Industrial blade-type cartridge fuses aM type

Catalogue number(s : 0 160 25/30/35/40/45/50 ; 0 165 35/40/45/50/55 0 166 35/40/45/50/55 ; 0 170 50/55/60/65 ; 0 171 50/55/60/65 0 175 60/65/70/75 ; 0 176 60/65/70/75 ; 0 180 75/80 ; 0 184 80/85/90 ; 0 163 04 ; 0 168 04 ; 0 173 04 ; 0 178 04 0 181 04 ; 0 185 04

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1. DESCRIPTION AND USAGE

Protection of conductors of electrical circuits in the event of overload or short circuit.
The 120,000 A breaking capacity enables complete protection in the most critical situations.
It is mandatory to associate them with a low-overload thermal protection device.
Can be used to protect DC circuits supplied with a voltage of 48 V maximum.
Ceramic housing

2. RANGE AND CHARACTERISTICS

■ 2.1 Rated currents

Current (A)	Size 000	Size 00	Size 0	
	With indicator	With indicator	With indicator	With striker
40	0 160 25	-	-	-
50	-	0 16 030	-	-
63	-	0 160 35	0 165 35	0 166 35
80	-	0 160 40	0 165 40	0 166 40
100	-	0 160 45	0 165 45	0 166 45
125	-	0 160 50	0 165 50	0 166 50
160	-	-	0 165 55	0 166 55

Current (A)	Size 1		Size 2	
	With indicator	With striker	With indicator	With striker
125	0 170 50	0 171 50	-	-
160	0 170 55	0 171 55	-	-
200	0 170 60	0 171 60	0 175 60	0 176 60
250	0 170 65	0 171 65	0 175 65	0 176 65
315	-	-	0 175 70	0 176 70
400	-	-	0 175 75	0 176 75
500	-	-	-	-

Current (A)	Size 3	Size 4
	With striker	With striker
500	0 180 75	
630	0 180 80	0 184 80
800		0 184 85
1000		0 184 90

■ 2.2 Rated voltage

Up to 500 VAC and 48 VDC

■ 2.3 Thermal dissipation of cartridge fuses

Dissipation in watts of heat at rated current

Cat. No.	Consumption (W)	Cat. No.	Consumption (W)
0 160 25	1.8	**0 171 50**	9.9
0 160 30	2.3	**0 171 55**	12.7
0 160 35	2.9	**0 171 60**	16.4
0 160 40	3.6	**0 171 65**	21.5
0 160 45	5.2	**0 175 60**	11.3
0 160 50	6.4	**0 175 65**	16.8
0 165 35	3.4	**0 175 70**	23.1
0 165 40	4.9	**0 175 75**	29.7
0 165 45	6	**0 176 60**	16.4
0 165 50	7.9	**0 176 65**	21.5
0 165 55	10.5	**0 176 70**	29
0 166 35	4.6	**0 176 75**	34
0 166 40	6	**0 180 75**	45
0 166 45	7.5	**0 180 80**	60
0 166 50	9.5	**0 184 80**	50
0 166 55	12	**0 184 85**	65
0 170 50	7.5	**0 184 90**	80
0 170 55	10.4	-	-
0 170 60	14.2	-	-
0 170 65	17.5	-	-

2. RANGE AND CHARACTERISTICS (suite)

■ 2.4 How to choose a protection system

- Overload : use the performance data for the various protection devices. The curves must not cross one another in the same circuit.
- Short-circuit : use the integral $(\int I^2dt)$ of the thermal stresses. The total integral for the downstream protection device must be lower than the pre-arc integral for the upstream device.

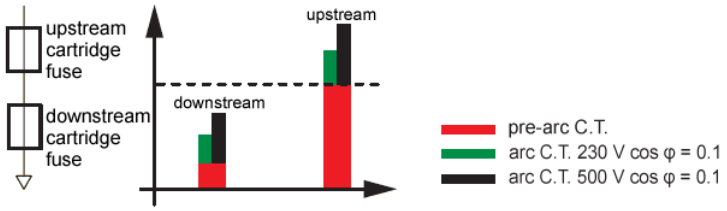
■ 2.5 Selectivity check

Selectivity between cartridge fuses

Upstream gG cartridge fuse rating (A)	Downstream Maximum rating (A) as a function of the usage category and the voltage to obtain selectivity	
	aM	gG
2	-	-
4	1	1
6	2	2
8	2	2
10	2	4
12	2	4
16	4	6
20	6	10
25	8	16
32	10	20
35	12	20
40	12	25
50	16	32
63	20	40
80	25	50
100	36	63
125	40	80
160	63	100
200	80	125
250	125	160
315	125	200
400	160	250
500	200	315
630	250	400
800	315	500
1000	400	630
1250	500	800

Upstream aM cartridge fuse rating (A)	Downstream Maximum rating (A) as a function of the usage category and the voltage to obtain selectivity	
	aM	gG
2	1	1
4	2	4
6	2	6
8	4	8
10	6	10
12	6	12
16	10	16
20	12	20
25	12	25
32	20	32
36	20	32
40	25	32
50	25	40
63	40	50
80	50	63
100	63	80
125	80	100
160	100	125
200	125	160
250	160	160
315	200	200
400	250	250
500	315	315
630	400	400
800	500	500
1000	630	500
1250	800	630

■ 2.6 Example of good protection



■ 2.7 Protection of motors

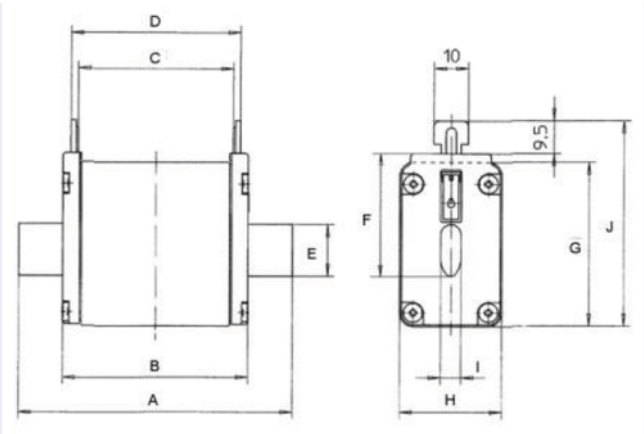
Motors 230 V 3-phase			Motors 400 V 3-phase			Motors 500 V 3-phase			Cartridge fuses Size 00 ratings		Size 0 ratings		Size 1 ratings		Size 2 ratings		Size 3 ratings		Size 4 ratings	
kW	ch	In A	kW	ch	In A	kW	ch	In A	gG	aM	gG	aM	gG	aM	gG	aM	gG	aM	gG	aM
			0,37	0,5	1,03	**0,75**	1	1,5												
0,37	0,5	1,8	**0,75**	1	2	**1,5**	2	2,6												
0,75	1	3,5	**1,5**	2	3,5	**2,2**	3	3,8												
1,1	1,5	4,4	**2,2**	3	5	**3,7**	5	5,9												
1,8	2,5	7	**3**	4	6,6	**4**	5,5	6,5												
2,2	3	8,7	**4**	5,5	8,5	**5,5**	7,5	9												
3	4	11,5	**5,5**	7,5	11,5	**7,5**	10	12	25											
4	5,5	14,3	**7,5**	10	15,5	**11**	15	18,4	32	**20**										
5,5	7,5	20	**11**	15	22	**15**	20	23	50	**25**										
7,5	10	27	**15**	20	30	**18,5**	25	28,5	50	**32**										
10	13,5	35	**18,5**	25	37	**25**	34	39,4	63	**40**	63									
11	15	39	**22**	30	44	**30**	40	45	80	**50**	80									
15	20	52	**25**	34	51	**40**	54	60	100	**63**	100	**63**								
18,5	25	64	**30**	40	60	**45**	60	65	125	**80**	125	**80**	125							
22	30	75	**37**	50	72	**51**	70	75	125	**80**	125	**80**	125							
25	35	85	**45**	60	85	**63**	109	89	160	**100**	160	**100**	160							
30	40	103	**55**	75	105	**80**	110	112		**125**	200	**125**	200	**125**	200					
45	60	147	**75**	100	138	**110**	150	156				**160**	250	**160**	250					
55	75	182	**90**	125	170	**132**	180	187						**200**	315	**200**				
75	100	239	**110**	150	205	**160**	220	220						**250**	400	**250**				
80	160	260	**132**	180	245	**220**	300	310								**315**				
90	125	295	**160**	218	300											**315**				
110	150	356	**200**	270	370	**250**	340	360								**400**				
132	180	425	**250**	340	475	**335**	450	472									**500**			
160	218	520	**315**	430	584	**450**	610	608									**630**			
220	300	710	**400**	550	750	**500**	680	680												**800**

(1) 400 V maximum

2. RANGE AND CHARACTERISTICS (suite)

■ 2.8 Dimensions

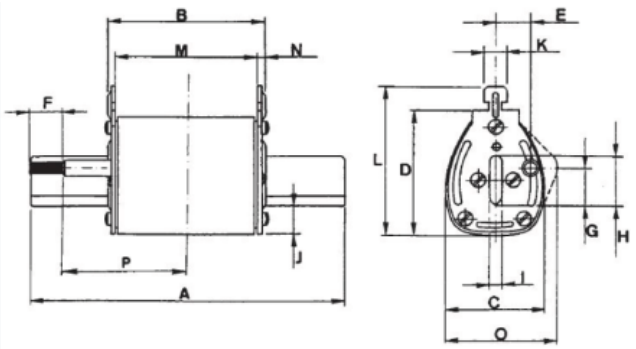
2.8.1 Cartridge fuses with indicator (without striker)



Size	A	B	C	D	E (min)
000	78.5 (± 1,5)	54 (0;-6)	45 (± 1,5)	49 (± 1,5)	15
00	78.5 (± 1,5)	54 (0;-6)	45 (± 1,5)	49 (± 1,5)	15
0	125 (± 2,5)	68 (0;-8)	62 (+3;-1.5)	68 (+1.5;-3)	15
1	135 (± 2,5)	75 (0;-10)	62 (± 2.5)	68 (± 2.5)	20
2	150 (± 2,5)	75 (0;-10)	62 (± 2.5)	68 (± 2.5)	25
3	150 (± 2,5)	75 (0;-10)	62 (± 2.5)	68 (± 2.5)	32

Size	F	G (max)	H (max)	I	J (max)
000	35 (± 0.8)	41	21	6 (± 0.2)	53
00	35 (± 0.8)	48	30	6 (± 0.2)	60
0	35 (± 0.8)	48	40	6 (± 0.2)	61
1	40 (± 0.8)	53	52	6 (± 0.2)	66
2	48 (± 0.8)	61	60	6 (± 0.2)	74
3	60 (± 0.8)	76	75	6 (± 0.2)	89

2.8.2 Cartridge fuses with striker



Size	A	B	C (max)	D (max)	E
0	125 (± 2,5)	68 (+1.5;-3)	45	48	14.5
1	135 (± 2,5)	68 (± 2.5)	52	53	16
2	150 (± 2,5)	68 (± 2.5)	60	61	19
3	150 (± 2,5)	68 (± 2.5)	75	76	24
4	200 (± 3)	68 (± 2.5)	105	110	27.5

Size	F	G	H	I (± 2)	J (max)	K (0;-0.3)	L (max)
0	15,5	14	15	6	14	10	61
1	15,5	14.5	20	6	14	10	66
2	15,5	14.5	26	6	15	10	74
3	15,5	14.5	32	6	16	10	89
4	16.5	14.5	49	8	20	10	123

Size	M	N	O	P
0	62 (+3;-1.5)	2 (+1.5;-0.5)	41,5	47
1	62 (± 2.5)	2.5 (+1.5;-0.5)	45	52
2	62 (± 2.5)	2.5 (+1.5;-0.5)	NA	60
3	62 (± 2.5)	2.5 (+1.5;-0.5)	NA	60
4	62 (± 2.5)	2.5 (+1.5;-0.5)	NA	72

3. COMPLIANCE

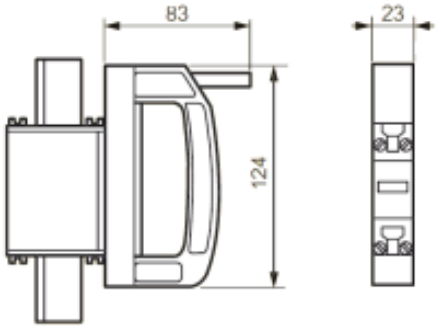
Comply with IEC 60269-1, 2 and 2-1 and VDE 0636-21

4. ACCESSORIES

■ 4.1 Bases

Size	Current (A)	1 pole		3 poles (bare)
		Bare	With miniswitch	
000/00	100A 160A	0 199 42 0 199 44	-	0 199 43 0 199 45
0	160	0 199 46	0 199 47	To be made up with 1 Pole + accessories
1	250	0 199 48	0 199 49	
2	400	0 199 50	0 199 51	
3	630		0 199 52	
4	1250		0 199 53	

■ 4.2 Handle cat. no.: 0 199 02

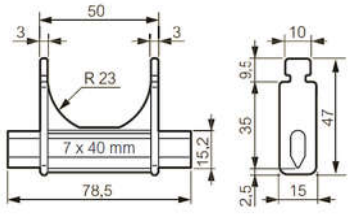


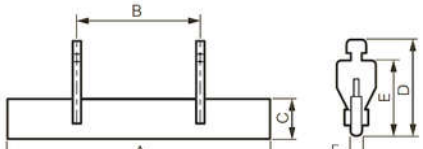
■ 4.3 Neutrals

- Rated current

Cat. No.	0 163 04	0 168 04	0 173 04	0 178 04	0 181 04	0 185 04
Size	00	0	1	2	3	4
In (A)	125	160	250	400	630	1000

- Size 00

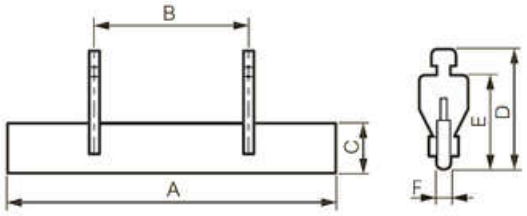




4. ACCESSORIES (suite)

- Size 0 à 4

Cat. No.	0 168 04	0 173 04	0 178 04	0 181 04	0 185 04
Size	0	1	2	3	4
A	125	135	150	150	200
B	65	65	65	65	65
C	15	20	26	38	50
D	45	50	58	66,5	78
E	35	40	48	56,5	68
F	6	6	6	6	6



■ 4.4 Kits of insulating partition and joining

Base	Cat. No.
000/00	0 199 30
0	0 199 31
1/2	0 199 32
3	0 199 33
4	0 199 19

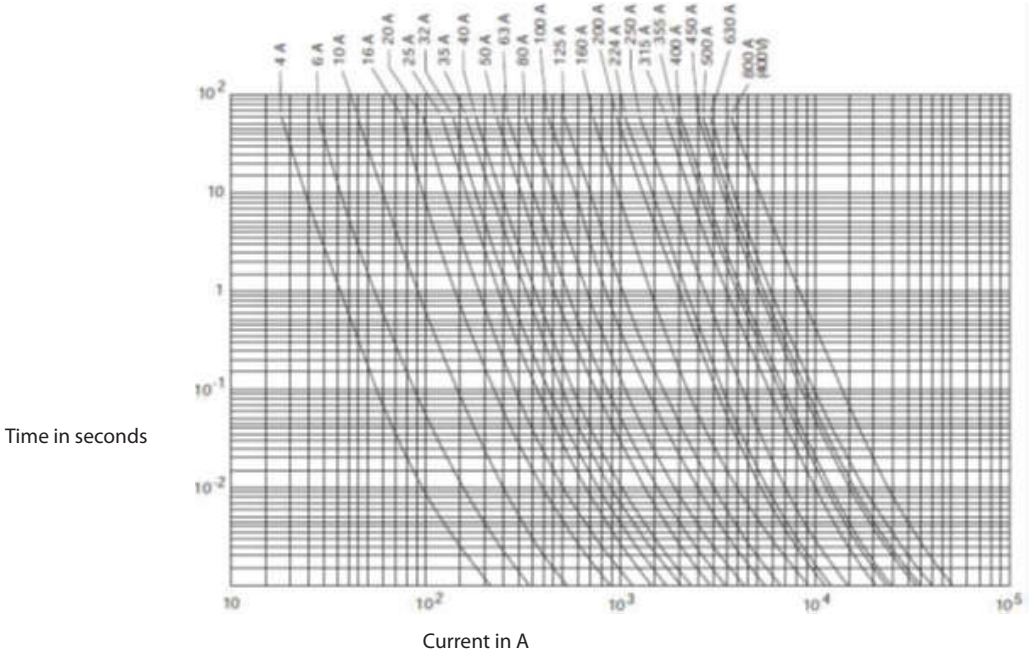
■ 4.5 Kits of protection

Base	Cat. No. 1P	Cat. No. 3P
000/00	0 199 35	0 199 39
0	0 199 36	-
1	0 199 37	-
2	0 199 38	-

5. CURVES

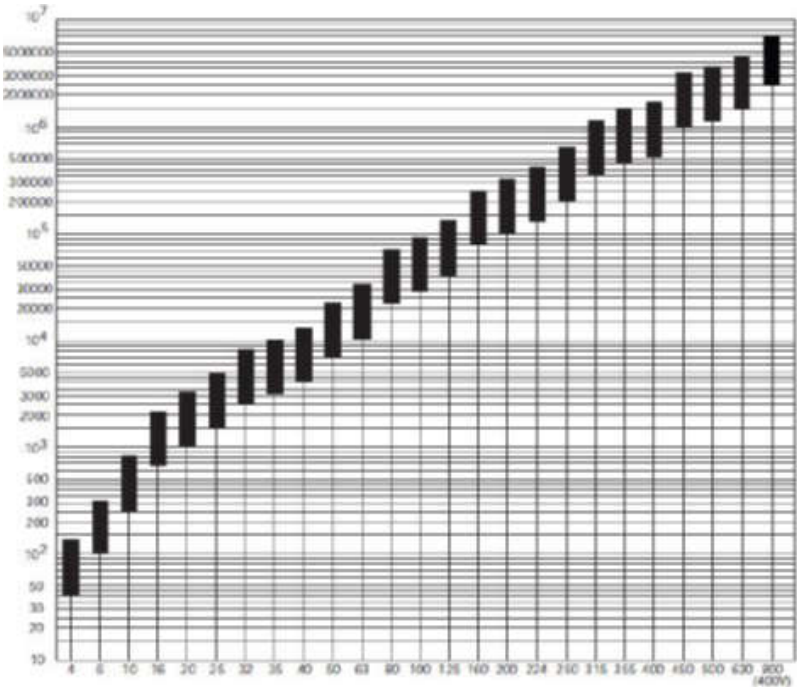
■ 5.1 Cartridge fuses with indicator (without striker)

Fusion curve

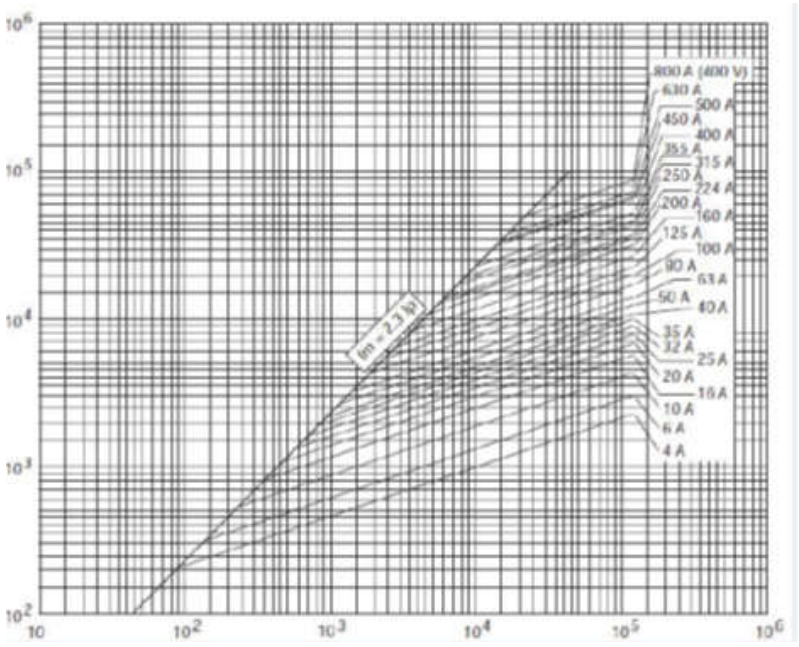


5. CURVES (suite)

Thermal stresses



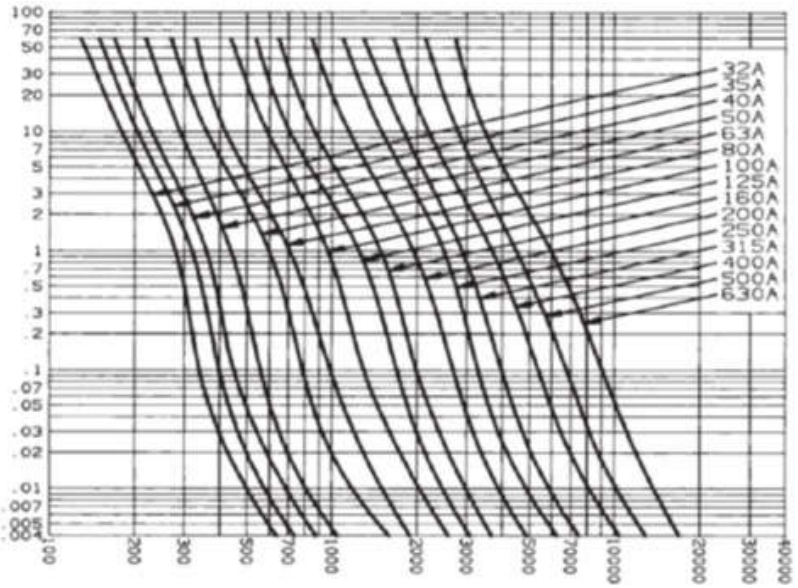
Limitation curve



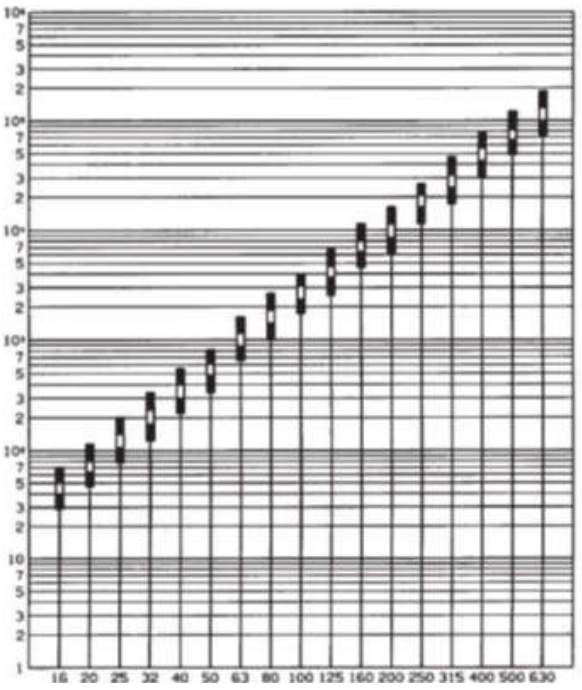
5. CURVES (suite)

■ 5.2 Cartridge fuses with striker

Fusion curve



Thermal stresses



5. CURVES (suite)

Limitation curve

