 00-160A	160	11,7	37	70000	98000	300000

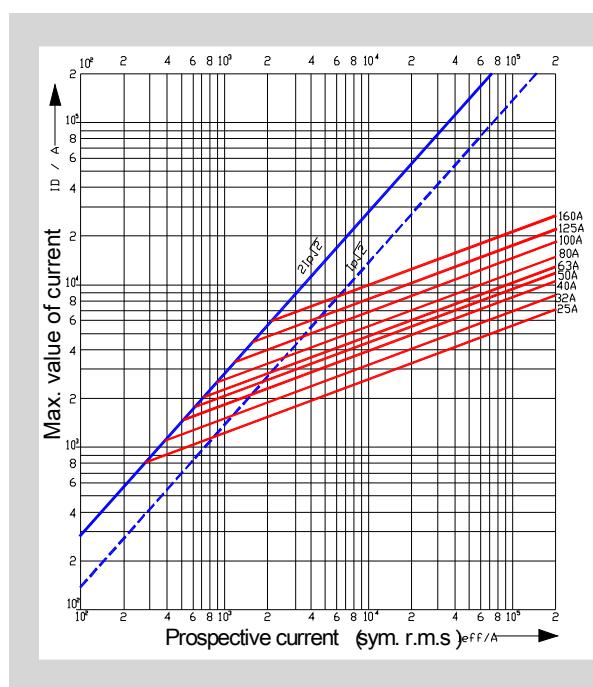
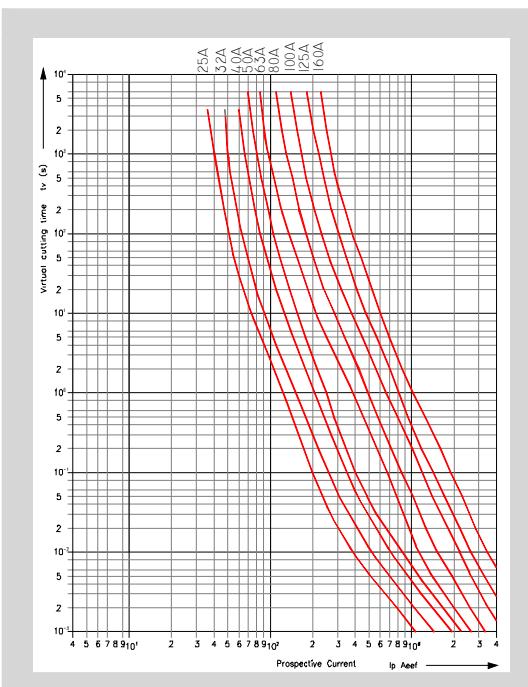
SIZE 0 COMBI HRC FUSE-LINKS



Amps	VDE	Product No	Pcs/C	kg/Carton
25	23.2025.80	10	2,5	
32	23.2032.80	10	2,5	
40	23.2040.80	10	2,5	
50	23.2050.80	10	2,5	
63	23.2063.80	10	2,5	
80	23.2080.80	10	2,5	
100	23.2100.80	10	2,5	
125	23.2125.80	10	2,5	
160	23.2160.80	10	2,5	



Time-Current and Cut-off Current Characteristic Curves



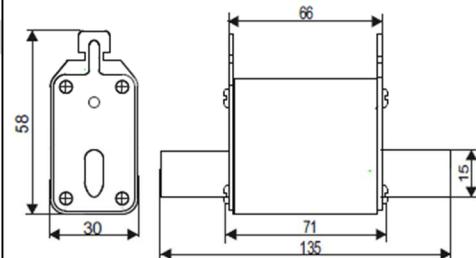
Power dissipation, temperature rise and I²t values table

Product No	Product	I _n	P _v W max 16	Δ θ K max 70°	I ² ta 1 ms A ² s	I ² ta 4 ms A ² s	I ₁ 120kA 500V AC A ² s
23.2025.80	NH 0-25A	25	5,4	15	746	950	3500
23.2032.80	NH 0-32A	32	5,6	15	2300	2800	8000
23.2040.80	NH 0-40A	40	5,8	17	3400	4200	18000
23.2050.80	NH 0-50A	50	5,9	18	5200	6400	24000
23.2063.80	NH 0-63A	63	7,3	23	7600	9800	35000
23.2080.80	NH 0-80A	80	9,1	30	11000	13500	55000
23.2100.80	NH 0-100A	100	10,3	33	25000	32000	100000
23.2125.80	NH 0-125A	125	10,6	34	36000	53000	160000
23.2160.80	NH 0-160A	160	16	39	70000	98000	300000

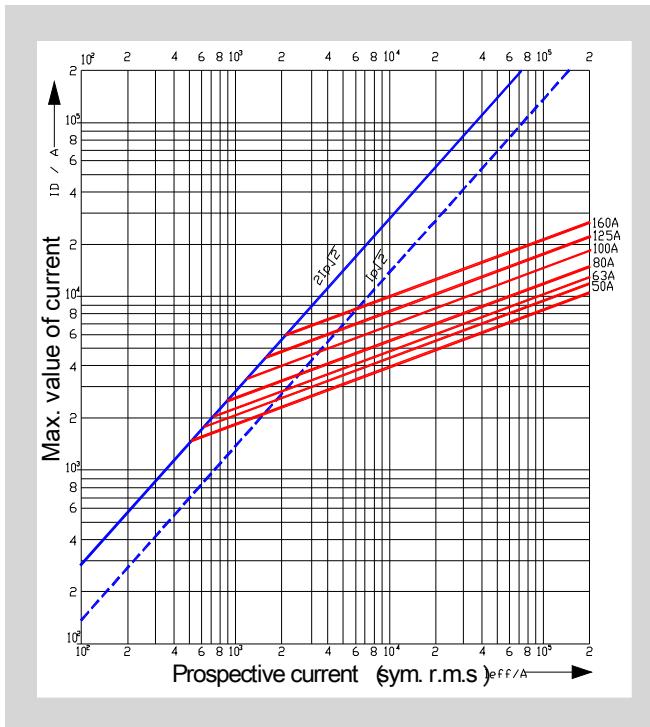
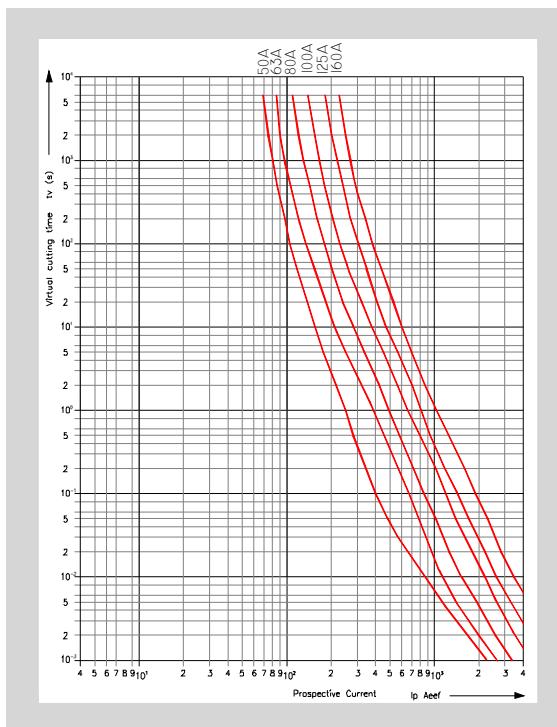
SIZE 01 COMPACT COMBI HRC FUSE-LINKS



Amps	VDE	Product No	Pcs/C	kg/Carton
50		23.7050.80	3	0,8
63		23.7063.80	3	0,8
80		23.7080.80	3	0,8
100		23.7100.80	3	0,8
125		23.7125.80	3	0,8
160		23.7160.80	3	0,8



Time-Current and Cut-off Current Characteristic Curves



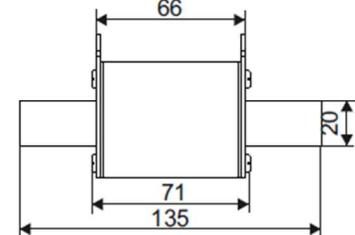
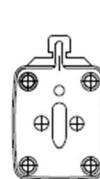
Power dissipation, temperature rise and I²t values table

Product No	Product	I _n	P _v W max 23	Δ θ K max 70°	I ² ta 1 ms A ² s	I ² ta 4 ms A ² s	I ₁ test 500V AC A ² s
23.7050.80	NH 01-50A	50	5,9	18	5200	6400	24000
23.7063.80	NH 01-63A	63	7,3	23	7600	9800	35000
23.7080.80	NH 01-80A	80	9,1	30	11000	13500	55000
23.7100.80	NH 01-100A	100	10,3	33	25000	32000	100000
23.7125.80	NH 01-125A	125	10,6	34	36000	53000	160000
23.7160.80	NH 01-160A	160	16	39	70000	98000	300000

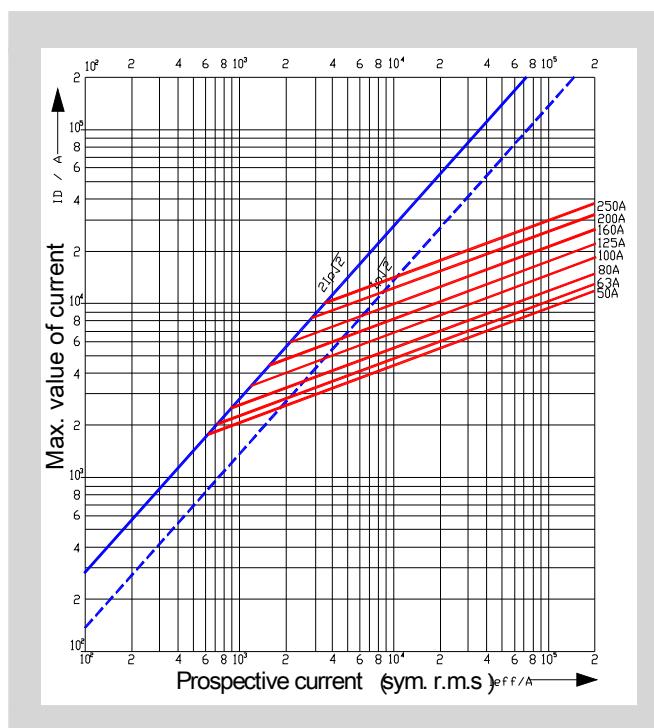
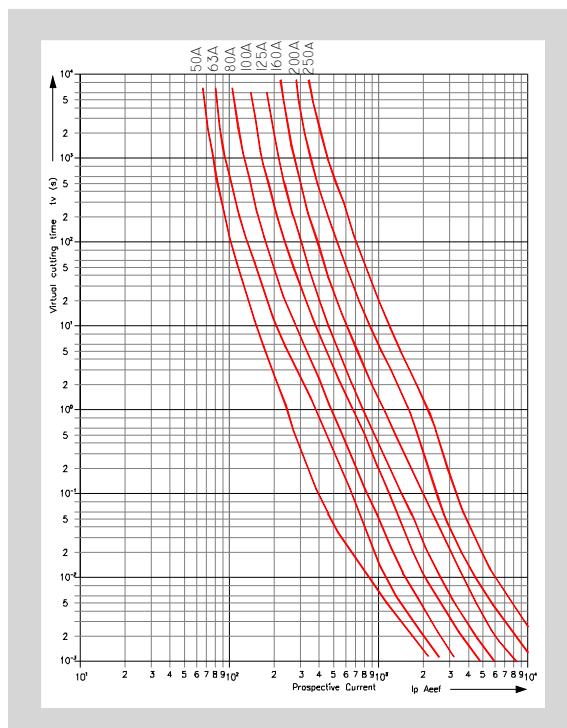
SIZE 1 COMBI HRC FUSE-LINKS



Amps	VDE	Product No	Pcs/C	kg/Carton
50		23.3050.80	10	1,25
63		23.3063.80	10	1,25
80		23.3080.80	10	1,25
100	D/E	23.3100.80	10	2,5
125	D/E	23.3125.80	10	2,5
160	D/E	23.3160.80	10	2,5
200	D/E	23.3200.80	10	2,5
250	D/E	23.3250.80	10	2,5



Time-Current and Cut-off Current Characteristic Curves



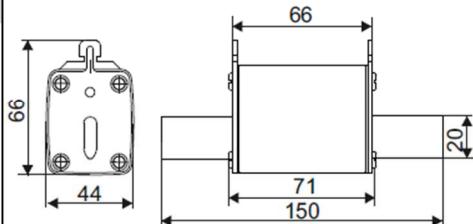
Power dissipation, temperature rise and I²t values table

Product No	Product	I _n	P _v W max 23	Δ θ K max 70°	I ² t _a 1 ms A ² s	I ² t _a 4 ms A ² s	I ₁ 120kA 500V AC A ² s
23.3050.80	NH 1-50A	50	6,9	17	5200	6400	24000
23.3063.80	NH 1-63A	63	7,5	18	7600	9800	35000
23.3080.80	NH 1-80A	80	8	20	11000	13500	55000
23.3100.80	NH 1-100A	100	10,6	22	25000	32000	100000
23.3125.80	NH 1-125A	125	12,5	25	36000	53000	160000
23.3160.80	NH 1-160A	160	17	28	70000	98000	300000
23.3200.80	NH 1-200A	200	19	35	85000	105000	400000
23.3250.80	NH 1-250A	250	22	40	140000	200000	730000

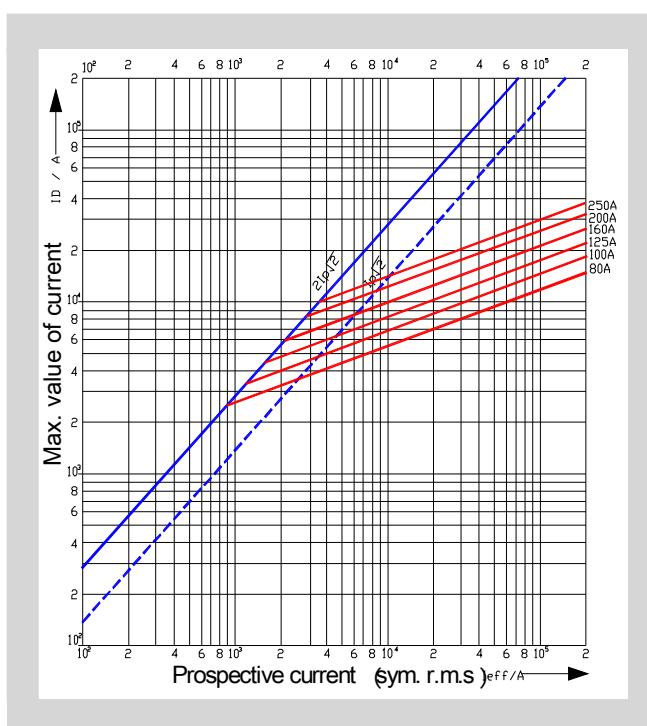
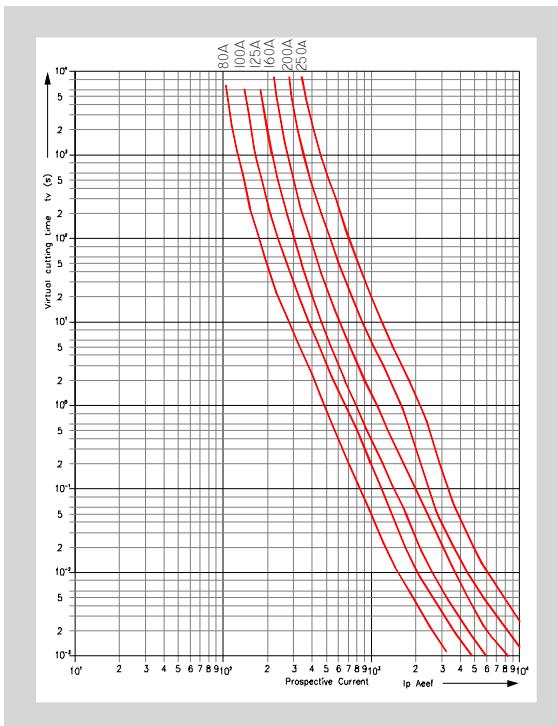
SIZE 02 COMPACT COMBI HRC FUSE-LINKS



Amps	VDE	Product No	Pcs/C	kg/Carton
80		23.8080.80	3	1,3
100		23.8100.80	3	1,3
125		23.8125.80	3	1,3
160		23.8160.80	3	1,3
200		23.8200.80	3	1,3
250		23.8250.80	3	1,3



Time-Current and Cut-off Current Characteristic Curves



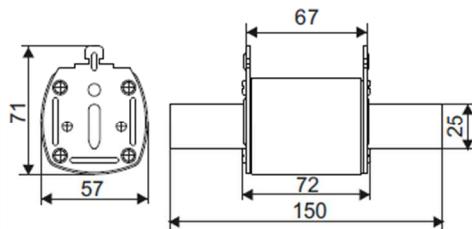
Power dissipation, temperature rise and I²t values table

Product No	Product	I _n	P _v W max 34	Δ θ K max 70°	I ² ta 1 ms A ² s	I ² ta 4 ms A ² s	I ₁ 120kA 500V AC A ² s
23.8080.80	NH 02-80A	80	8	20	11000	13500	55000
23.8100.80	NH 02-100A	100	10,6	22	25000	32000	100000
23.8125.80	NH 02-125A	125	12,5	25	36000	53000	160000
23.8160.80	NH 02-160A	160	17	28	70000	98000	300000
23.8200.80	NH 02-200A	200	19	35	85000	105000	400000
23.8250.80	NH 02-250A	250	22	40	140000	200000	730000

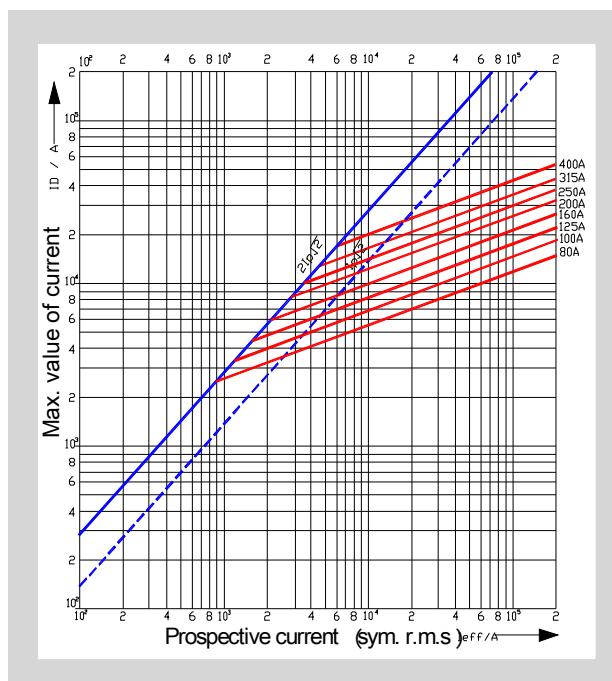
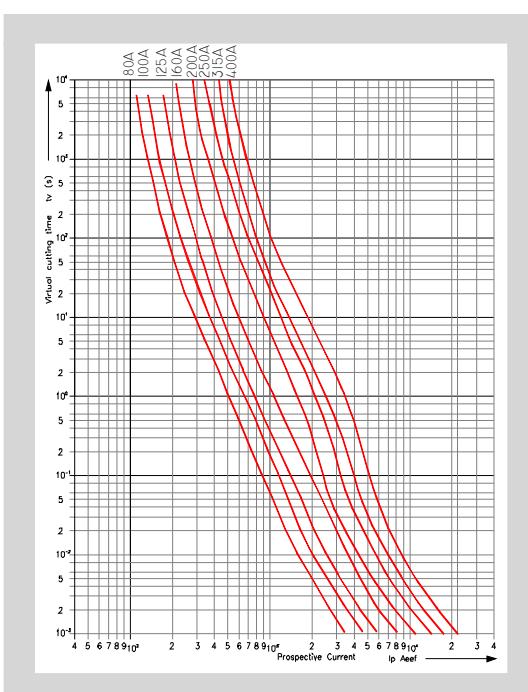
SIZE 2 COMBI HRC FUSE-LINKS



Amps	VDE	Product No	Pcs/C	kg/Carton
80		23.4080.80	3	1,7
100		23.4100.80	3	1,7
125		23.4125.80	3	1,7
160		23.4160.80	3	1,7
200	VDE	23.4200.80	3	1,7
250	VDE	23.4250.80	3	1,7
315	VDE	23.4315.80	3	1,7
400	VDE	23.4400.80	3	1,7



Time-Current and Cut-off Current Characteristic Curves



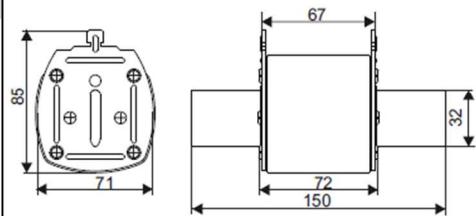
Power dissipation, temperature rise and I^2t values table

Product No	Product	I _n	P _v W max 34	Δ θ K max 70°	I ² ta 1 ms A ² s	I ² ta 4 ms A ² s	I ₁ 120kA 500V AC A ² s
23.4080.80	NH 2-80A	80	8	20	11000	13500	55000
23.4100.80	NH 2-100A	100	15	25	25000	32000	100000
23.4125.80	NH 2-125A	125	15,6	26	36000	53000	160000
23.4160.80	NH 2-160A	160	17,2	28	70000	98000	300000
23.4200.80	NH 2-200A	200	14	31	85000	105000	400000
23.4250.80	NH 2-250A	250	17	29	140000	200000	730000
23.4315.80	NH 2-315A	315	22	28	320000	430000	1100000
23.4400.80	NH 2-400A	400	30	39	560000	700000	1900000

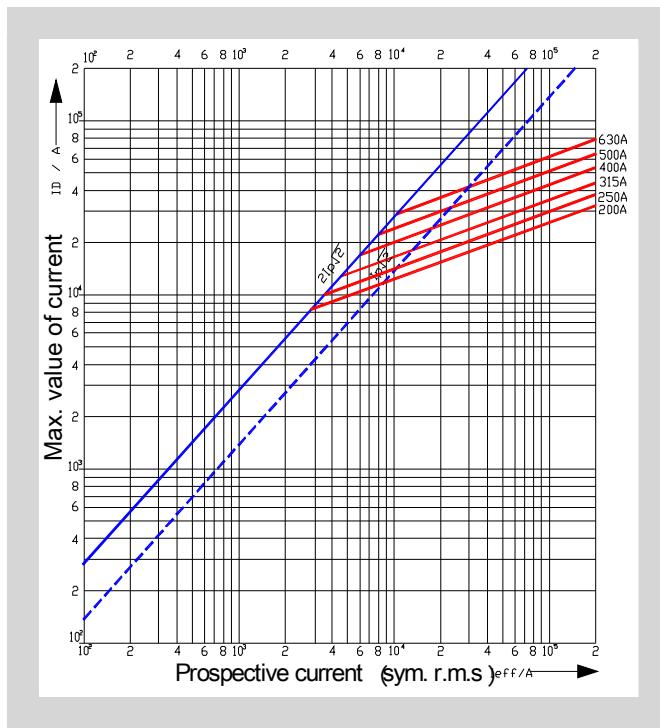
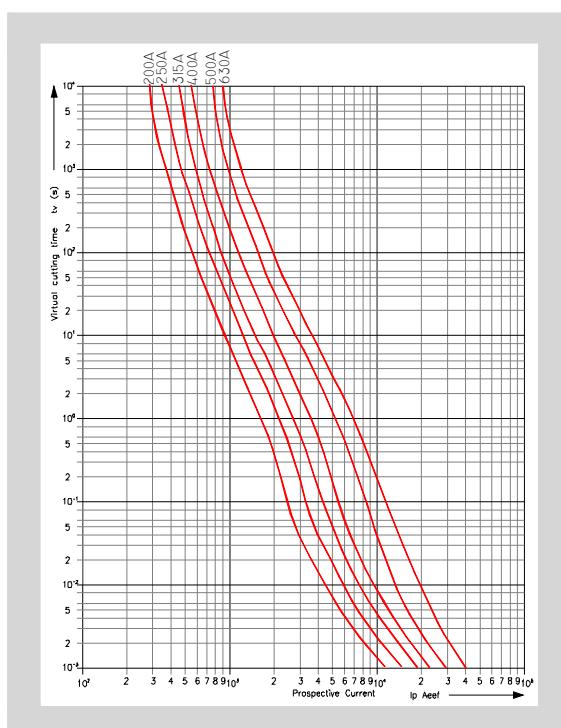
SIZE 3 COMBI HRC FUSE-LINKS



Amps	VDE	Product No	Pcs/C	kg/Carton
200	23.5200.80	3	2,5	
250	23.5250.80	3	2,5	
315	23.5315.80	3	2,5	
400	23.5400.80	3	2,5	
500	23.5500.80	3	2,5	
630	23.5630.80	3	2,5	



Time-Current and Cut-off Current Characteristic Curves



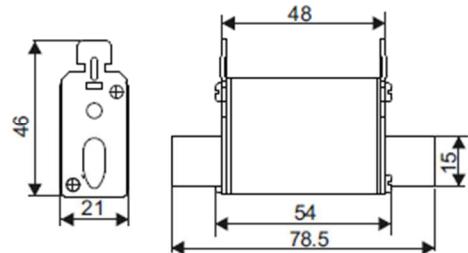
Power dissipation, temperature rise and I^2t values table

Product No	Product	In	Pv W max 48	$\Delta \vartheta$ K max 70°	I^2ta 1 ms A ² s	I^2ta 4 ms A ² s	I_1 120kA 500V AC A ² s
23.5200.80	NH 3-200A	200	20	20	85000	105000	400000
23.5250.80	NH 3-250A	250	22	20	140000	200000	730000
23.5315.80	NH 3-315A	315	24	25	320000	430000	1100000
23.5400.80	NH 3-400A	400	28	35	560000	700000	1900000
23.5500.80	NH 3-500A	500	33,2	43	1000000	1400000	4000000
23.5630.80	NH 3-630A	630	45,6	48	1900000	2400000	6500000

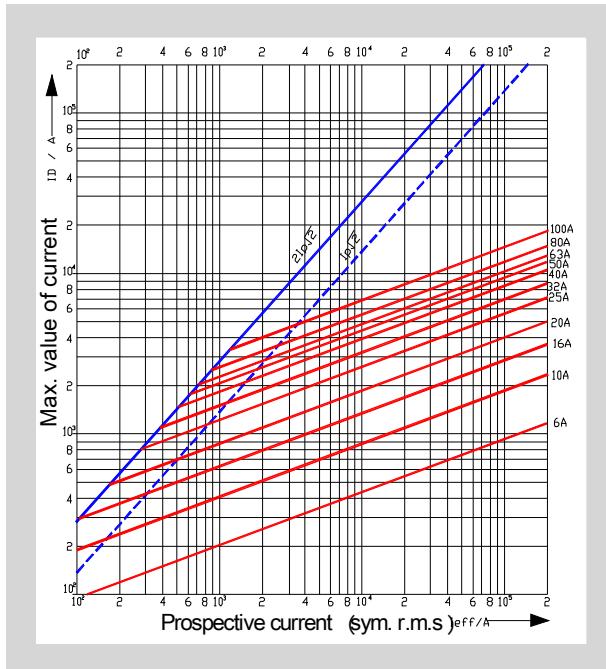
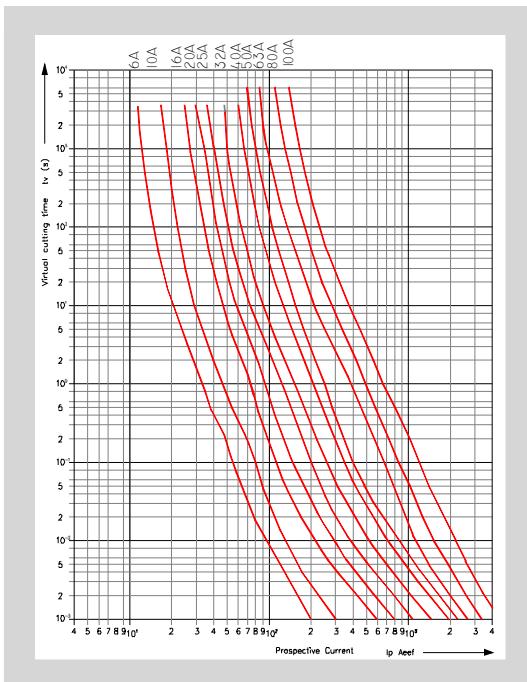
SIZE 000 HRC NORMAL FUSE-LINKS



Amps	VDE	Product No	Pcs/C	kg/Carton
6		23.0006.70	10	1,25
10		23.0010.70	10	1,25
16		23.0016.70	10	1,25
20		23.0020.70	10	1,25
25		23.0025.70	10	1,25
32		23.0032.70	10	1,25
40		23.0040.70	10	1,25
50		23.0050.70	10	1,25
63		23.0063.70	10	1,25
80		23.0080.70	10	1,25
100		23.0100.70	10	1,25



Time-Current and Cut-off Current Characteristic Curves



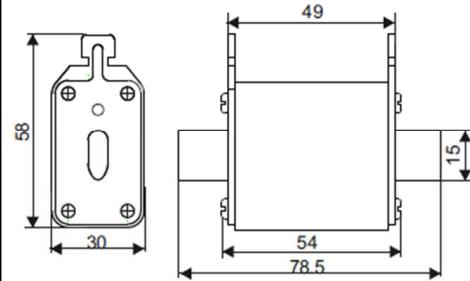
Power dissipation, temperature rise and I²t values table.

Product No	Product	I _n	P _v W max 7,5	Δ θ K max 70°	I ² ta 1 ms A ² s	I ² ta 4 ms A ² s	I ₁ 120kA 500V AC A ² s
23.0006.70	NH 000-6A	6	1,3	8			
23.0010.70	NH 000-10A	10	1,3	10	83	102	500
23.0016.70	NH 000-16A	16	2,2	17	254	314	10
23.0020.70	NH 000-20A	20	3,2	22	332	500	2000
23.0025.70	NH 000-25A	25	3,5	23	746	950	3500
23.0032.70	NH 000-32A	32	3,8	23	2300	2800	8000
23.0040.70	NH 000-40A	40	4,2	25	3400	4200	18000
23.0050.70	NH 000-50A	50	6	23	5200	6400	24000
23.0063.70	NH 000-63A	63	6,5	27	7600	9800	35000
23.0080.70	NH 000-80A	80	7,3	30	11000	13500	55000
23.0100.70	NH 000-100A	100	7,5	33	25000	32000	100000

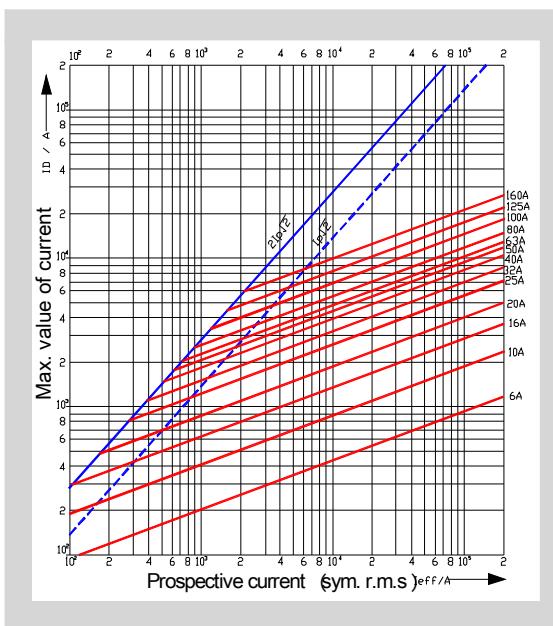
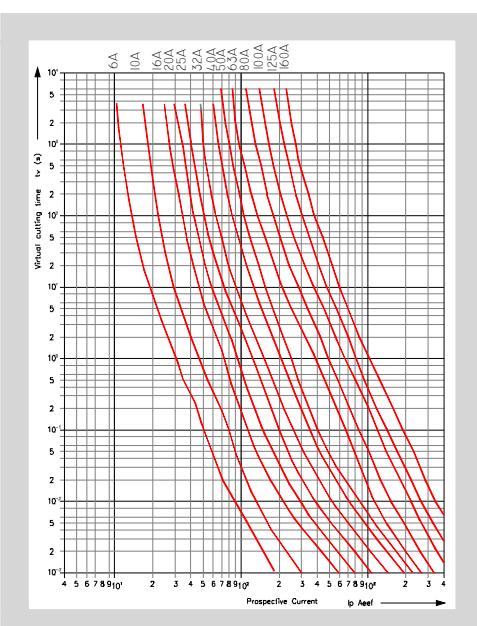
SIZE 00 HRC NORMAL FUSE-LINKS



Amps	VDE	Product No	Pcs/C	kg/Carton
6		23.1006.00	10	1,75
10		23.1010.00	10	1,75
16		23.1016.00	10	1,75
20		23.1020.00	10	1,75
25		23.1025.00	10	1,75
32		23.1032.00	10	1,75
40		23.1040.00	10	1,75
50		23.1050.00	10	1,75
63		23.1063.00	10	1,75
80		23.1080.00	10	1,75
100		23.1100.00	10	1,75
125		23.1125.00	10	1,75
160		23.1160.00	10	1,75



Time-Current and Cut-off Current Characteristic Curves



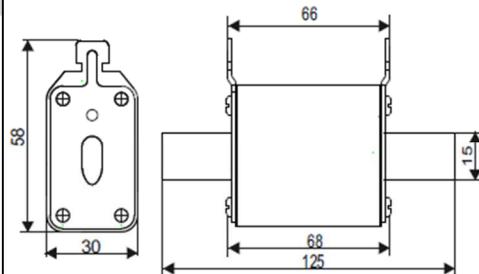
Power dissipation, temperature rise and I^2t values table

Product No	Product	I _n	P _v W max 12	Δ θ K max 70°	I ² t _a 1 ms A ² s	I ² t _a 4 ms A ² s	I ₁ 120kA 500V AC A ² s
23.1006.00	NH 00-6A	6	1,3	8			
23.1010.00	NH 00-10A	10	1,3	10	83	102	500
23.1016.00	NH 00-16A	16	2,2	17	254	314	10
23.1020.00	NH 00-20A	20	3,2	22	332	500	2000
23.1025.00	NH 00-25A	25	3,5	23	746	950	3500
23.1032.00	NH 00-32A	32	3,8	23	2300	2800	8000
23.1040.00	NH 00-40A	40	4,2	25	3400	4200	18000
23.1050.00	NH 00-50A	50	6	23	5200	6400	24000
23.1063.00	NH 00-63A	63	6,5	27	7600	9800	35000
23.1080.00	NH 00-80A	80	7,3	30	11000	13500	55000
23.1100.00	NH 00-100A	100	7,5	33	25000	32000	100000
23.1125.00	NH 00-125A	125	11	35	36000	53000	160000
23.1160.00	NH 00-160A	160	11,7	37	70000	98000	300000

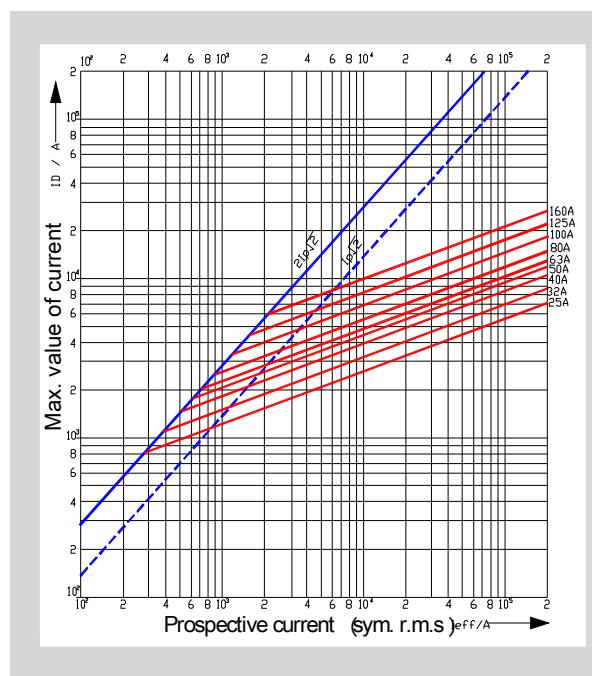
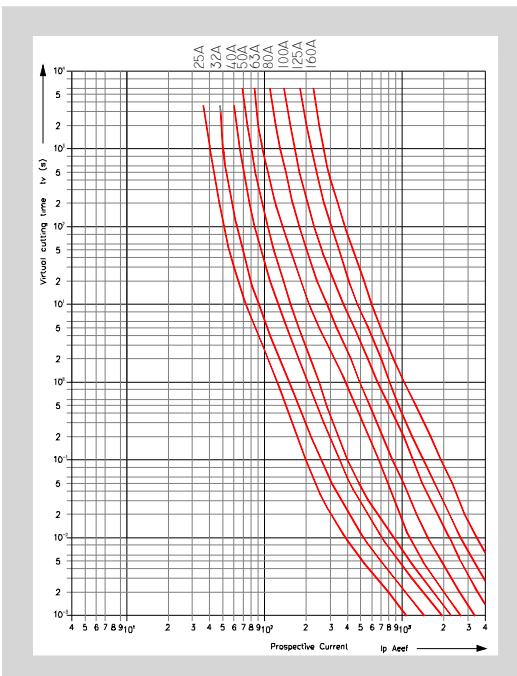
SIZE 0 HRC NORMAL FUSE-LINKS



Amps	VDE	Product No	Pcs/C	kg/Carton
25	23.2025.90	10	2,5	
32	23.2032.90	10	2,5	
40	23.2040.90	10	2,5	
50	23.2050.90	10	2,5	
63	23.2063.90	10	2,5	
80	23.2080.90	10	2,5	
100	23.2100.90	10	2,5	
125	23.2125.90	10	2,5	
160	23.2160.90	10	2,5	



Time-Current and Cut-off Current Characteristic Curves



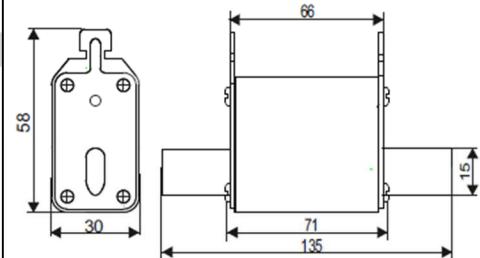
Power dissipation, temperature rise and I^2t values table

Product No	Product	I _n	P _v W max 16	Δ _θ K max 70°	I ² t _a 1 ms A ² s	I ² t _a 4 ms A ² s	I ₁ 120kA 500V AC A ² s
23.2025.90	NH 0-25A	25	5,4	15	746	950	3500
23.2032.90	NH 0-32A	32	5,6	15	2300	2800	8000
23.2040.90	NH 0-40A	40	5,8	17	3400	4200	18000
23.2050.90	NH 0-50A	50	5,9	18	5200	6400	24000
23.2063.90	NH 0-63A	63	7,3	23	7600	9800	35000
23.2080.90	NH 0-80A	80	9,1	30	11000	13500	55000
23.2100.90	NH 0-100A	100	10,3	33	25000	32000	100000
23.2125.90	NH 0-125A	125	10,6	34	36000	53000	160000
23.2160.90	NH 0-160A	160	16	39	70000	98000	300000

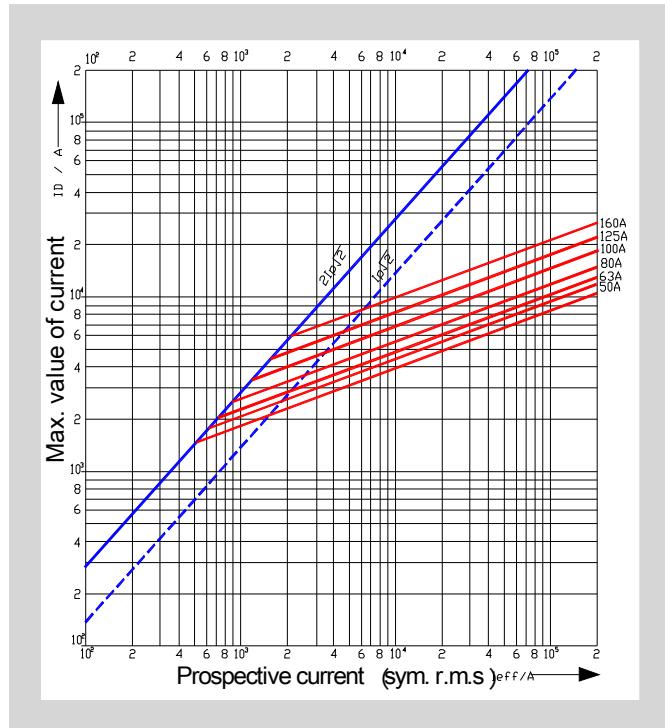
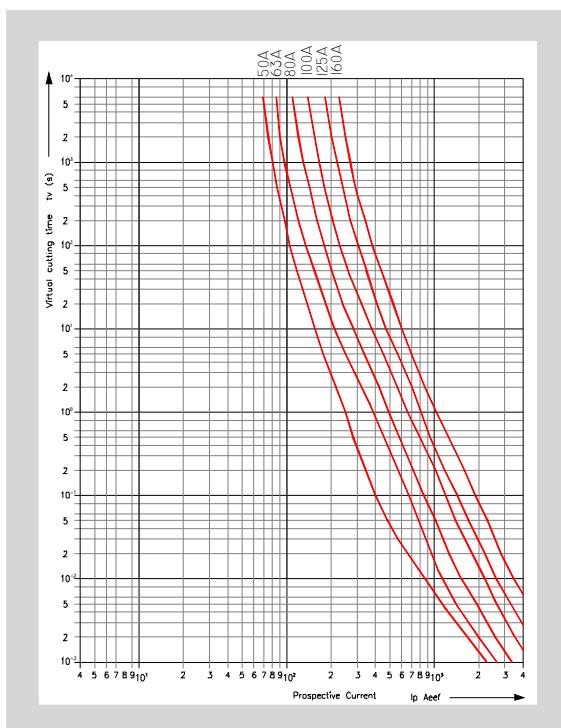
SIZE 01 COMPACT HRC NORMAL FUSE-LINKS



Amps	VDE	Product No	Pcs/C	kg/Carton
50	23.7050.70	3	0,8	
63	23.7063.70	3	0,8	
80	23.7080.70	3	0,8	
100	23.7100.70	3	0,8	
125	23.7125.70	3	0,8	
160	23.7160.70	3	0,8	



Time-Current and Cut-off Current Characteristic Curves



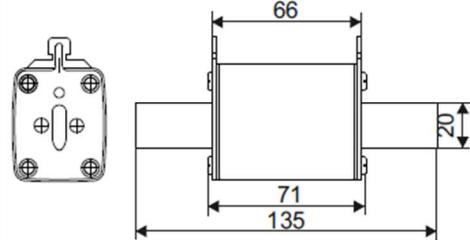
Power dissipation, temperature rise and I²t values table

Product No	Product	I _n	P _v W max 23	Δ θ K max 70°	I ² ta 1 ms A ² s	I ² ta 4 ms A ² s	I _t test 500V AC A ² s
23.7050.70	NH 01-50A	50	5,9	18	5200	6400	24000
23.7063.70	NH 01-63A	63	7,3	23	7600	9800	35000
23.7080.70	NH 01-80A	80	9,1	30	11000	13500	55000
23.7100.70	NH 01-100A	100	10,3	33	25000	32000	100000
23.7125.70	NH 01-125A	125	10,6	34	36000	53000	160000
23.7160.70	NH 01-160A	160	16	39	70000	98000	300000

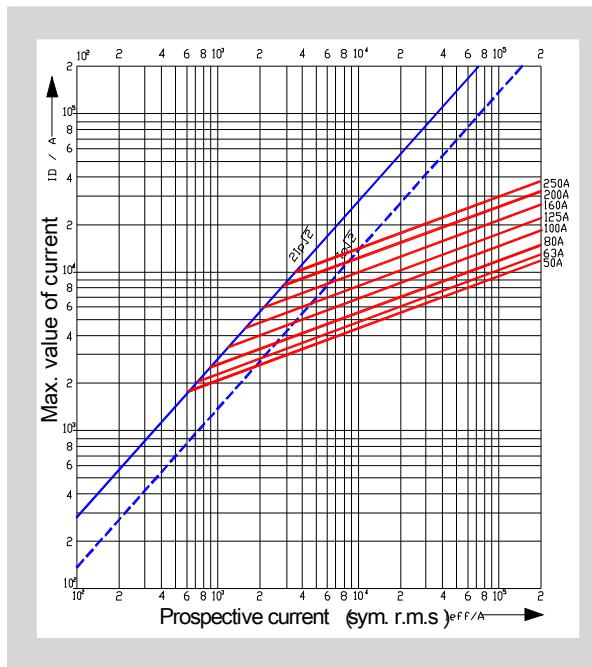
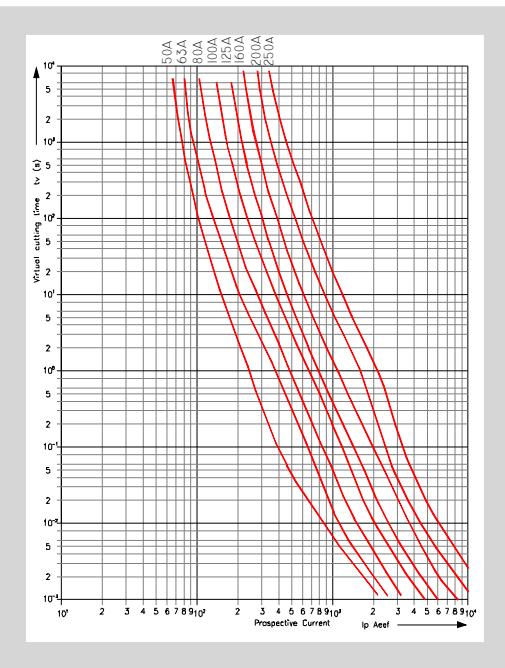
SIZE 1 HRC NORMAL FUSE-LINKS



Amps	VDE	Product No	Pcs/C	kg/Carton
50	23.3050.10	5	2,15	
63	23.3063.10	5	2,15	
80	23.3080.10	5	2,15	
100	23.3100.10	5	2,15	
125	23.3125.10	5	2,15	
160	23.3160.10	5	2,15	
200	23.3200.10	5	2,15	
250	23.3250.10	5	2,15	



Time-Current and Cut-off Current Characteristic Curves



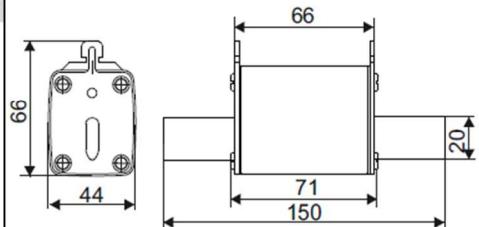
Power dissipation, temperature rise and I²t values table

Product No	Product	I _n	P _v W max 23	Δ θ K max 70°	I ² ta 1 ms A ² s	I ² ta 4 ms A ² s	I ₁ 120kA 500V AC A ² s
23.3050.10	NH 1-50A	50	6,9	17	5200	6400	24000
23.3063.10	NH 1-63A	63	7,5	18	7600	9800	35000
23.3080.10	NH 1-80A	80	8	20	11000	13500	55000
23.3100.10	NH 1-100A	100	10,6	22	25000	32000	100000
23.3125.10	NH 1-125A	125	12,5	25	36000	53000	160000
23.3160.10	NH 1-160A	160	17	28	70000	98000	300000
23.3200.10	NH 1-200A	200	19	35	85000	105000	400000
23.3250.10	NH 1-250A	250	22	40	140000	200000	730000

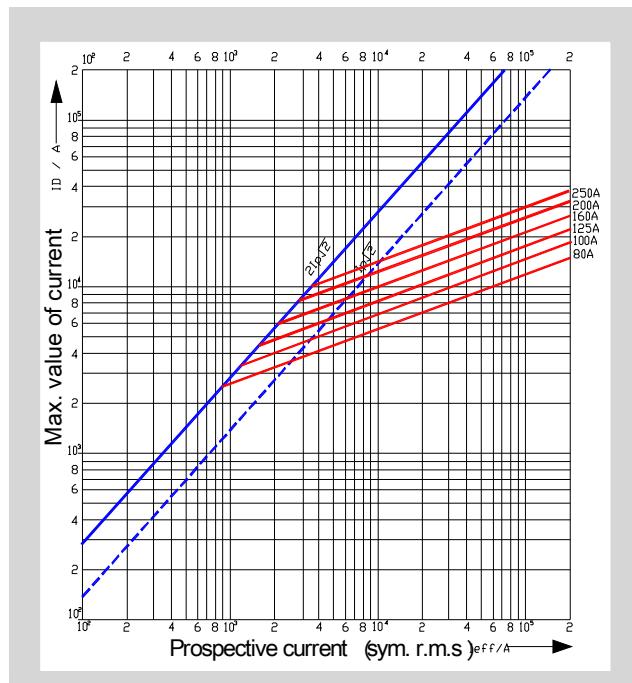
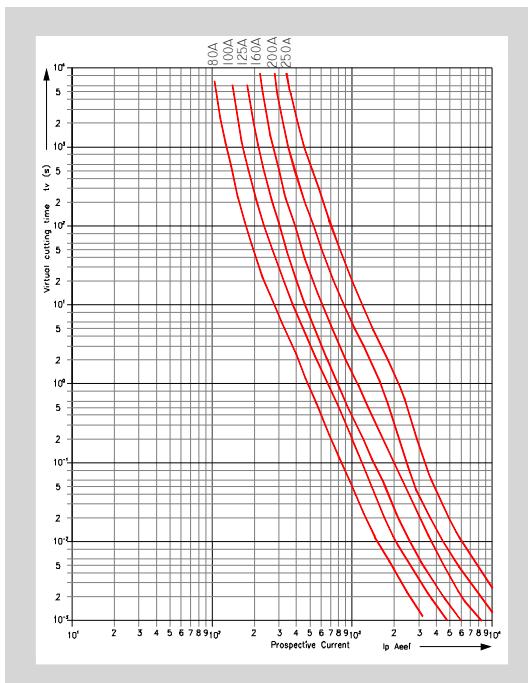
SIZE 02 COMPACT HRC NORMAL FUSE-LINKS



Amps	VDE	Product No	Pcs/C	kg/Carton
80	23.8080.70	3	1,3	
100	23.8100.70	3	1,3	
125	23.8125.70	3	1,3	
160	23.8160.70	3	1,3	
200	23.8200.70	3	1,3	
250	23.8250.70	3	1,3	



Time-Current and Cut-off Current Characteristic Curves



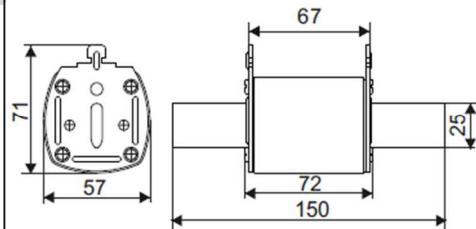
Power dissipation, temperature rise and I^2t values table

Product No	Product	In	Pv W max 34	$\Delta \vartheta$ K max 70°	I^2ta 1 ms A²s	I^2ta 4 ms A²s	I_1 120kA 500V AC A²s
23.8080.70	NH 02-80A	80	8	20	11000	13500	55000
23.8100.70	NH 02-100A	100	10,6	22	25000	32000	100000
23.8125.70	NH 02-125A	125	12,5	25	36000	53000	160000
23.8160.70	NH 02-160A	160	17	28	70000	98000	300000
23.8200.70	NH 02-200A	200	19	35	85000	105000	400000
23.8250.70	NH 02-250A	250	22	40	140000	200000	730000

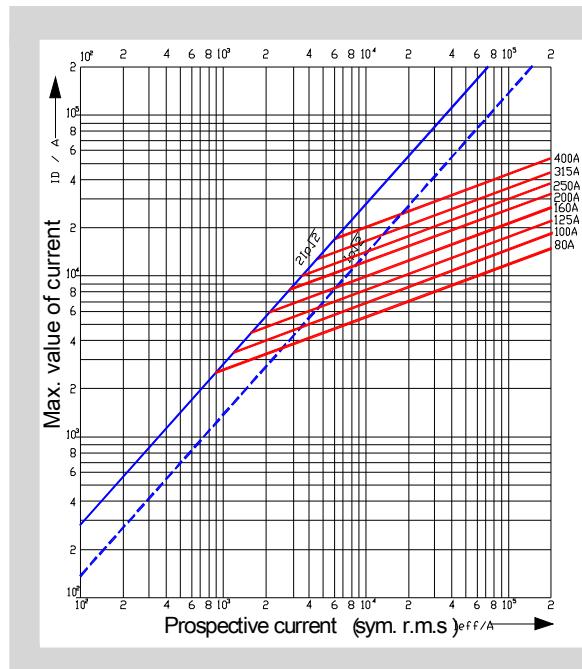
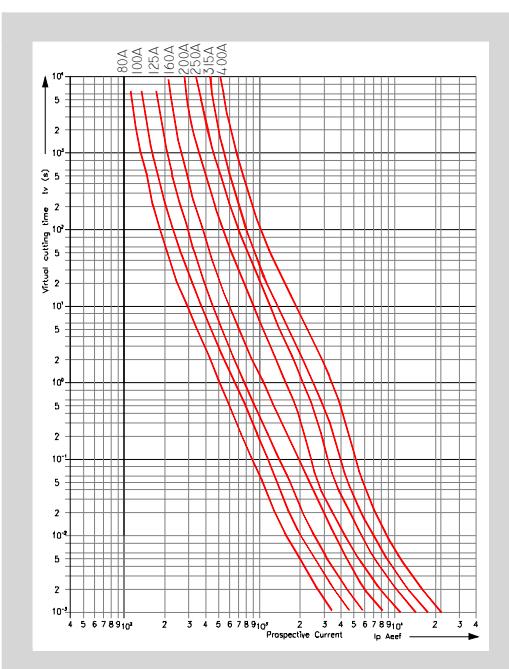
SIZE 2 HRC NORMAL FUSE-LINKS



Amps	VDE	Product No	Pcs/C	kg/Carton
80	23.4080.20	3	1,7	
100	23.4100.20	3	1,7	
125	23.4125.20	3	1,7	
160	23.4160.20	3	1,7	
200	23.4200.20	3	1,7	
250	23.4250.20	3	1,7	
315	23.4315.20	3	1,7	
400	23.4400.20	3	1,7	



Time-Current and Cut-off Current Characteristic Curves



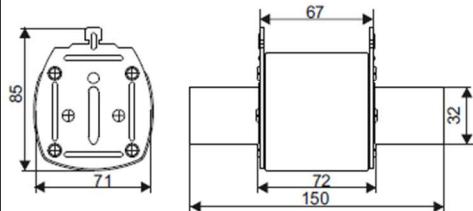
Power dissipation, temperature rise and I^2t values table

Product No	Product	I _n	P _v W max 34	Δ θ K max 70°	I ² t _a 1 ms A ² s	I ² t _a 4 ms A ² s	I ₁ 120kA 500V AC A ² s
23.4080.20	NH 2-80A	80	8	20	11000	13500	55000
23.4100.20	NH 2-100A	100	15	25	25000	32000	100000
23.4125.20	NH 2-125A	125	15,6	26	36000	53000	160000
23.4160.20	NH 2-160A	160	17,2	28	70000	98000	300000
23.4200.20	NH 2-200A	200	14	31	85000	105000	400000
23.4250.20	NH 2-250A	250	17	29	140000	200000	730000
23.4315.20	NH 2-315A	315	22	28	320000	430000	1100000
23.4400.20	NH 2-400A	400	30	39	560000	700000	1900000

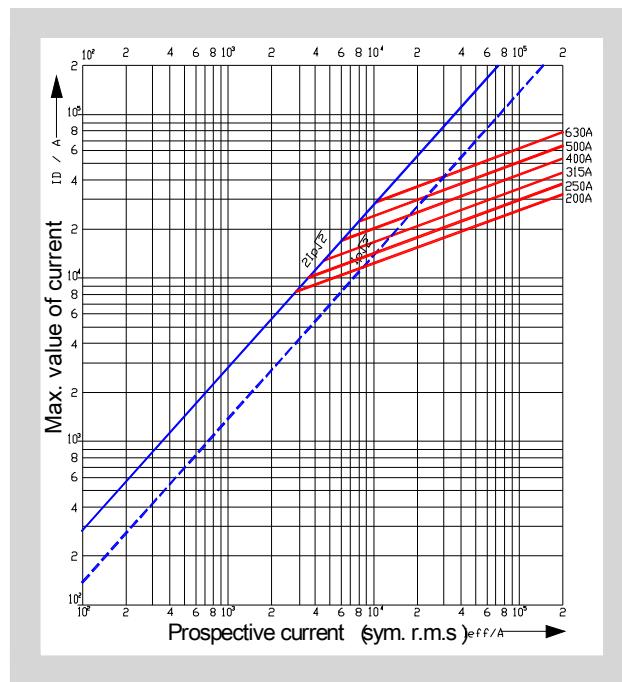
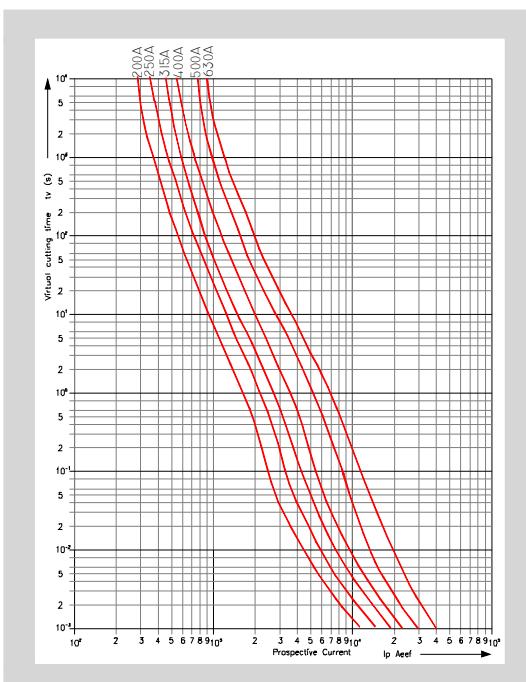
SIZE 3 HRC NORMAL FUSE-LINKS



Amps	VDE	Product No	Pcs/C	kg/Carton
200		23.5200.30	3	2,5
250		23.5250.30	3	2,5
315		23.5315.30	3	2,5
400		23.5400.30	3	2,5
500		23.5500.30	3	2,5
630		23.5630.30	3	2,5



Time-Current and Cut-off Current Characteristic Curves

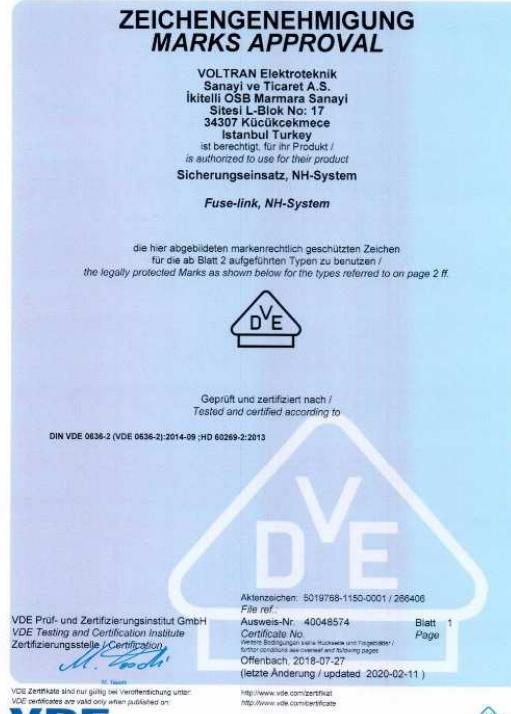


Power dissipation, temperature rise and I²t values table

Product No	Product	I _n	P _v W max 48	Δ θ K max 70°	I ² ta 1 ms A ² s	I ² ta 4 ms A ² s	I ₁ 120kA 500V AC A ² s
23.5200.30	NH 3-200A	200	20	20	85000	105000	400000
23.5250.30	NH 3-250A	250	22	20	140000	200000	730000
23.5315.30	NH 3-315A	315	24	25	320000	430000	1100000
23.5400.30	NH 3-400A	400	28	35	560000	700000	1900000
23.5500.30	NH 3-500A	500	33,2	43	1000000	1400000	4000000
23.5630.30	NH 3-630A	630	45,6	48	1900000	2400000	6500000

SIZE 00 HRC FUSE LINKS VDE CERTIFICATES

VDE Prüf- und Zertifizierungsinstitut



VDE Prüf- und Zertifizierungsinstitut Zeichengenehmigung

Name und Sitz des Genehmigungs-Inhabers / Name and registered seat of the Certificate holder
VOLTRAN Elektrotechnik Sanayi ve Ticaret A.S., İkitelli OSB Marmara Sanayi, Sitesi L-Blok No: 17, 34307 KÜÇÜKCEKMECE, İstanbul, TURKEY

Akkernummer / File ref:
5019768-1150-0001 / 266406 TL3 / KOH

letzte Änderung / updated Datum / Date
2020-02-11 2018-07-27

Dieses Blatt gilt nur in Verbindung mit Blatt 1 des Zeichengenehmigungsausweises Nr. 40048574.
This supplement is only valid in conjunction with page 1 of the Certificate No. 40048574.

Sicherungseinsatz, NH-System

Fuse-link, NH-System

Type(s) / Type(s)

23.1xxx.80

Bemessungsspannung Rated voltage	AC 500 V
Bemessungsstrom Rated current	63 A; 80 A; 100 A; 125 A; 160 A
Bemessungsfrequenz Rated frequency	45 bis / to 62 Hz
Bemessungsausschaltvermögen Rated breaking capacity	120 kA
Baugröße Size	00
Betriebsklasse Utilization category	gG
Grieffläche Gripping lug	spannungsführend energized
Anzeigevorrichtung Indicating device	Kombi-Anzeiger (vorne und oben) combined indicator (in front and at the top)
Weitere Angaben siehe Anlage Further information see appendix	100 vom 2018-07-27 100 dated 2018-07-27

Fortsetzung siehe Blatt 3 /
continued on page 3

VDE Prüf- und Zertifizierungsinstitut GmbH * Testing and Certification Institute

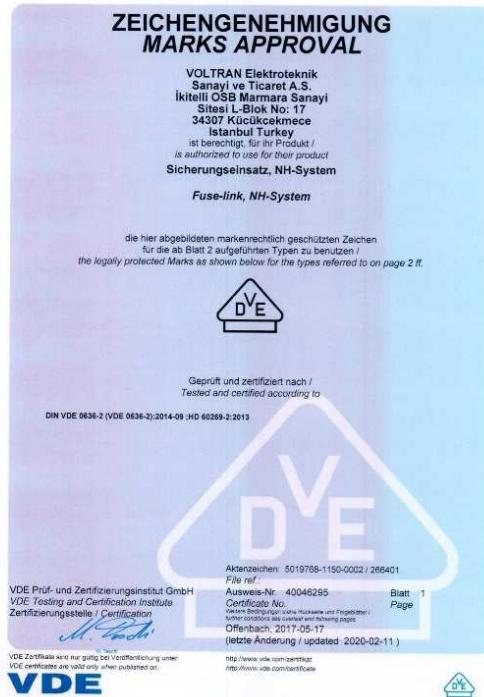
Melonstrasse 28 D-63309 Offenbach

Phone +49 (0) 69 83 06-0
Telefax +49 (0) 69 83 06-555



SIZE 1 HRC FUSE LINKS VDE CERTIFICATES

VDE Prüf- und Zertifizierungsinstitut



VDE Prüf- und Zertifizierungsinstitut Zeichengenehmigung

Name und Sitz des Genehmigungs-Inhabers / Name and registered seal of the Certificate holder
VOLTRAN Elektrotechnik Sanayi ve Ticaret A.Ş., İkitelli OSB Marmara Sanayi, Sitesi L-Blok No: 17, 34307 KÜÇÜKÇEKMECE, İSTANBUL, TURKEY

Ausweis-Nr. / File ref.: 5019768-1150-0002 / 266401 / TL3 / KOH Letzte Änderung / updated: 2020-02-11 Datum / Date: 2017-05-17

Dieses Blatt gilt nur in Verbindung mit Blatt 1 des Zeichengenehmigungsausweises Nr. 40046295.
This supplement is only valid in conjunction with page 1 of the Certificate No. 40046295.

Sicherungseinsatz, NH-System

Fuse-link, NH-System

Type(s) / Type(s):

23.3xxx.80

Bemessungsspannung Rated voltage	500 V a.c.
Bemessungsstrom Rated current	100A; 125 A; 160 A; 200 A; 250 A
BaugröÙe Size	NH1
Bemessungsausschaltvermögen Rated breaking capacity	120 kA
Grißfläche Gripping lug	spannungsführend energized
Anzeigevorrichtung Indicating device	kombiniert (oben und vorn) combined (top and front)

Fortsetzung siehe Blatt 3 /
continued on page 3

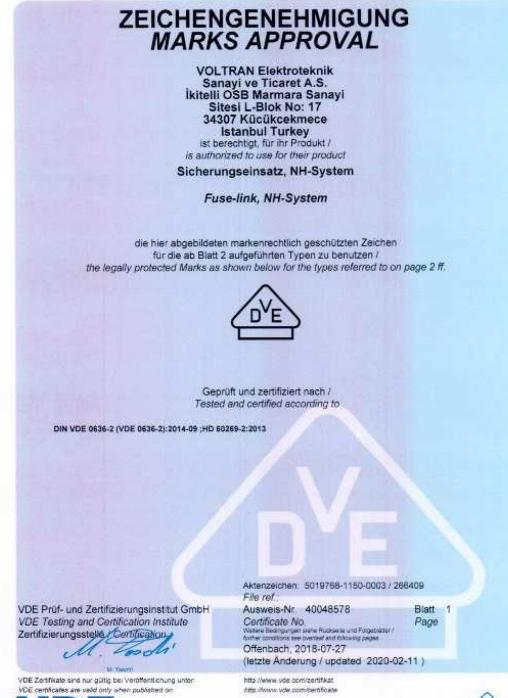
Marienhöher Str. 04369 Offenbach

VDE Prüf- und Zertifizierungsinstitut GmbH • Testing and Certification Institute

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SIZE 2 HRC FUSE LINKS VDE CERTIFICATES

VDE Prüf- und Zertifizierungsinstitut



**VDE Prüf- und Zertifizierungsinstitut
Zeichengenehmigung**

Name und Sitz des Genehmigungs-Inhabers / Name and registered seat of the Certificate holder
VOLTRAN Elektrotechnik Sanayi ve Ticaret A.S., İkitelli OSB Marmara Sanayi, Sitesi L-Blok No: 17, 34307
KÜÇÜKÇEKMECE, İstanbul, TURKEY

Akkazischen / File ref.:
5019788-1150-0003 / 268409 / TL3 / KOH
letzte Änderung / updated: 2020-02-11 Datum / Date: 2018-07-27

Dieses Blatt gilt nur in Verbindung mit Blatt 1 des Zeichengenehmigungsausweises Nr. 40048578.
This supplement is only valid in conjunction with page 1 of the Certificate No. 40048578.

Sicherungseinsatz, NH-System

Fuse-link, NH-System

Type(n) / Type(s)

23.4xxx.80

Bemessungsspannung Rated voltage	AC 500 V
Bemessungsstrom Rated current	200 A; 250 A; 315 A; 400 A
Bemessungsfrequenz Rated frequency	45 bis / to 62 Hz
Bemessungsausschaltvermögen Rated breaking capacity	120 kA
Baugröße Size	2
Betriebsklasse Utilization category	gG
Griphäse Gripping lug	spannungsführend energized
Anzeigevorrichtung Indicating device	Kombi-Anzeiger (vorne und oben) combined indicator (in front and at the top)

Fortsetzung siehe Blatt 3 /
continued on page 3

VDE Prüf- und Zertifizierungsinstitut GmbH * Testing and Certification Institute

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ISO 9001 QUALITY MANAGEMENT SYSTEM CERTIFICATE



CERTIFICATE

No. 902089



This is to certify the Quality Management System of

VOLTRAN ELEKTROTEKNIK SANAYI VE TICARET A.Ş.
IKİTELLİ OSB MARMARA SANAYİ SİTESİ L-BLOK NO: 17
KUCUKCEKMECE
34307 İSTANBUL
TURKEY

has been assessed and found to be in compliance with the Standard

ISO 9001:2015

applicable to

**DESIGN AND PRODUCTION OF KALEPORSELEN AND
VOLTRANO BRANDED HRC-LV FUSE LINKS, HRC-LV FUSE
BASES, HRC-LV FUSE SWITCH DISCONNECTORS,
LAMPHOLDERS LIGHTING FITTINGS, MINIATURE
CIRCUIT BREAKERS, RESIDUAL CURRENT CIRCUIT
BREAKERS AND DISTRIBUTION BOARDS.**

The certificate has been issued under No. **902089 (version 5)** for
the registration period from 09 September 2019 to 18 January 2021.
The first certificate date of issue is 19 January 2015.

Approved by

Printed by



S 3137

validity code **2105DF45-96D**Check the validity of this certificate using this code at www.ll-c.info

LL-C (Certification) Czech Republic a.s. | Pobřežní 620/3, 186 00 Praha 8



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