

ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION R 1548

PRECISION FUSE-LINKS FOR AIRCRAFT
(TYPE A)

1st EDITION

May 1971

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BRIEF HISTORY

The ISO Recommendation R 1548, *Precision fuse-links for aircraft (Type A)*, was drawn up by Technical Committee ISO/TC 20, *Aircraft and space vehicles*, the Secretariat of which is held by the British Standards Institution (BSI).

Work on this question led to the adoption of Draft ISO Recommendation No. 1548, which was circulated to all the ISO Member Bodies for enquiry in June 1968. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies :

Australia	Italy	Thailand
Belgium	New Zealand	Turkey
Canada	Peru	U.A.R.
Czechoslovakia	South Africa, Rep. of	United Kingdom
Greece	Spain	
Israel	Switzerland	

The following Member Bodies opposed the approval of the Draft :

Germany
Netherlands
U.S.S.R.

This Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided to accept it as an ISO RECOMMENDATION.

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PRECISION FUSE-LINKS FOR AIRCRAFT

(TYPE A)

1. SCOPE

This ISO Recommendation gives the dimensions and performance requirements for a range of precision fuse-links suitable for use in aircraft electrical systems having voltage and frequency characteristics conforming to ISO Recommendation R 222*, *Voltages for aircraft electrical systems*, at any ambient temperature from -65°C to $+85^{\circ}\text{C}$, and all altitudes from 0 to 24 400 m.

2. TERMINOLOGY

The terminology used in this ISO Recommendation is in conformity with the International Electrotechnical Commission (IEC) Publication 269, *Low voltage fuses with high breaking capacity for industrial and similar purposes – Part 1 : General requirements*, as far as practicable.

3. GENERAL REQUIREMENTS

The fuse-links should comply with the requirements of ISO Recommendation R 1547, *Precision fuse-links for aircraft – General requirements*.

4. DIMENSIONS

The dimensions of the fuse-links should comply with Table 1 for the ferrule type or Table 2 for the tag type.

5. CURRENT, VOLTAGE AND BREAKING-CAPACITY RATINGS

The current ratings, the voltage ratings and breaking-capacity ratings of the fuse-links should be in accordance with those listed in Table 3.

6. TIME/CURRENT CHARACTERISTICS

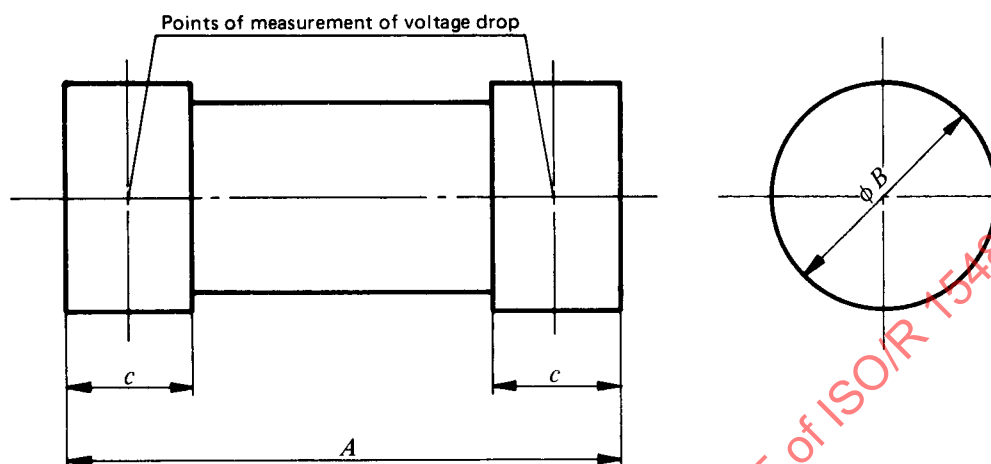
The pre-arcing time/current characteristics of the fuse-links should be within the appropriate envelope curves shown in the Annex.

7. TESTS

The fuse-links should be tested in accordance with ISO Recommendation R 1547.

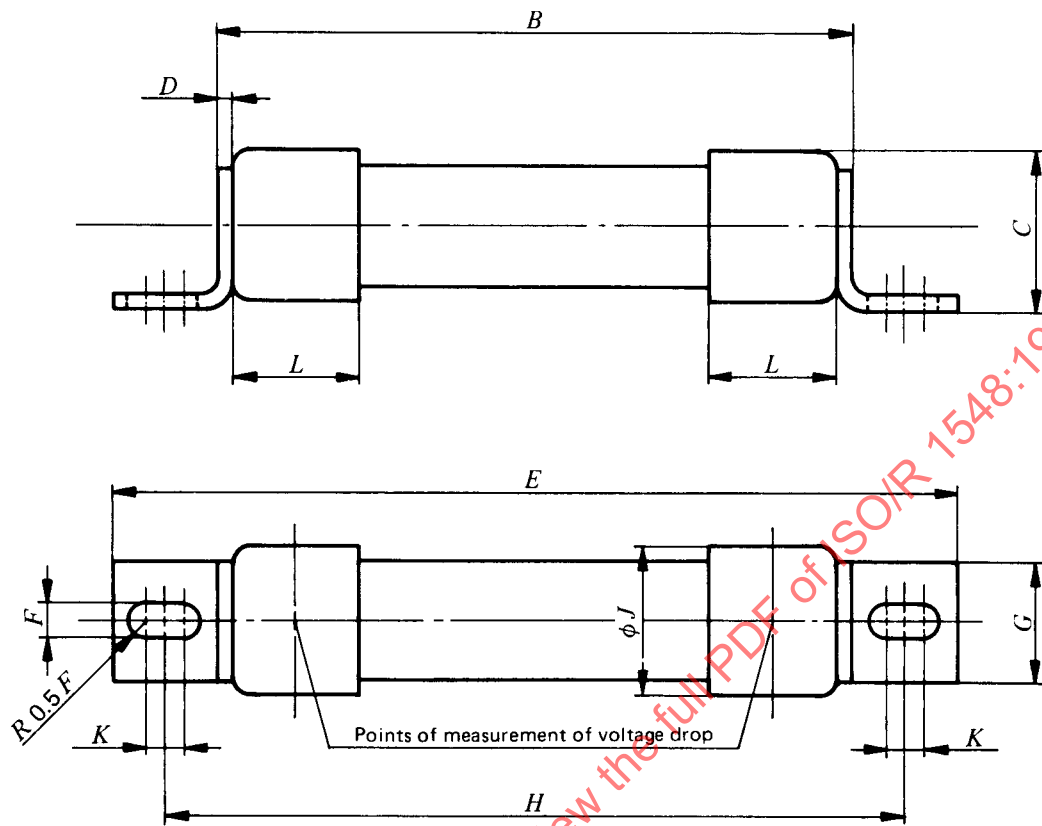
* See also ISO Recommendation R 1540, *Characteristics of aircraft electrical systems*. (In course of preparation.)

TABLE 1 — Dimensions of ferrule-type fuse-links



Body size		A		B		C	
		max.	min.	max.	min.	max.	min.
00	mm	16.7	15.5	4.9	4.6	4.9	3.2
	in	0.656	0.609	0.192	0.182	0.192	0.125
0	mm	32.5	31.2	6.5	6.2	6.4	4.7
	in	1.281	1.234	0.255	0.245	0.250	0.187
1	mm	34.3	32.8	12.0	11.8	7.9	6.4
	in	1.354	1.291	0.474	0.463	0.312	0.250
2	mm	38.1	36.8	16.8	16.6	9.5	7.9
	in	1.509	1.454	0.663	0.656	0.374	0.312
3	mm	48.5	47.0	33.3	33.0	12.7	11.1
	in	1.919	1.858	1.319	1.306	0.499	0.437

TABLE 2 — Dimensions of tag-type fuse-links



Body size		B		C		D	E		F	
		max.	min.	max.	min.	nom.	max.	min.	max.	min.
0	mm	34.0	32.8	7.3	7.0	0.8	53.1	50.0	3.9	3.7
	in	1.349	1.294	0.289	0.275	0.032	2.097	1.974	0.152	0.147
1	mm	34.3	33.0	12.7	12.1	0.8	56.6	54.9	5.2	4.9
	in	1.354	1.300	0.500	0.475	0.032	2.234	2.160	0.204	0.194
2	mm	37.8	36.8	18.3	17.9	1.2	71.4	69.9	6.9	6.5
	in	1.490	1.450	0.720	0.704	0.048	2.818	2.754	0.270	0.256
3	mm	48.0	47.0	35.1	34.5	1.6	89.4	87.9	8.9	8.1
	in	1.890	1.850	1.382	1.360	0.063	3.522	3.462	0.334	0.318

Body size		G		H	J		K		L
		max.	min.	nom.	max.	min.	max.	min.	max.
0	mm	6.5	6.2	43.4	6.5	6.2	0.81	0.71	0.64
	in	0.255	0.245	1.71	0.255	0.245	0.032	0.028	0.25
1	mm	10.3	9.5	44.5	12.0	11.8	1.40	0.51	7.9
	in	0.406	0.375	1.75	0.474	0.463	0.055	0.020	0.312
2	mm	16.0	15.2	55.4	16.8	16.7	1.40	0.51	9.5
	in	0.630	0.600	2.187	0.663	0.656	0.055	0.020	0.375
3	mm	26.2	25.4	69.9	33.3	33.0	1.40	0.51	12.7
	in	1.030	1.000	2.75	1.319	1.306	0.055	0.020	0.5

1	2	3	4	5	6	7	8	9	10	11	12	2
Body size	Rated current (- 65 °C to + 35 °C ambient temperature*)	Type of end cap	Voltage rating and breaking capacity				Voltage drop**		Duration of test for minimum fusing current	Copper core cable to be used during tests (in accordance with ISO Recommendations R 469 and R 474)		Rated current (- 65 °C to + 35 °C ambient temperature)
			Voltage	Prospective current of circuit	Power factor (lagging) of test circuit (max.)	Time constant of test circuit (min.)	Upper limit of mean value	Percentage tolerance on actual mean value		Nominal cross- sectional area of conductor	Cable size number	
	A		V	A		s	mV	± %	h	mm ²		A
00	0.025	Ferrule only	250 a.c. 230 d.c.	4 000 4 000	0.4 —	— 0.0040	540**	30***	1.0	0.347	22	0.025
	0.05						4 300	20				
	0.1						3 000	20				
	0.25						1 850	20				
	0.5						2 100	15				
	1.0						385	15				
0	2.0	Ferrule or tag Tag only	250 a.c. 230 d.c. 440 a.c. 230 d.c.	4 000 4 000 33 000 33 000	0.4 — 0.3 —	— 0.0040 0.0150 —	275	15	1.5	0.347	22	2.0
	0.06						3 100	20				
	0.1						3 100	20				
	0.15						3 800	20				
	0.25						3 960	15				
	0.5						2 500	12.5				
	1.0						2 700	10				
	2						370	10				
	3						340	7.5				
	5						300	7.5				
	7						190	7.5				
	10						170	7.5				
	15	185	7.5									
	20	250	7.5									

TABLE 3 — Rating of fuse links (continued)

1	2	3	4	5	6	7	8	9	10	11	12	2												
1	0.5	Ferrule or tag Tag only	440 a.c. 230 d.c.	33 000 33 000	0.3 —	— 0.0150	3 420 2 350 450 550 615 345 190 155 175 145	12.5	{ }	{ }	{ }	0.5												
	1.0							10				22	1.0											
	2							10						2										
	3							7.5						3										
	5							7.5						5										
	7							7.5						7										
	10							7.5						10										
	15							7.5						15										
	20							7.5						20										
	30							7.5						30										
2	10	Ferrule or tag Tag only	440 a.c. 230 d.c.	33 000 33 000	0.3 —	— 0.0150	175 155 170 125 150 150 145	7.5	{ }	{ }	{ }	10												
	15							7.5						15										
	20							7.5						20										
	30							7.5						30										
	40							7.5						40										
	50							7.5						50										
	60							7.5						60										
	3							40				Ferrule or tag Tag only	440 a.c. 230 d.c.	33 000 33 000	0.3 —	— 0.0150	150 140 115 104 98 73 81****	7.5	{ }	{ }	{ }	40		
								60										7.5						60
								80										7.5						80
100		7.5			100																			
125		7.5			125																			
150		7.5			150																			
200		7.5****			200																			

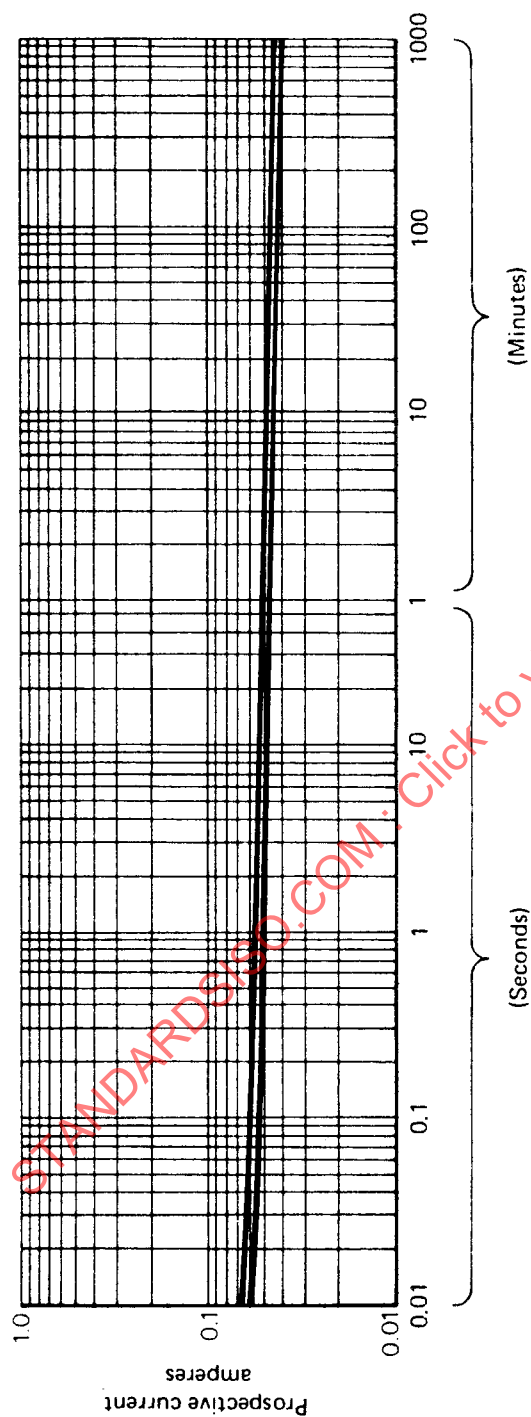
* See ISO Recommendation R 1547, Precision fuse-links for aircraft — General requirements.

** As determined by the method described in the Annex to ISO Recommendation R 1547, for fuse-links of ratings of 35 A and above, the voltage drop values are so low as to have no significant effect on the impedance of a circuit.

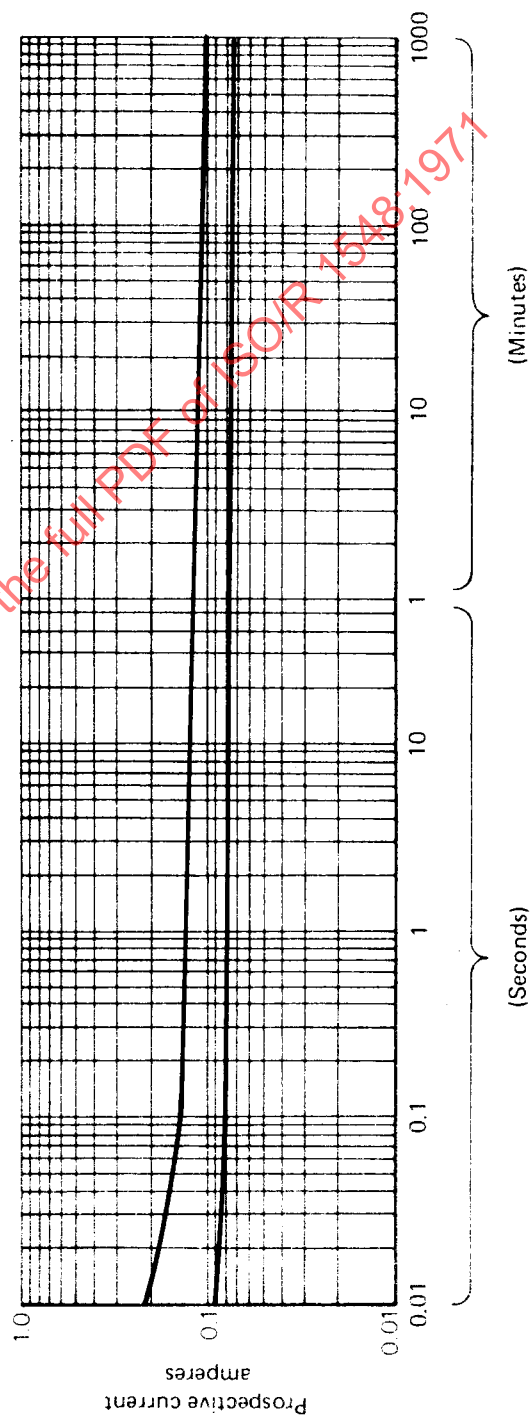
*** These values have been obtained from one source only.

ANNEX

ENVELOPE CURVES OF TIME/CURRENT CHARACTERISTICS OF FUSE-LINKS



Pre-arcing time
FIG. 1 - Size 00, 0.025 A



Pre-arcing time
FIG. 2 - Size 00, 0.05 A

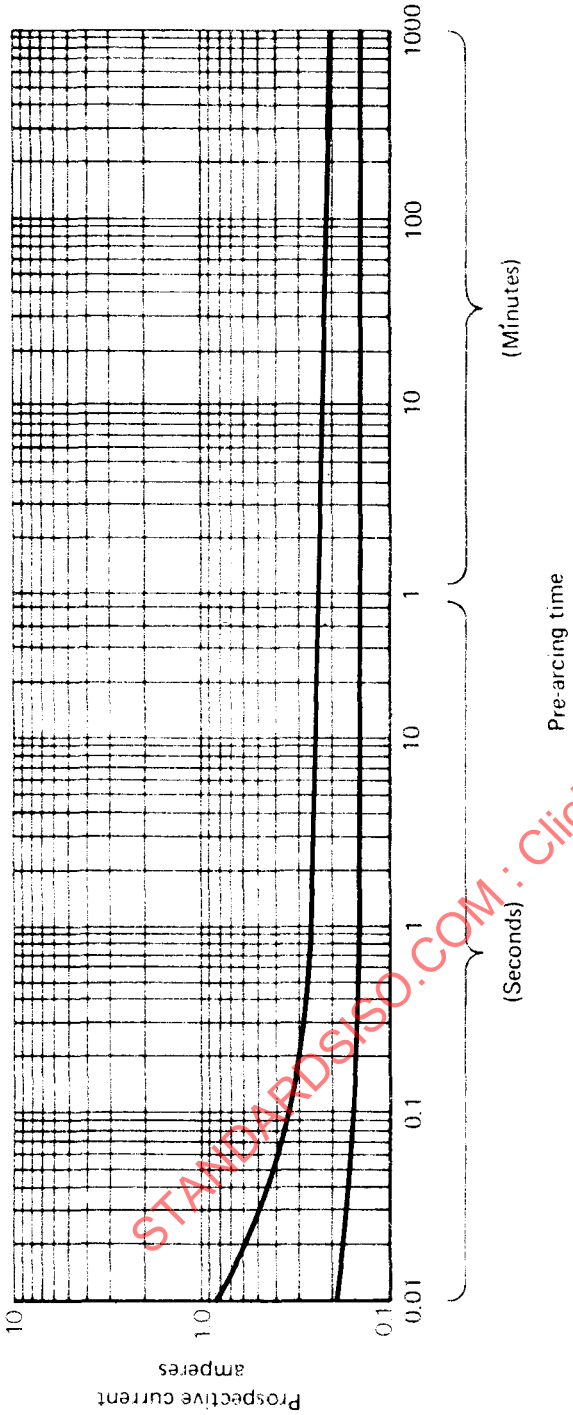


FIG. 3 - Size 00, 0.1 A

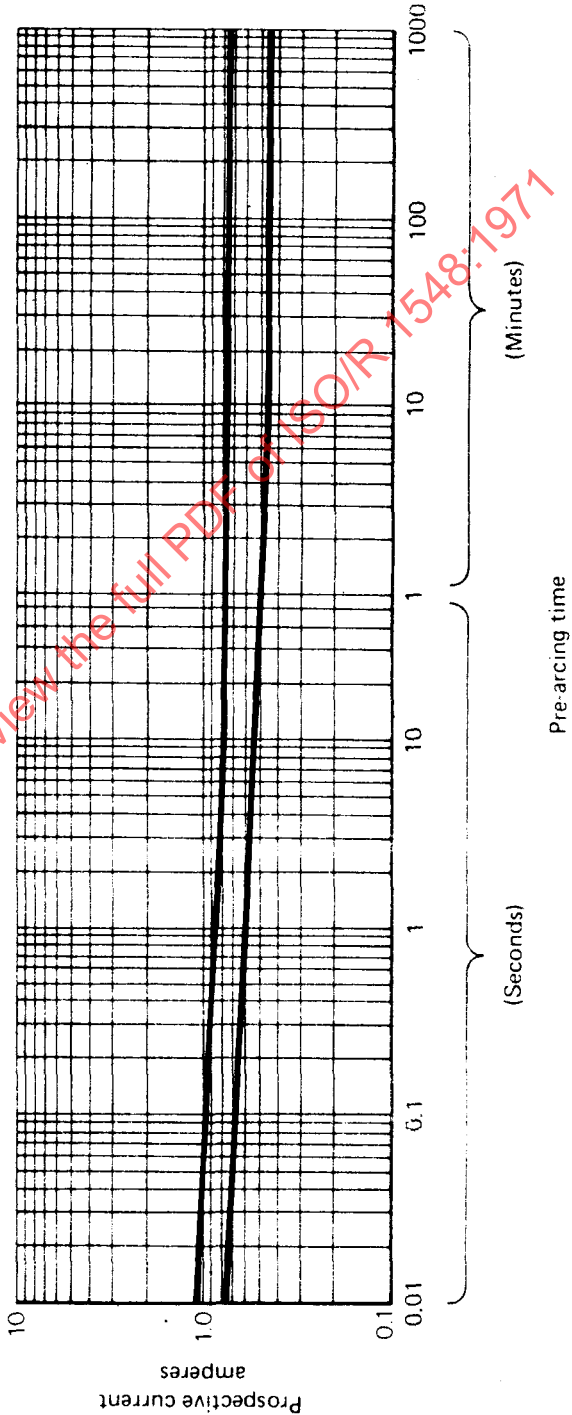


FIG. 4 - Size 00, 0.25 A

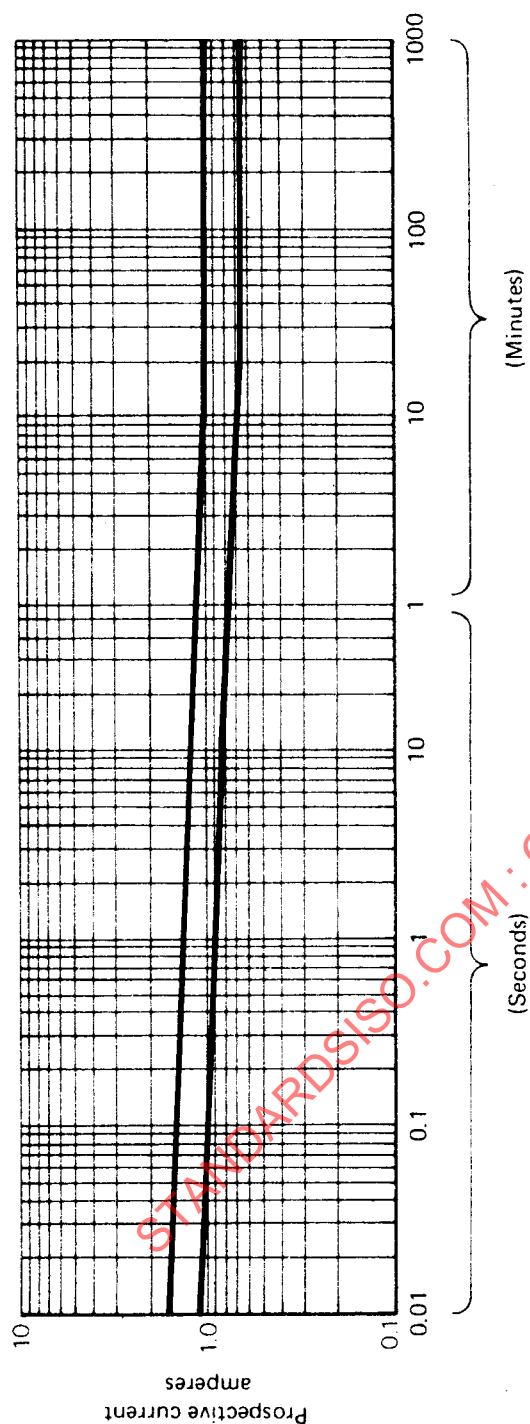


FIG. 5 - Size 00, 0.5 A

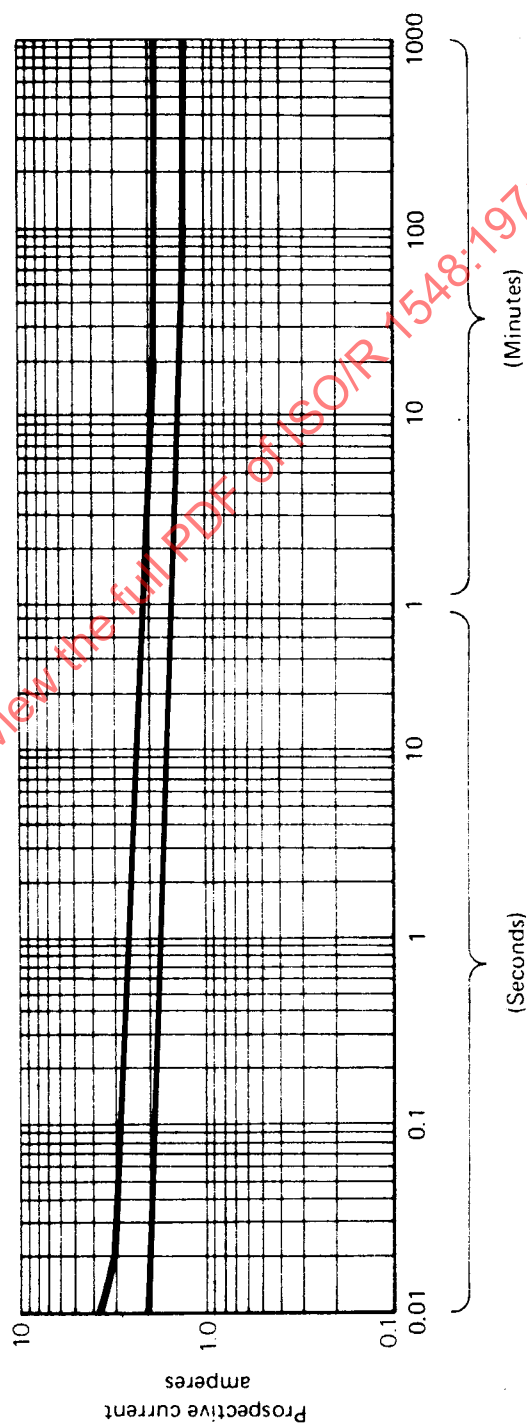
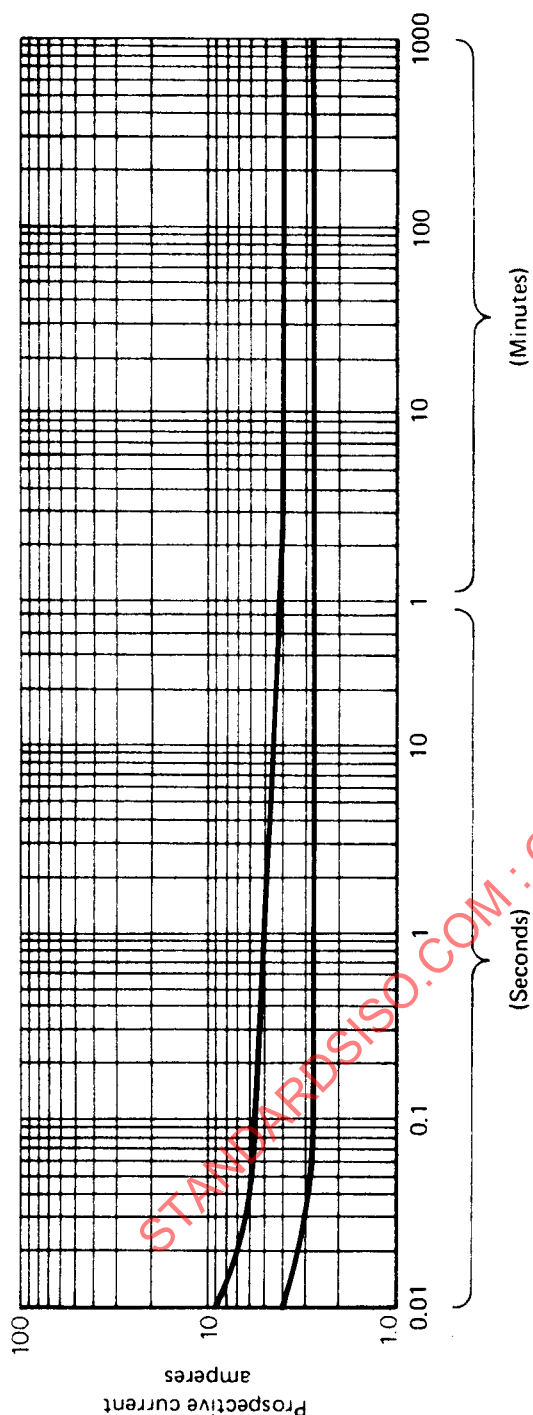
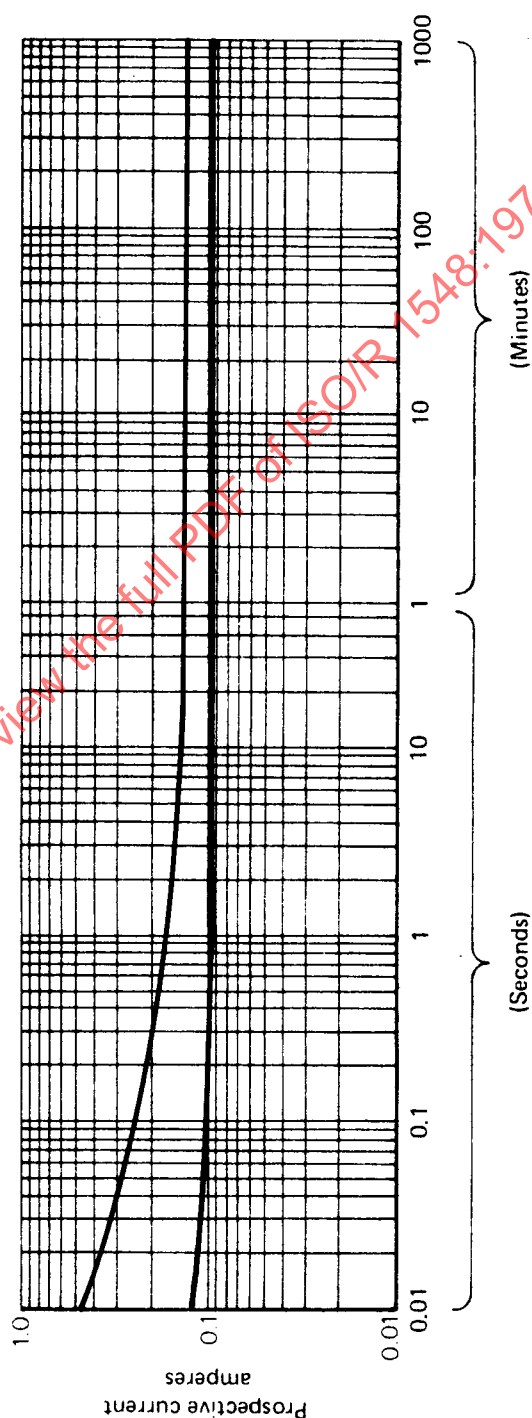


FIG. 6 - Size 00, 1 A



Pre-arcing time

FIG. 7 - Size 00, 2 A



Pre-arcing time

FIG. 8 - Size 0, 0.06 A

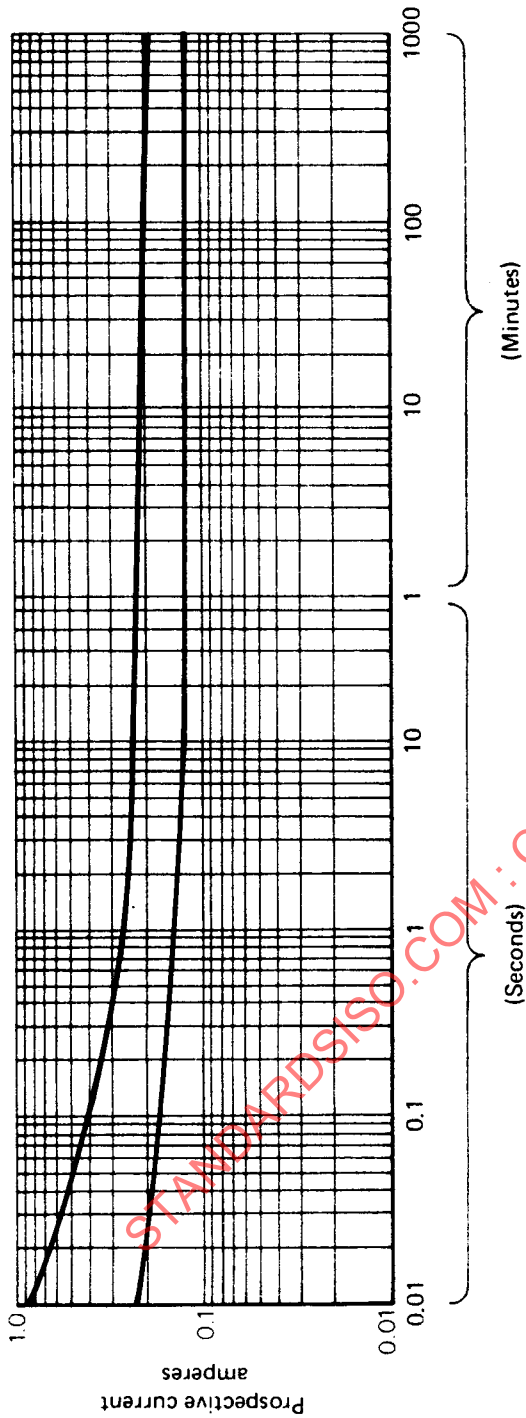


FIG. 9 - Size 0, 0.1 A

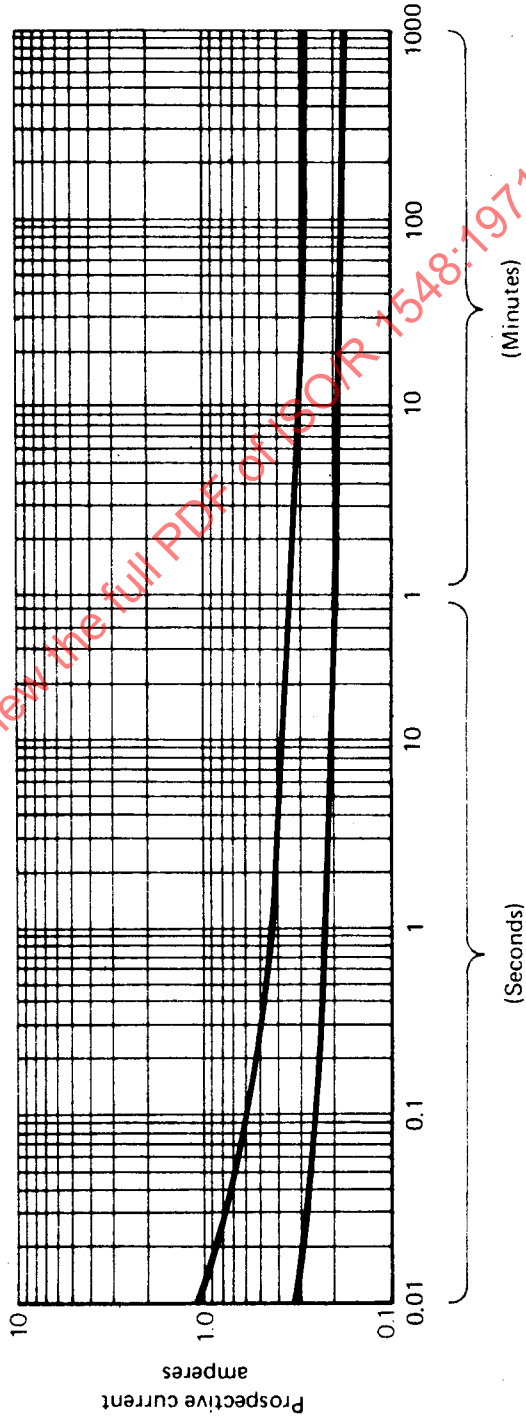


FIG. 10 - Size 0, 0.15 A

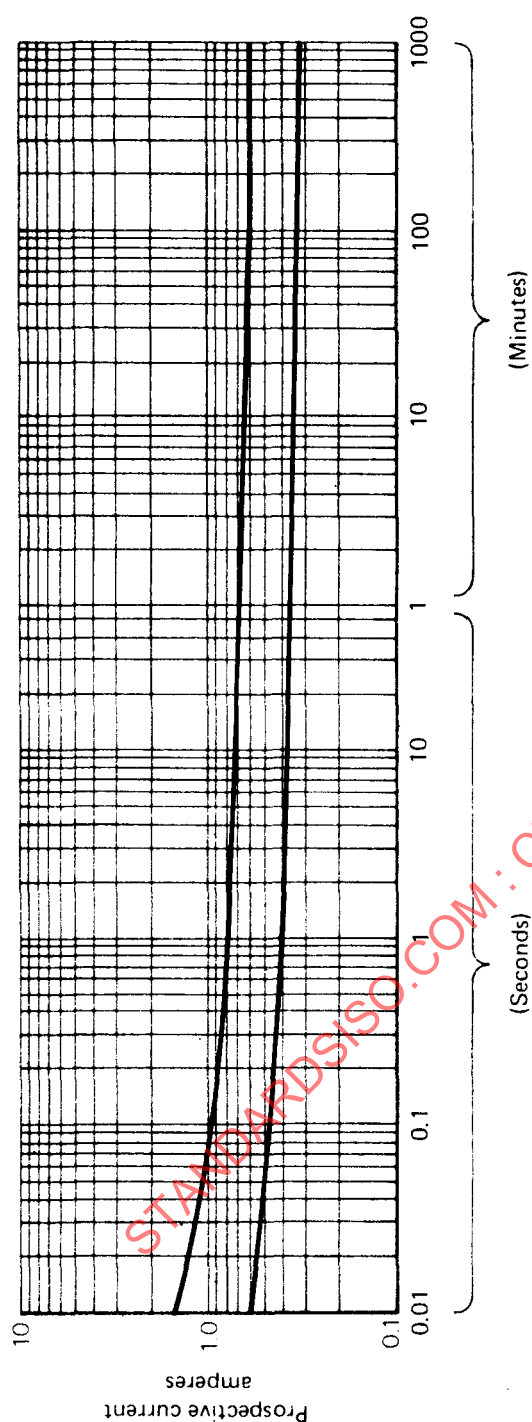


FIG. 11 -- Size 0, 0.25 A

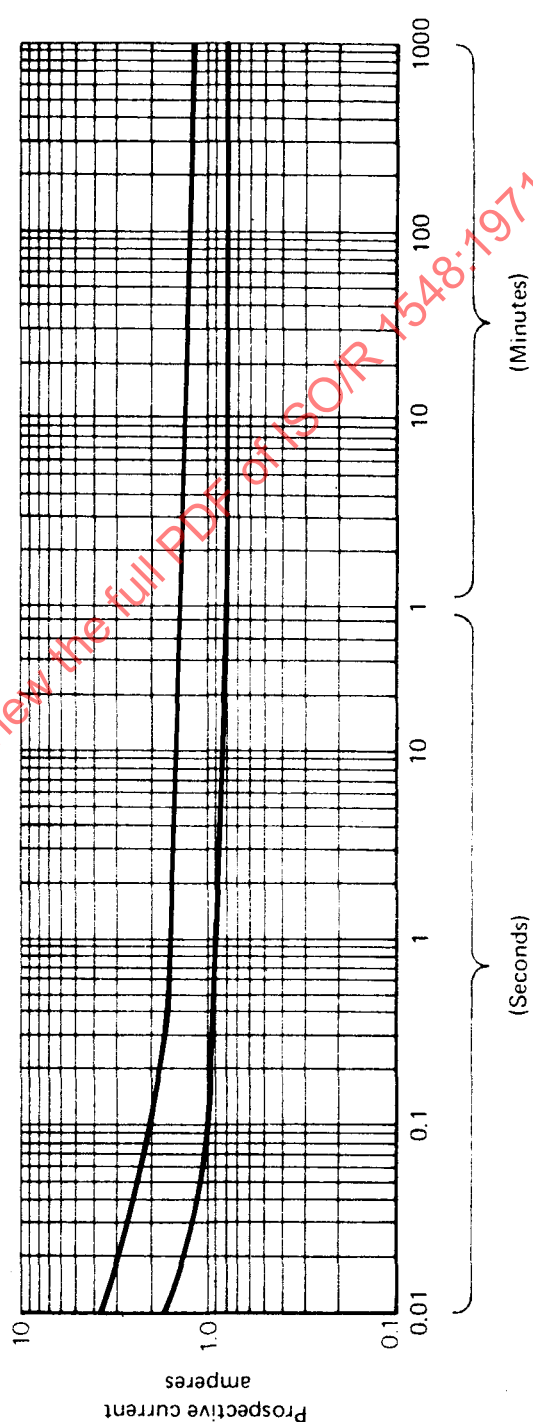


FIG. 12 -- Size 0, 0.5 A

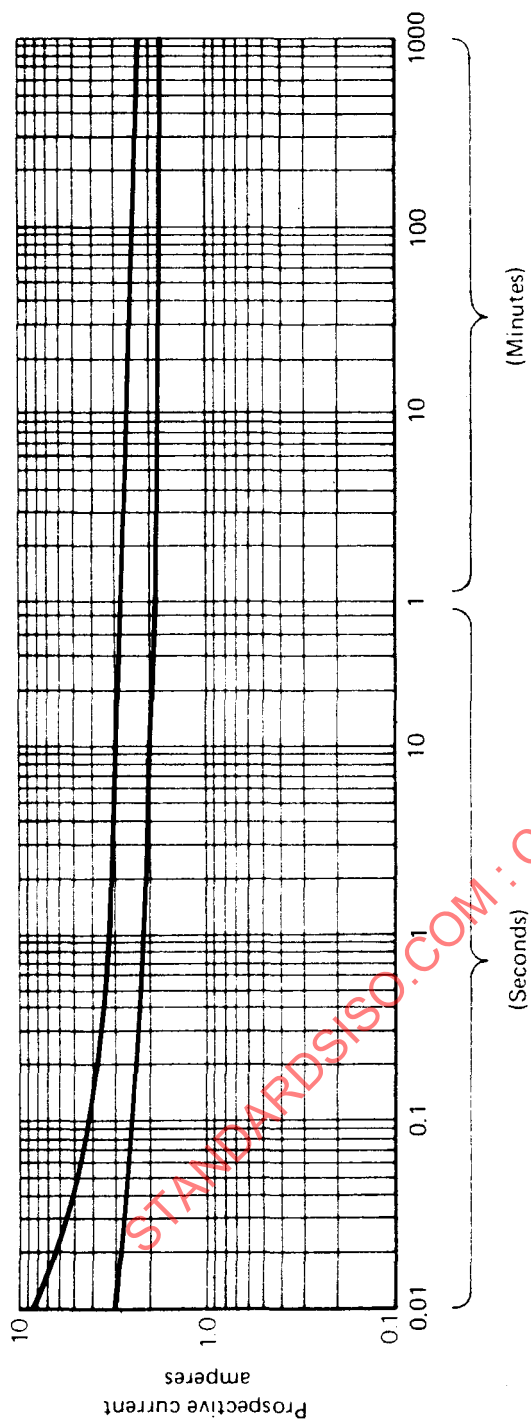


FIG. 13 - Size 0, 1 A

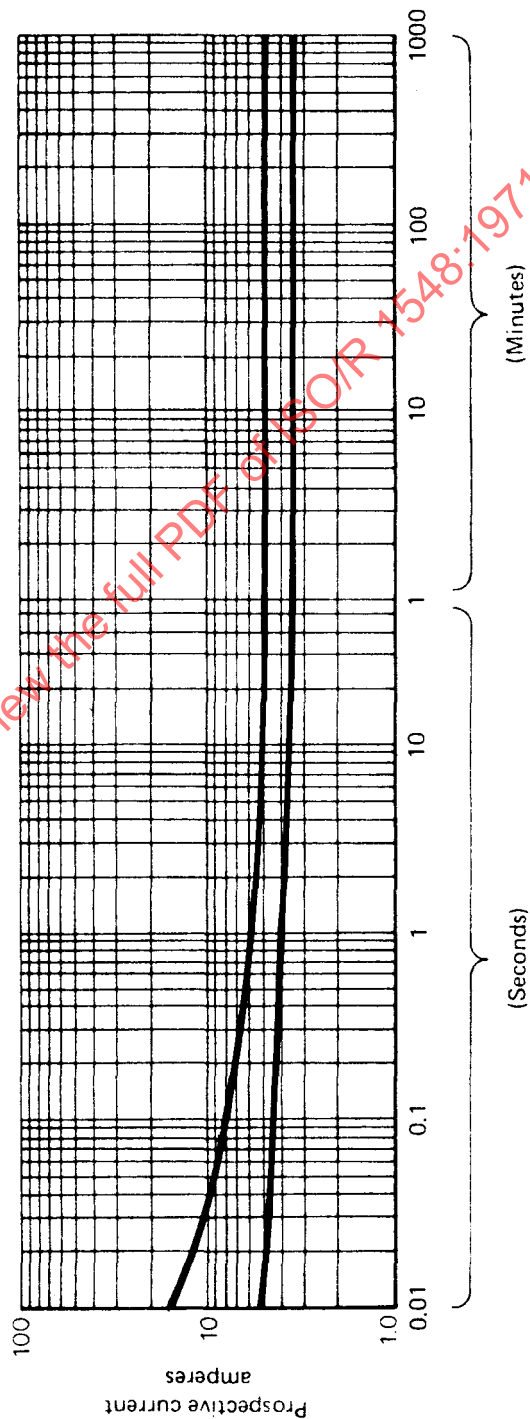


FIG. 14 - Size 0, 2 A

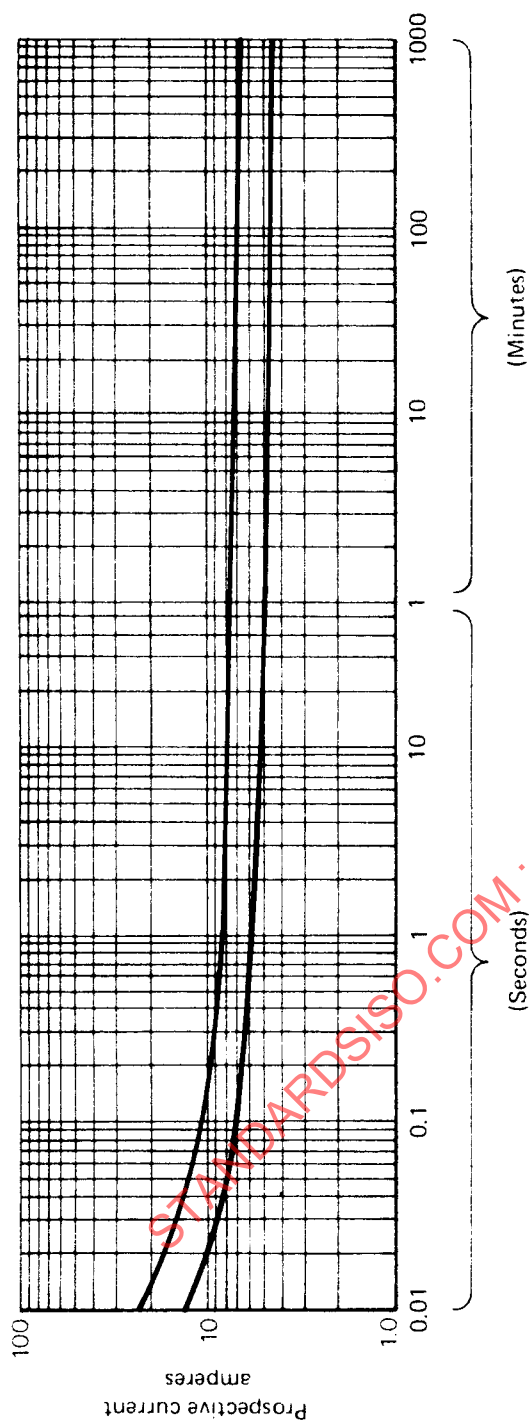


FIG. 15 - Size 0, 3 A

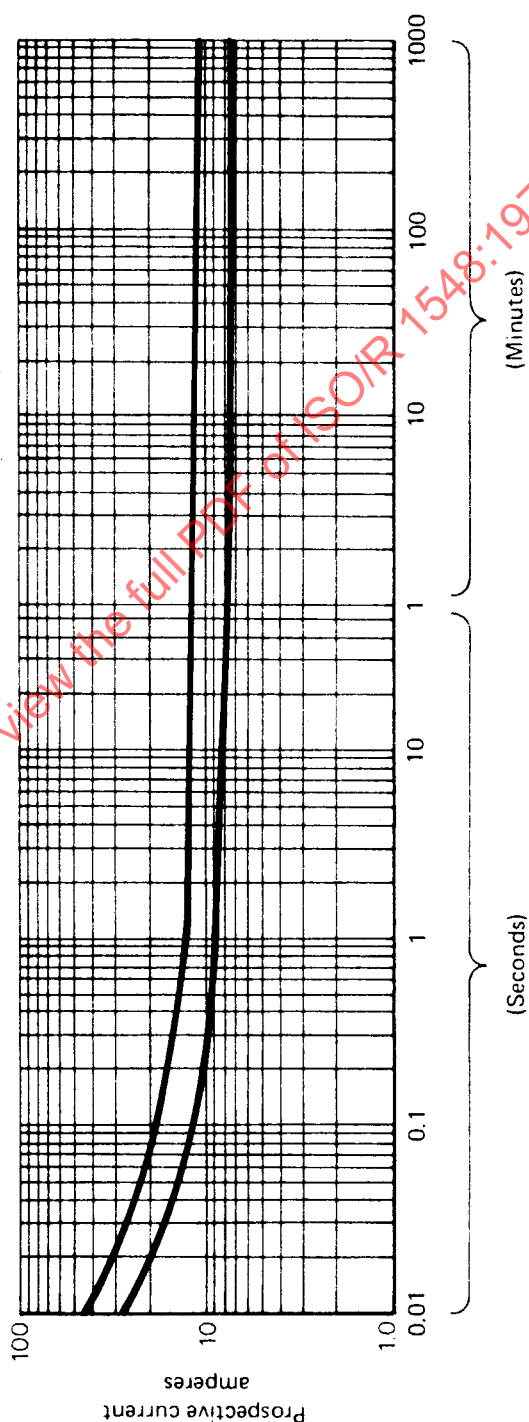


FIG. 16 - Size 0, 5 A

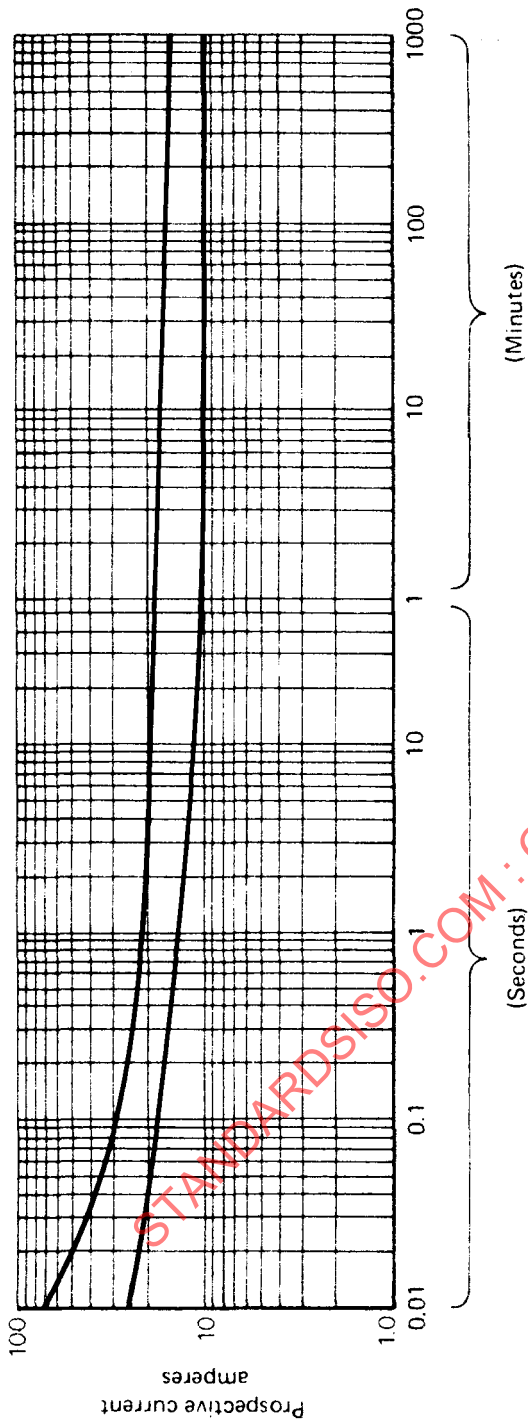


FIG. 17 - Size 0, 7 A

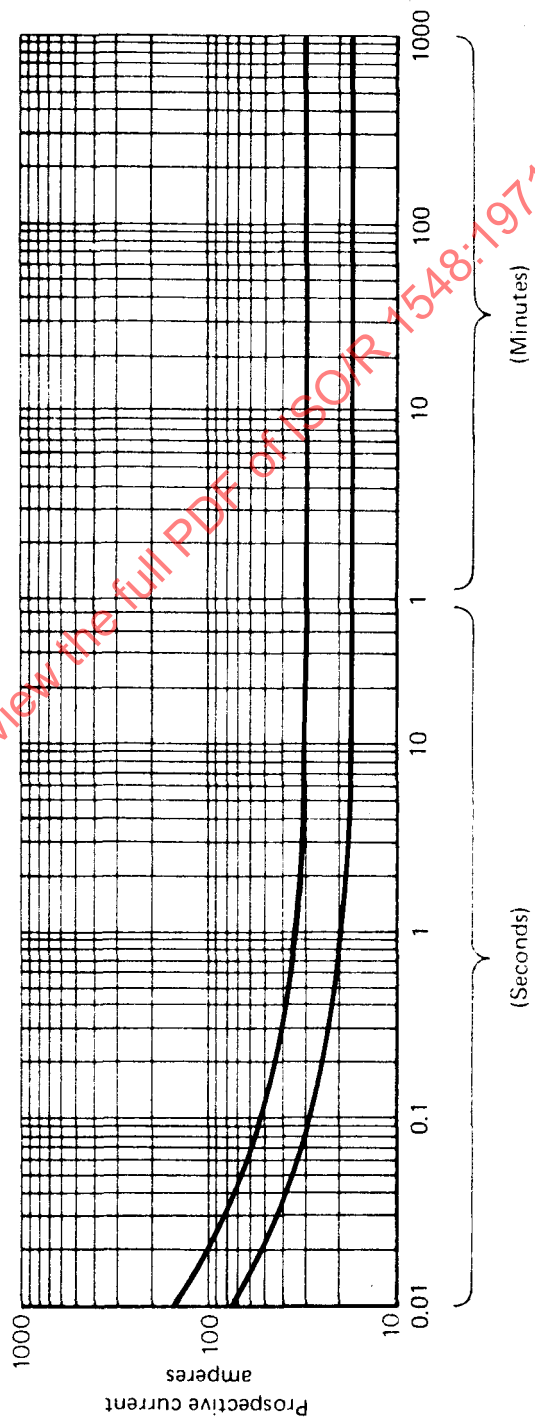


FIG. 18 - Size 0, 10 A

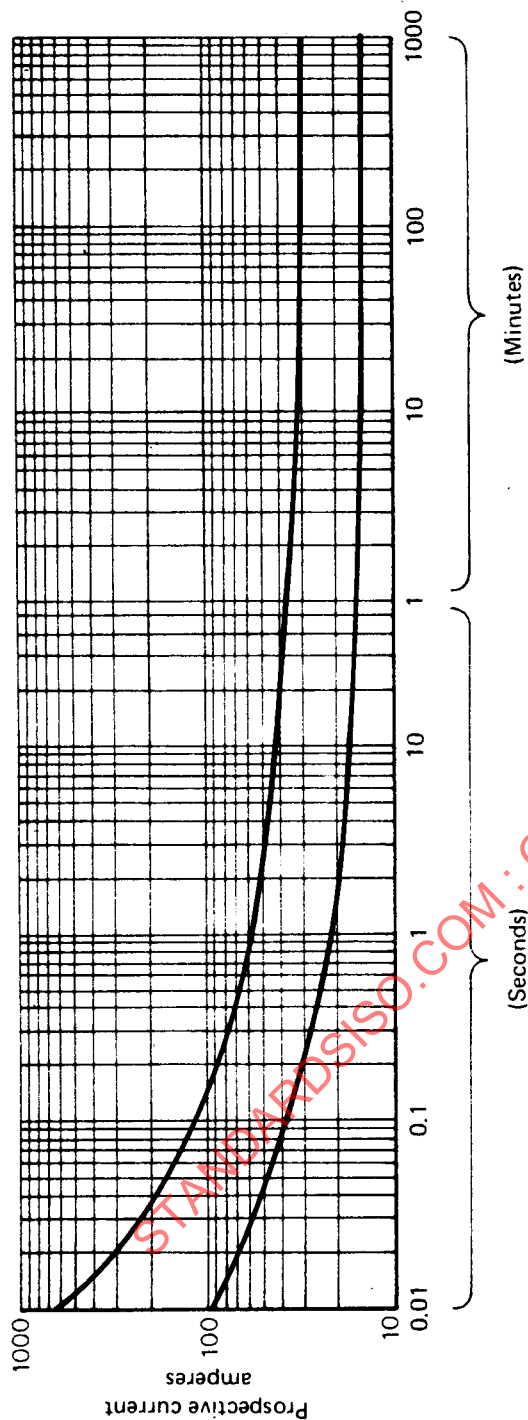


FIG. 19 — Size 0, 15 A

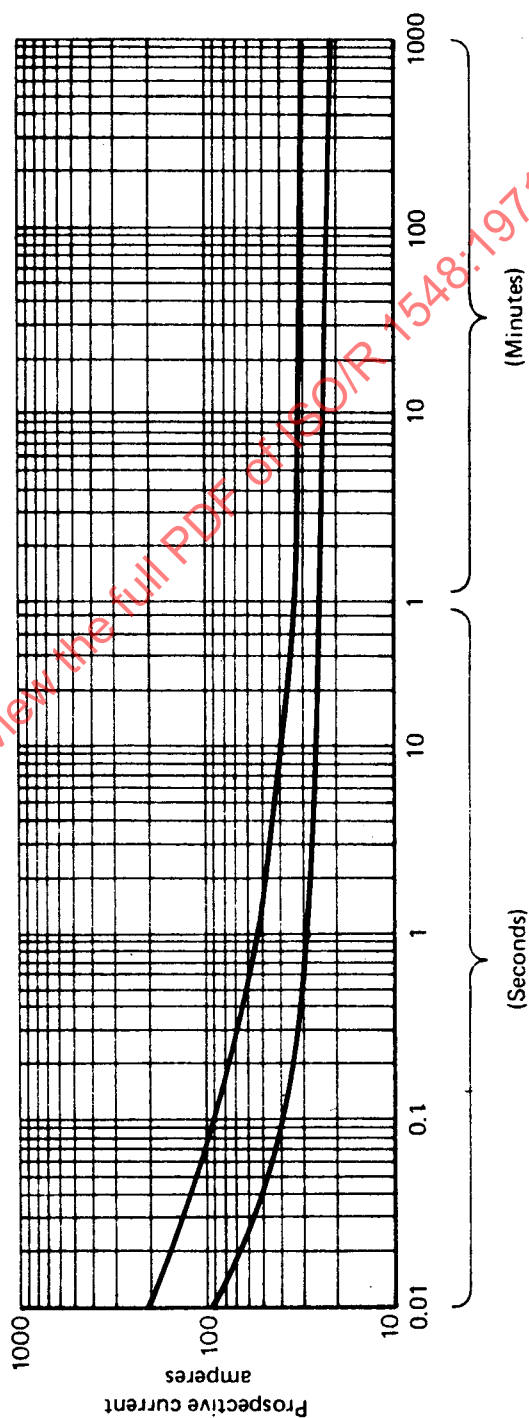


FIG. 20 — Size 0, 20 A

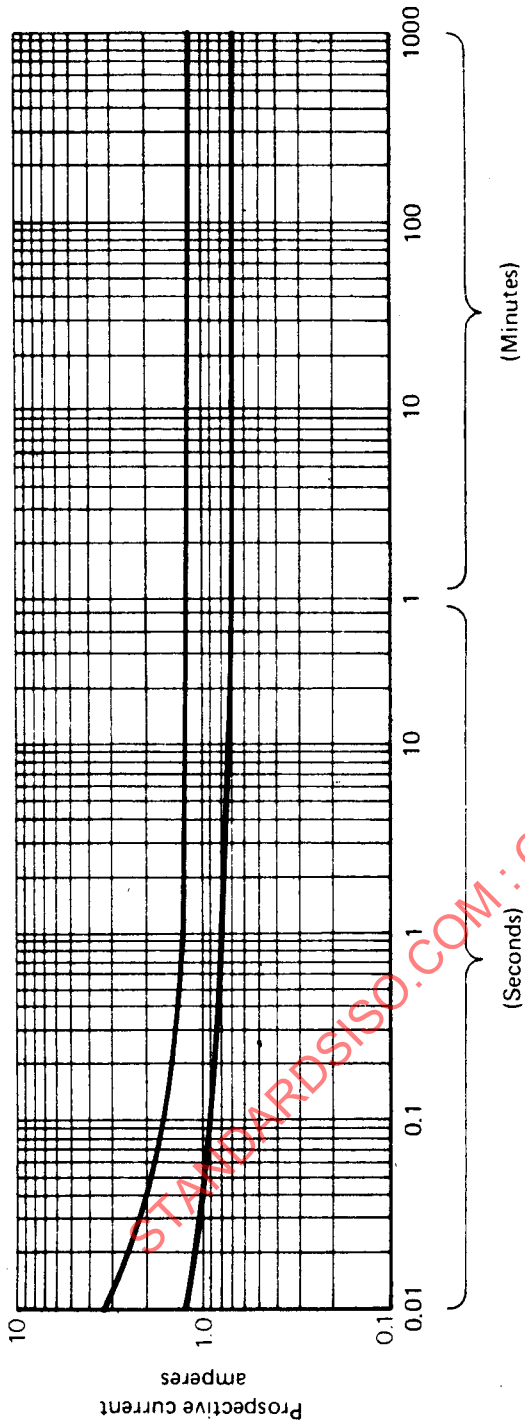


FIG. 21 — Size 1, 0.5 A

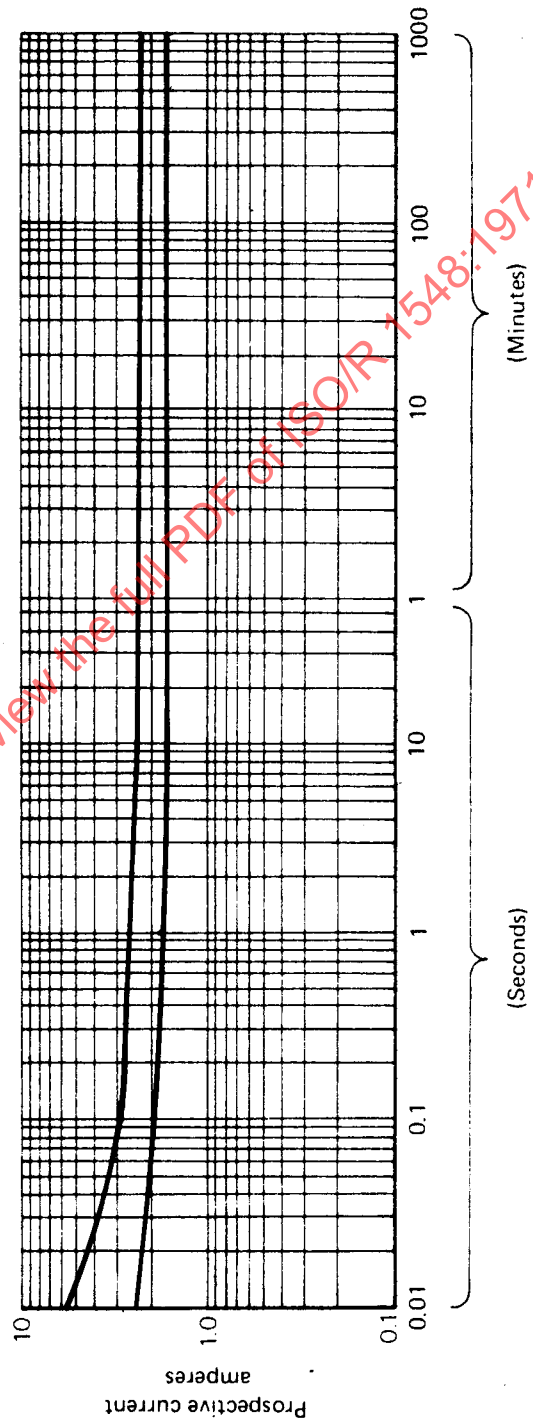


FIG. 22 — Size 1, 1 A

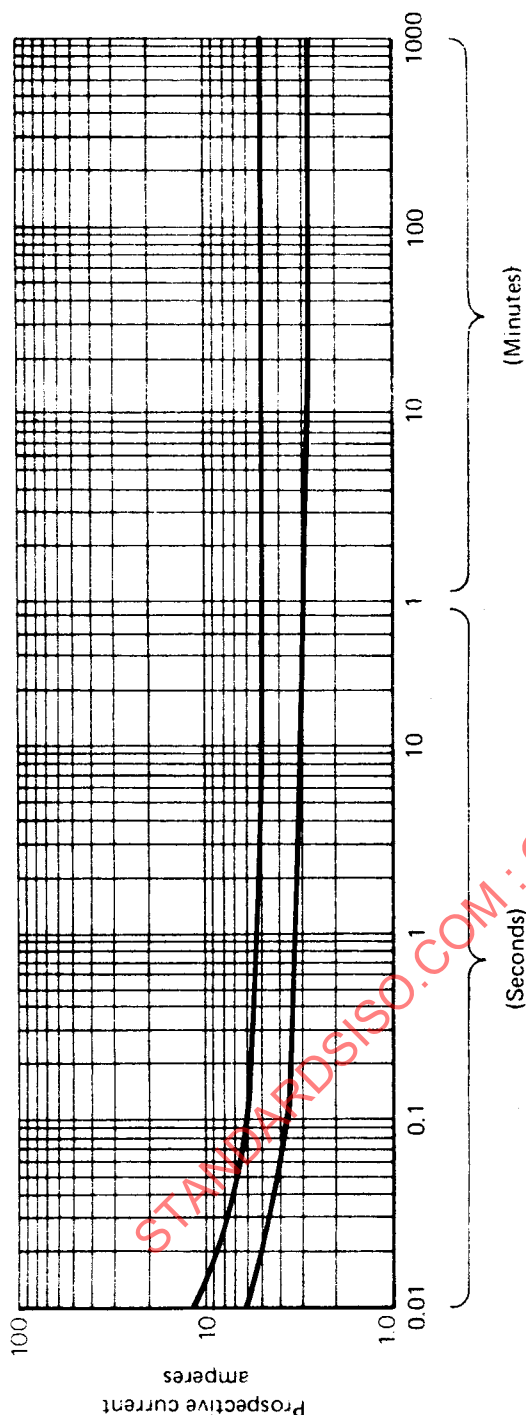


FIG. 23 - Size 1, 2 A

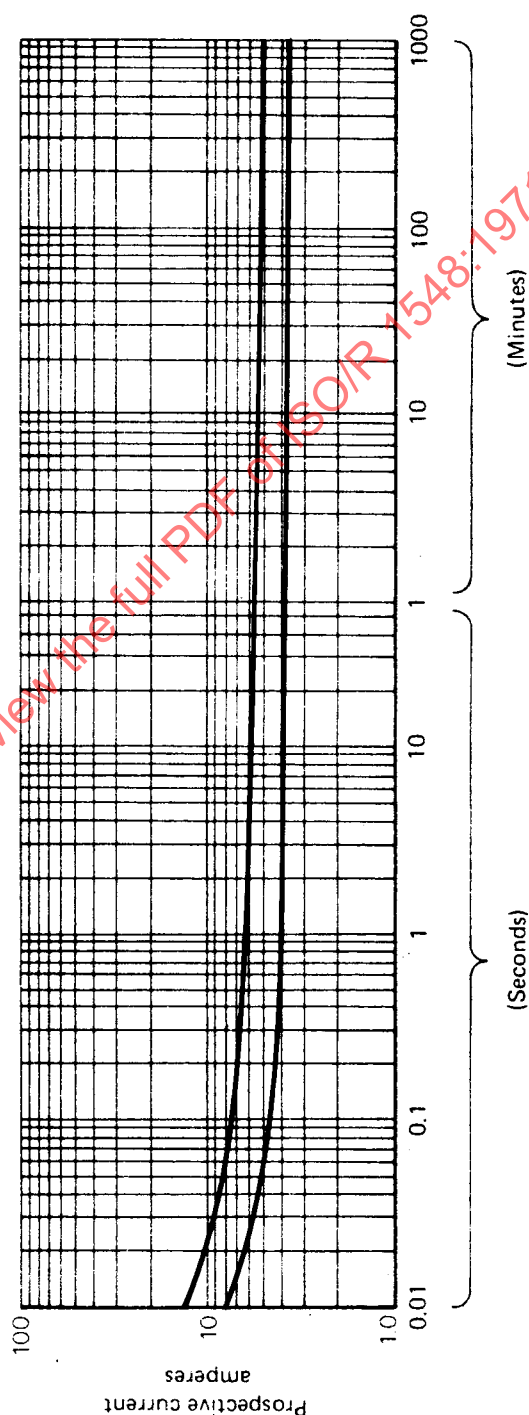


FIG. 24 - Size 1, 3 A

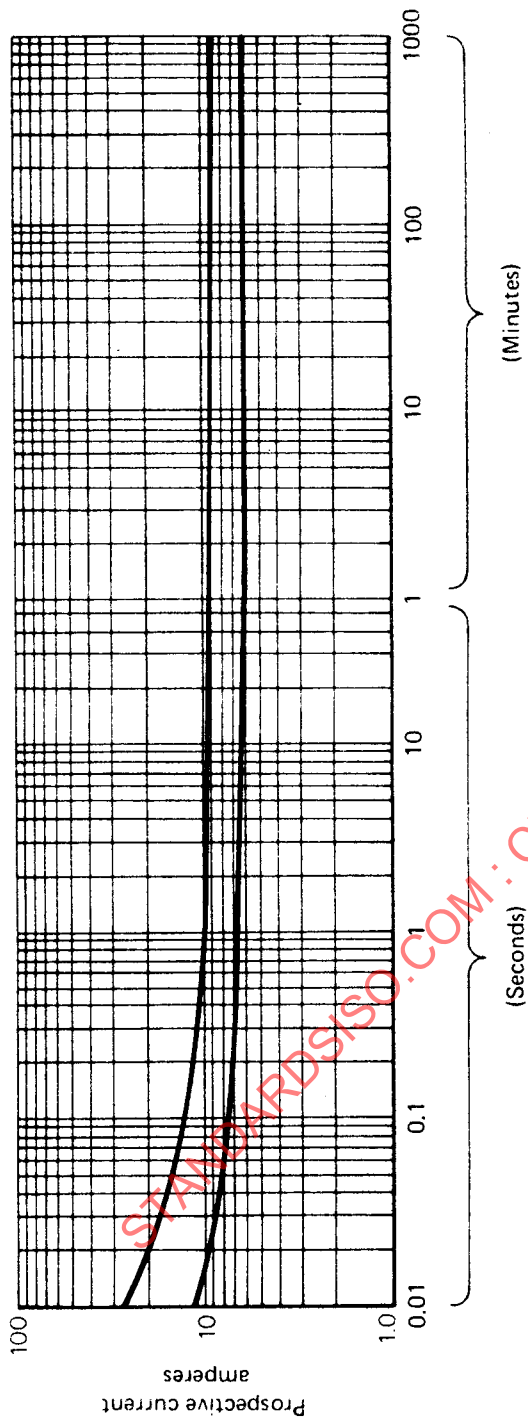


FIG. 25 — Size 1, 5 A

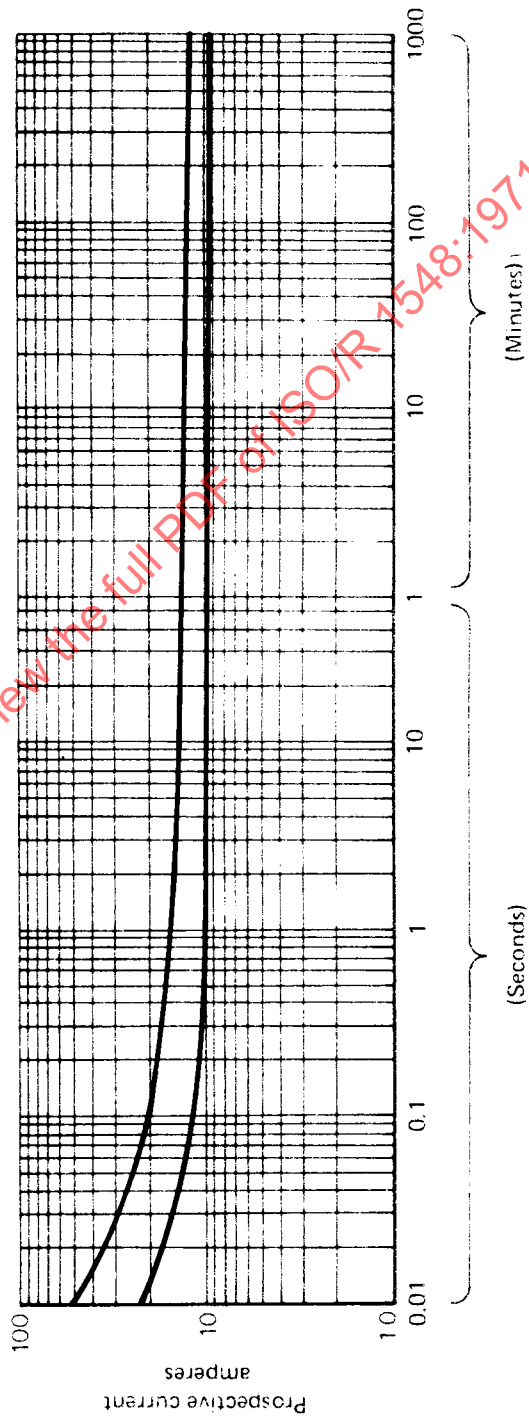


FIG. 26 — Size 1, 7 A

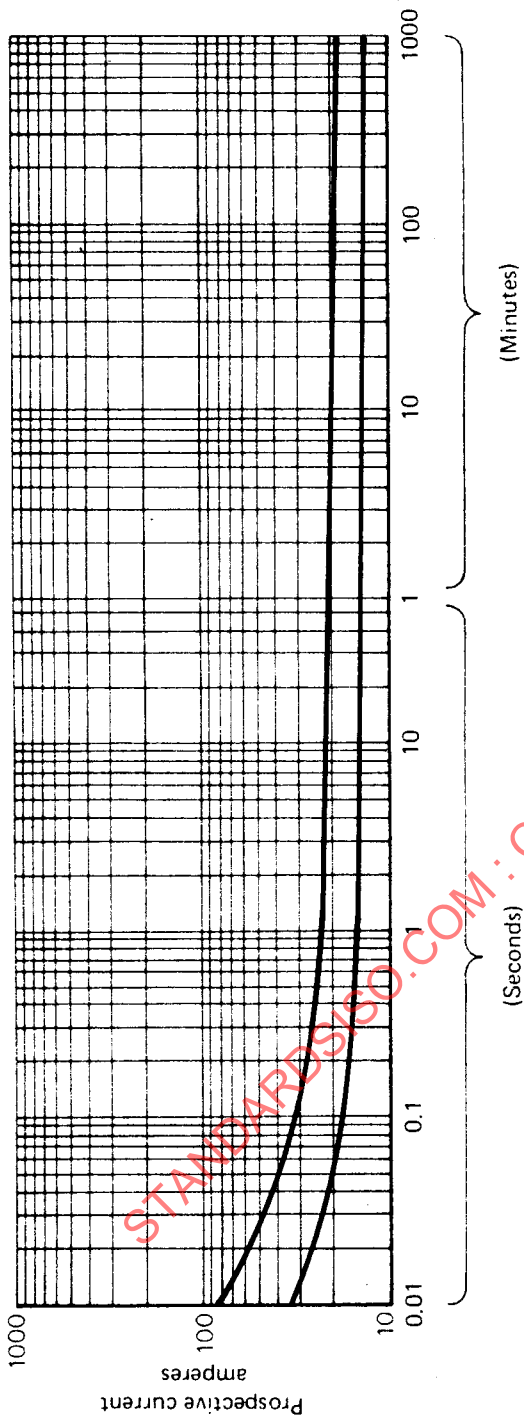


FIG. 27 — Size 1, 10 A

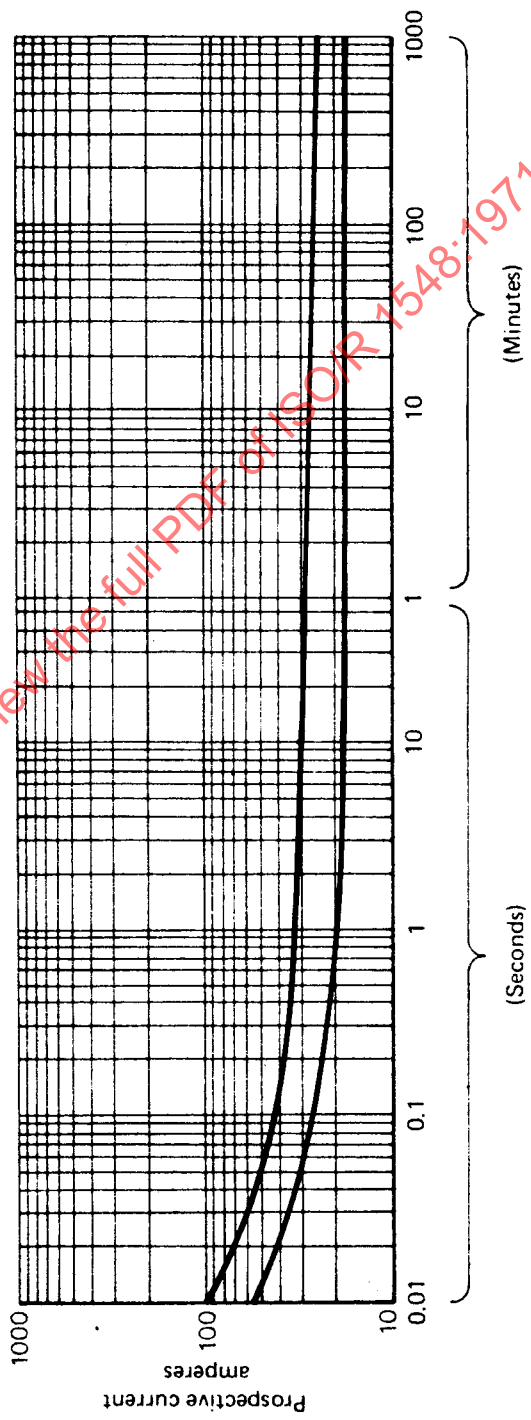


FIG. 28 — Size 1, 15 A

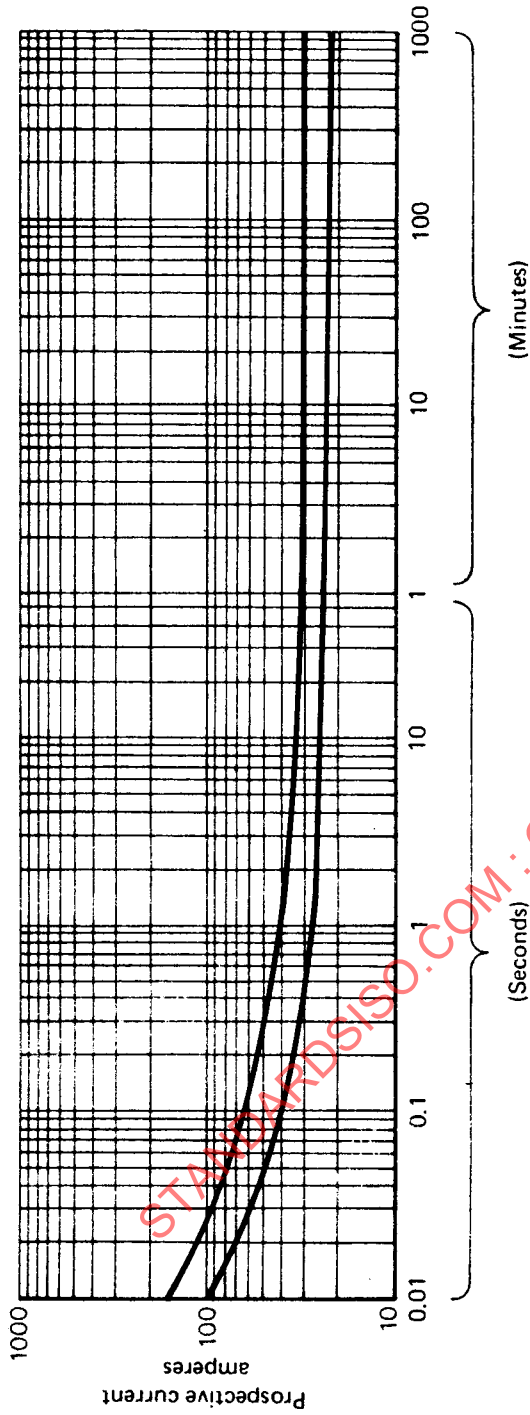


FIG. 29 - Size 1, 20 A

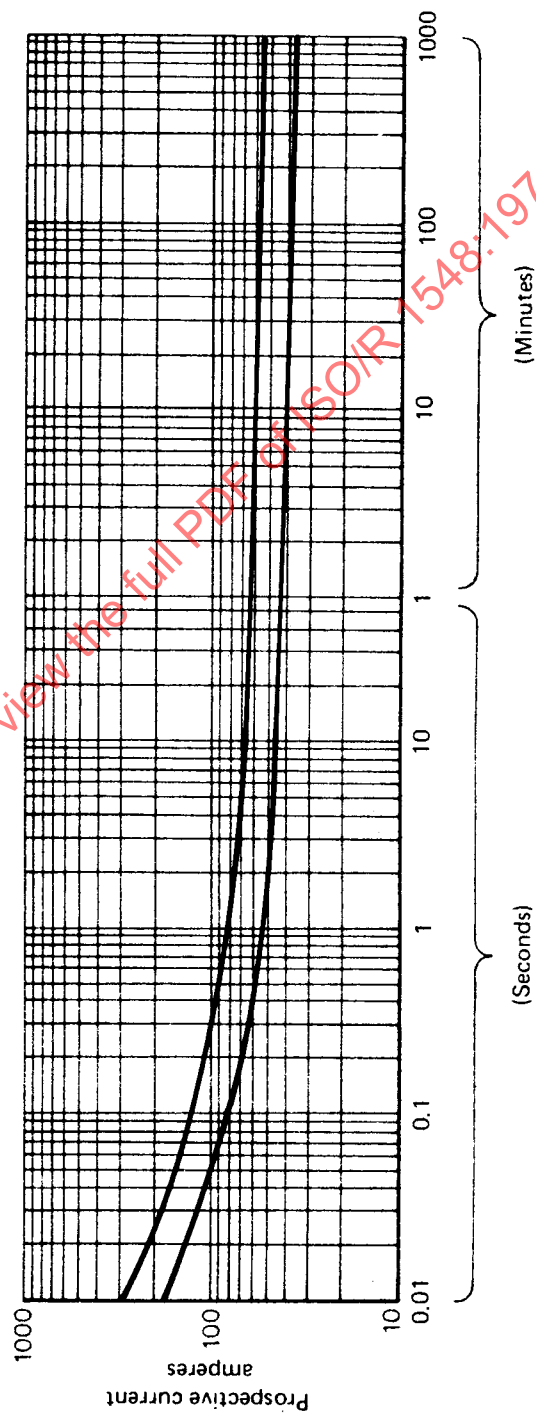


FIG. 30 - Size 1, 30 A

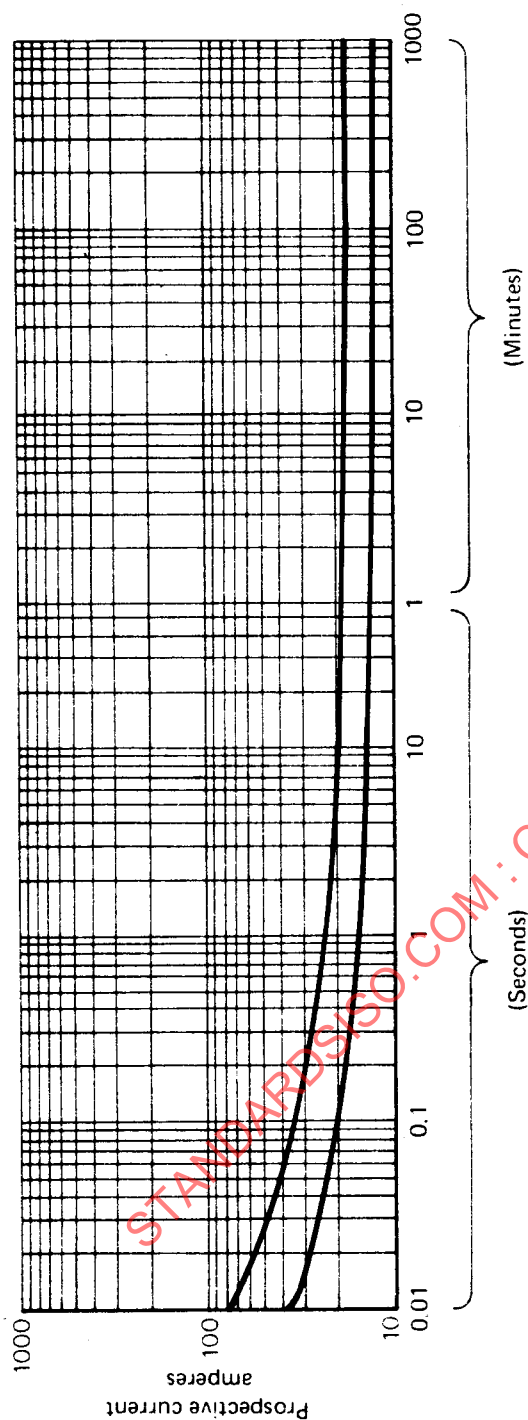


FIG. 31 - Size 2, 10 A

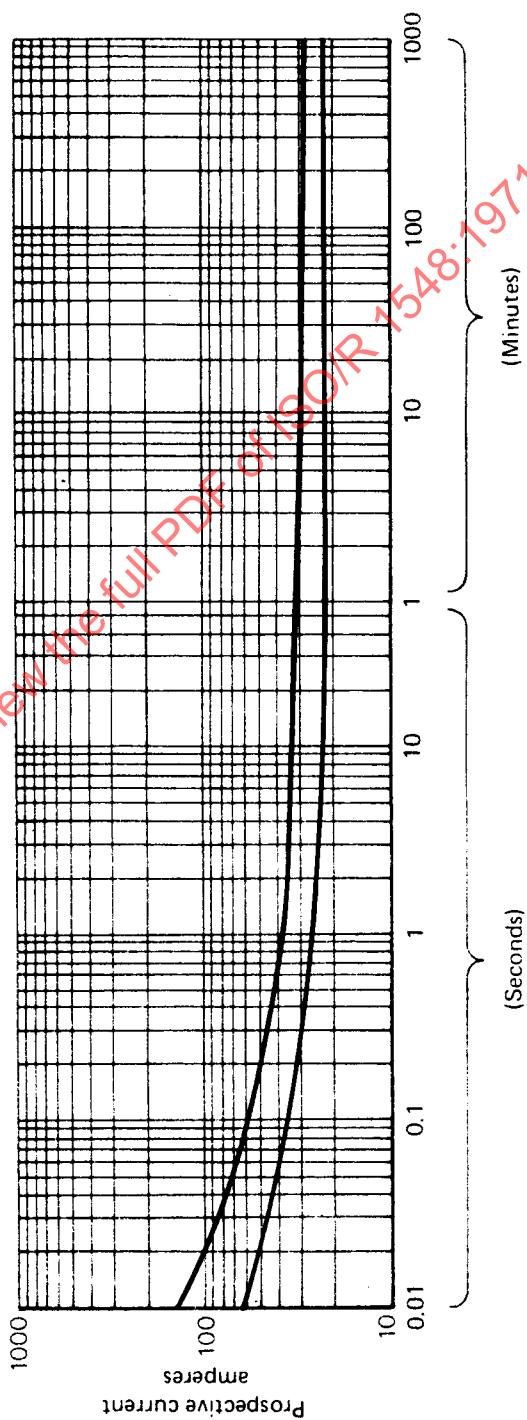


FIG. 32 - Size 2, 15 A