

Links, Distribution Fuse, Expulsion



Table of Contents

1. Scope	2
2. Application	2
3. Industry Standards	2
4. Requirements	3
5. Marking	3
6. Packaging	3
7. Issuance	3
8. Approved Manufacturers	4
9. References	4
10. Sources	4
Appendix A. Eaton Minimum Melting Time-Current Fuse Curves – Type K	5
Appendix B. Eaton Total Clearing Time-Current Fuse Curves – Type K	6
Appendix C. Eaton Minimum Melting Time-Current Fuse Curves – Type H	7
Appendix D. Eaton Total Clearing Time-Current Fuse Curves – Type H	8
Appendix E. S&C Minimum Melting Time-Current Fuse Curves – Type K	9
Appendix F. S&C Total Clearing Time-Current Fuse Curves – Type K	10
Appendix G. S&C Minimum Melting Time-Current Fuse Curves – Type Std. Speed	11
Appendix H. S&C Total Clearing Time-Current Fuse Curves – Type Std. Speed	12
Appendix I. Hubbell Minimum Melting Time-Current Fuse Curves – Type T	13
Appendix J. Hubbell Total Clearing Time-Current Fuse Curves – Type T	14
Appendix K. Eaton Minimum Melting Time-Current Fuse Curves – Type KS	15
Appendix L. Eaton Total Clearing Time-Current Fuse Curves – Type KS	16

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1. Scope

This standard covers the requirements of removable buttonhead type K fuse links. This standard applies to the following Seattle City Light (SCL) stock numbers:

Stock No.	Rating (A)
683706	3
683708	6
683710	10
683711	15
683713	25
683715	40
683717	50
683718	65
683724	100

The cutout and the fuse link holder that are used with the fuse link are outside the scope of this standard and can be found in SCL Material Standard 6820.95.

2. Application

The removable button fuse links are installed in cutout fuse link holders and used with open distribution cutouts. The combined system provides overcurrent protection and sectionalizing to isolate faulted feeders or equipment.

Since the fuse link only limits the duration of a fault on the electrical system, not the magnitude, it is installed in series with a backup fault current-limiting fuse. See SCL Work Practice 1065.17 for cross-reference tables to properly coordinate the fuse links with an appropriate back-up fault-current-limiting fuse.

Fuse links do not have a voltage or fault interrupting rating. These ratings are a function of the cutout and fuse link holder design in which the fuse link is placed. Per SCL 6820.95, SCL cutouts have a rated maximum voltage rating of 27 kV and an interrupting rating of 8 kA rms symmetrical. The fuse link is also assumed to have these default ratings.

3. Industry Standards

Fuse links shall meet the applicable requirements of the latest revision of the following industry standards:

IEEE C37.41; IEEE Standard Design Tests for High-Voltage (>1000V) Fuses

IEEE C37.42-2016; IEEE Standard Specifications for High-Voltage (>1000V) Fuses and Accessories

ANSI B1.1; "Unified Inch Screw Threads"

4. Requirements

Fuse links shall meet the requirements as shown in Table 4.

Table 4. Fuse Link Requirements

Class per IEEE C37.42	2A
Head style	Removable buttonhead
Link type	Expulsion
Link speed	K
Fuse link element material	Silver
Fuse element construction	Solderless
Rated current, A (rms)	3*, 6, 10, 15, 25, 40, 50, 65, 100
Withstand pull tension (lb/ft) minimum	10

*For 3 A fuse links, type KS, T, and H fuse links are also approved. The approved catalog numbers for the 3 A fuse links are listed in the Approved Manufacturers section of this standard.

5. Marking

The following minimum information shall be placed on fuse links and their packaging:

- Manufacturer name
- Catalog no. or identifying mark
- Rated current
- Fuse link speed rating (K, KS, T, H, etc.)

6. Packaging

Fuse links shall be individually packaged. Each shipping box shall be legibly marked with the following information:

- SCL purchase order number
- SCL Stock No.
- Identifying date code (month and year)

7. Issuance

Stock Unit: EA

8. Approved Manufacturers

Stock No.	Rating (A)	Eaton/Cooper Power Systems	S&C	Hubbell
683706	3	FL3H3 or 21003	64003R1	M3TA23
683708	6	FL6K6	265006R1	–
683710	10	FL6K10	265010R1	–
683711	15	FL6K15	265015R1	–
683713	25	FL6K25	265025R1	–
683715	40	FL6K40	265040R1	–
683717	50	FL6K50	265050R1	–
683718	65	FL6K65	265065R1	–
683724	100	FL6K100	265100R1	–

The 3 A fuse links listed above have the following speed ratings:

- FL3H3 is H speed
- 21003 is KS speed
- 64003R1 is Standard speed
- M3TA23 is T speed

The 6 A to 100 A fuse links listed above have a K speed rating.

See Appendix A through L for TCC curves.

9. References

SCL Material Standard 6820.95; “27 kV Cutouts, Open Type, Polymer”

SCL Work Practice 1065.17; “Primary Fuse Selection, Looped Radial System”

10. Sources

Edison Fuse Links Catalog Data CA132008EN; “Edison Tin and Silver Fuse Links,” March 2023

SCL Work Practice 1065.17; “Primary Fuse Selection, Looped Radial System”

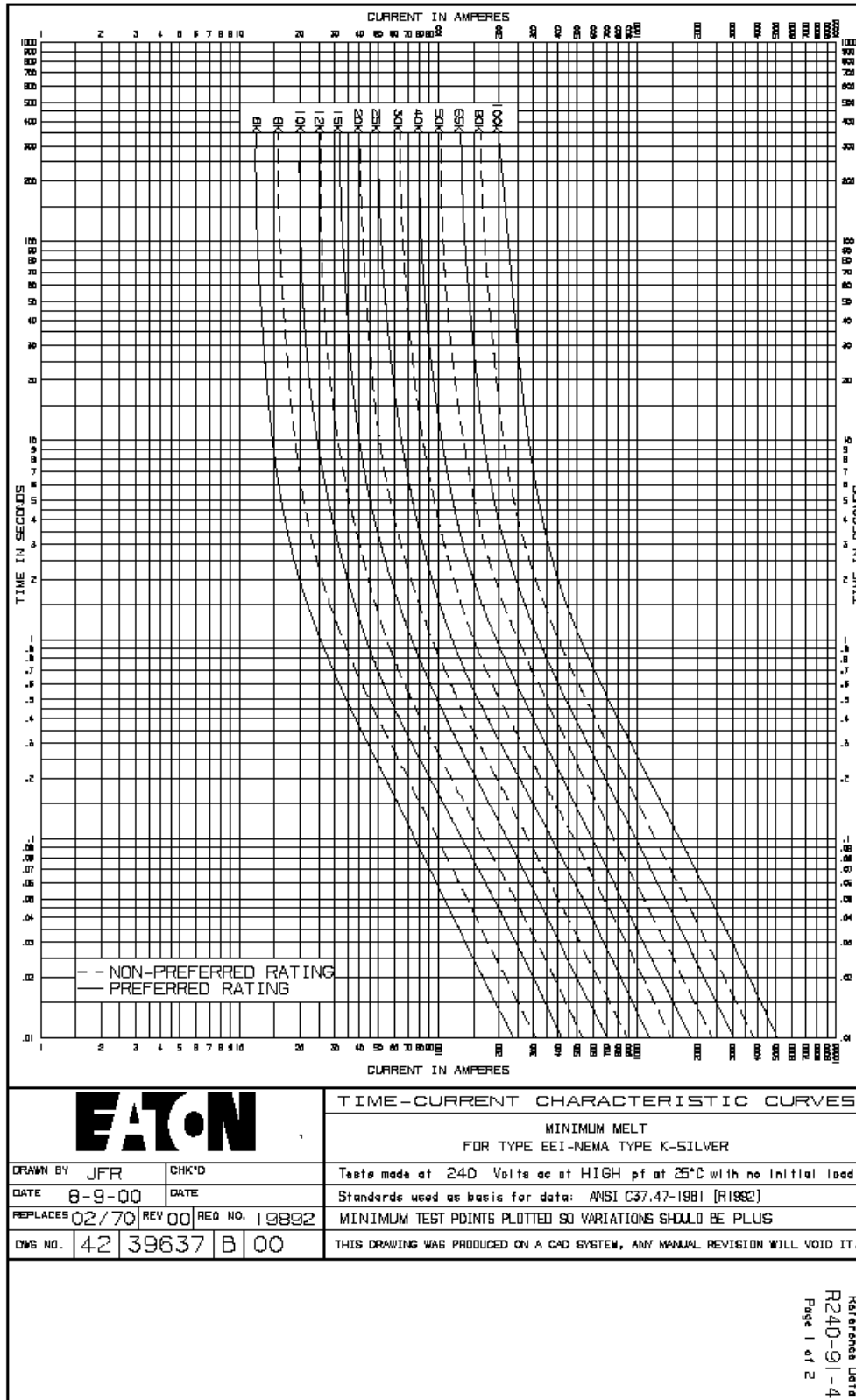
S&C Descriptive Bulletin 352-30; “S&C Positrol Fuse Links,” December 2018

S&C Informative Bulletin 352-50; “Positrol Fuse Links Catalog Number Cross Reference,” October 2019

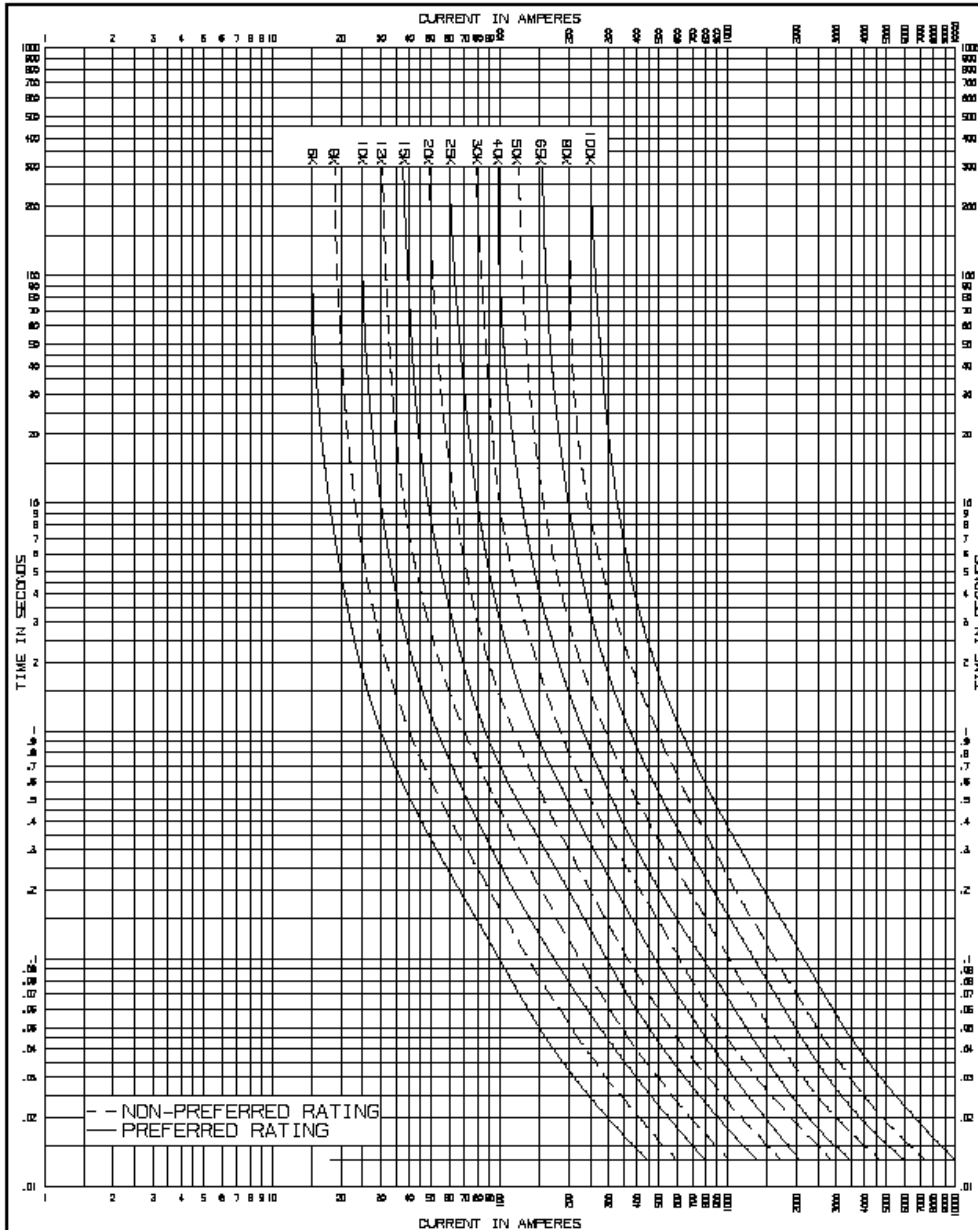
S&C Specification Bulletin 352-31; “Positrol Fuse Links Specifications,” January 2021

Shetab; Muneer; SCL Standards Engineer, subject matter expert for 6837.10

Appendix A. Eaton Minimum Melting Time-Current Fuse Curves – Type K

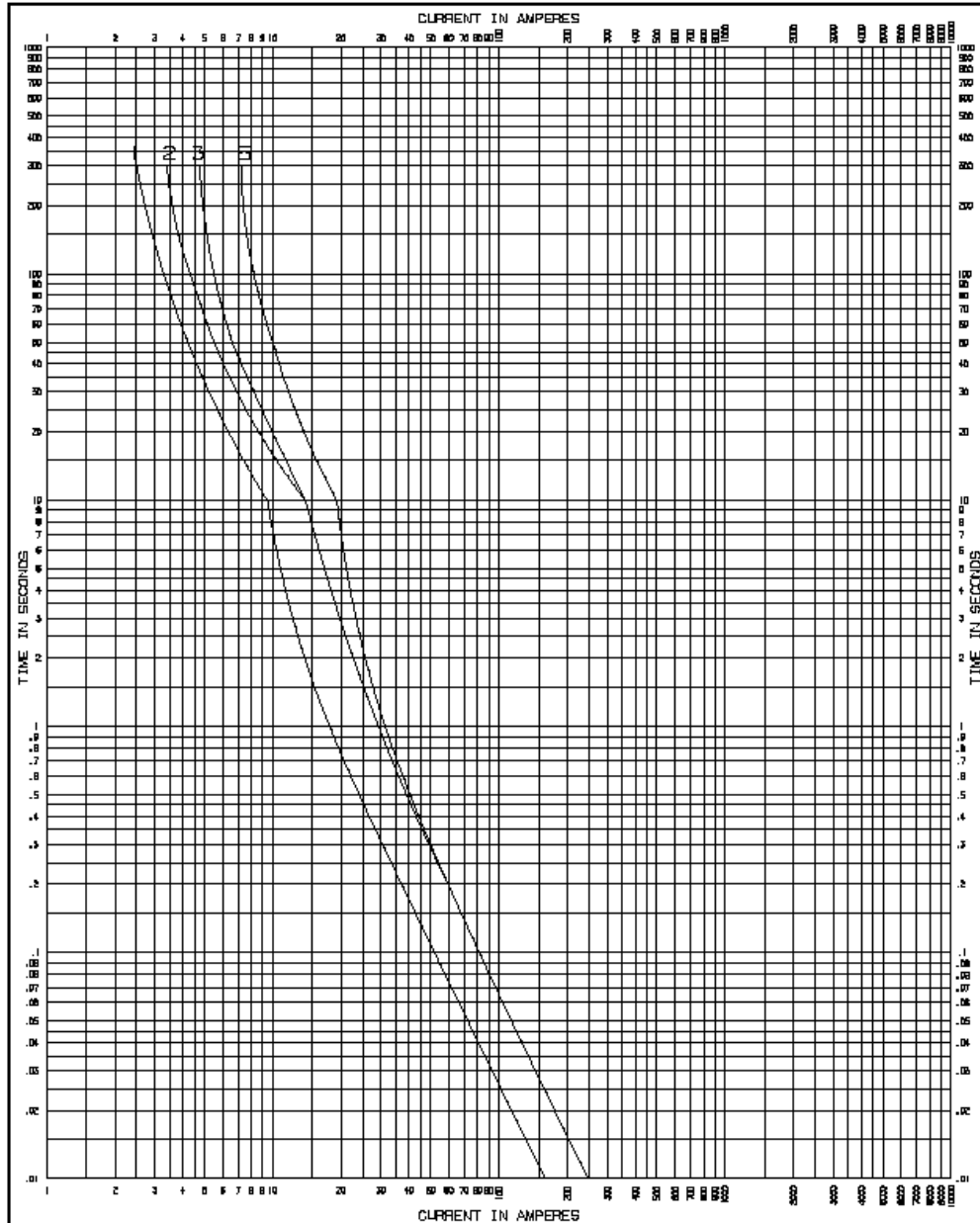


Appendix B. Eaton Total Clearing Time-Current Fuse Curves – Type K



EATON		TIME-CURRENT CHARACTERISTIC CURVES	
		MAXIMUM CLEAR FOR TYPE EEI-NEMA TYPE K-SILVER	
DRAWN BY	JFR	CHK'D	
DATE	8-9-00	DATE	
REPLACES	02/70	REV	00
		REQ NO.	19892
DWG NO.	42	39637	B 00
THIS DRAWING WAS PRODUCED ON A CAD SYSTEM, ANY MANUAL REVISION WILL VOID IT.			
Reference Data R240-91-4 Page 2 of 2			

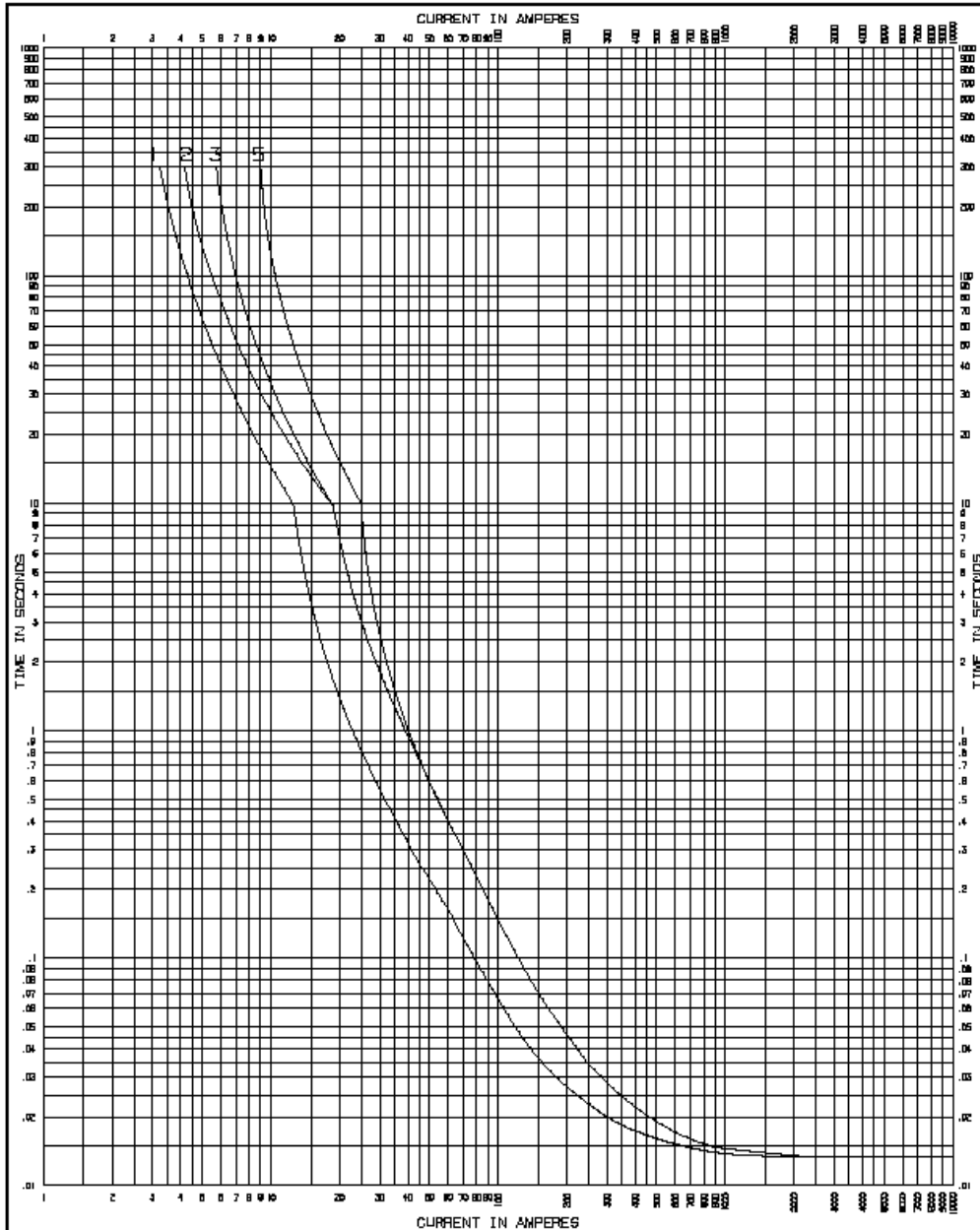
Appendix C. Eaton Minimum Melting Time-Current Fuse Curves – Type H



EATON		TIME-CURRENT CHARACTERISTIC CURVES	
		MINIMUM MELT TIME CURRENT CHARACTERISTIC CURVES HIGH SURGE TYPE H FUSE LINK	
DRAWN BY	RJC	CHK'D	
DATE	4-16-96	DATE	
REPLACES	11/91	REV	01
REQ NO.	16566	Tests made at LOW Volts ac at HIGH pf at 25°C with no initial load	
DWG NO.	42	39033	B 00
		Standards used as basis for data: ANSI C37.47-1981 (R1992)	
		MINIMUM TEST POINTS PLOTTED SO VARIATIONS SHOULD BE PLUS	
		THIS DRAWING WAS PRODUCED ON A CAD SYSTEM, ANY MANUAL REVISION WILL VOID IT.	

of 2
 R240-91-3
 Reference Data

Appendix D. Eaton Total Clearing Time-Current Fuse Curves – Type H



EATON

TIME-CURRENT CHARACTERISTIC CURVES

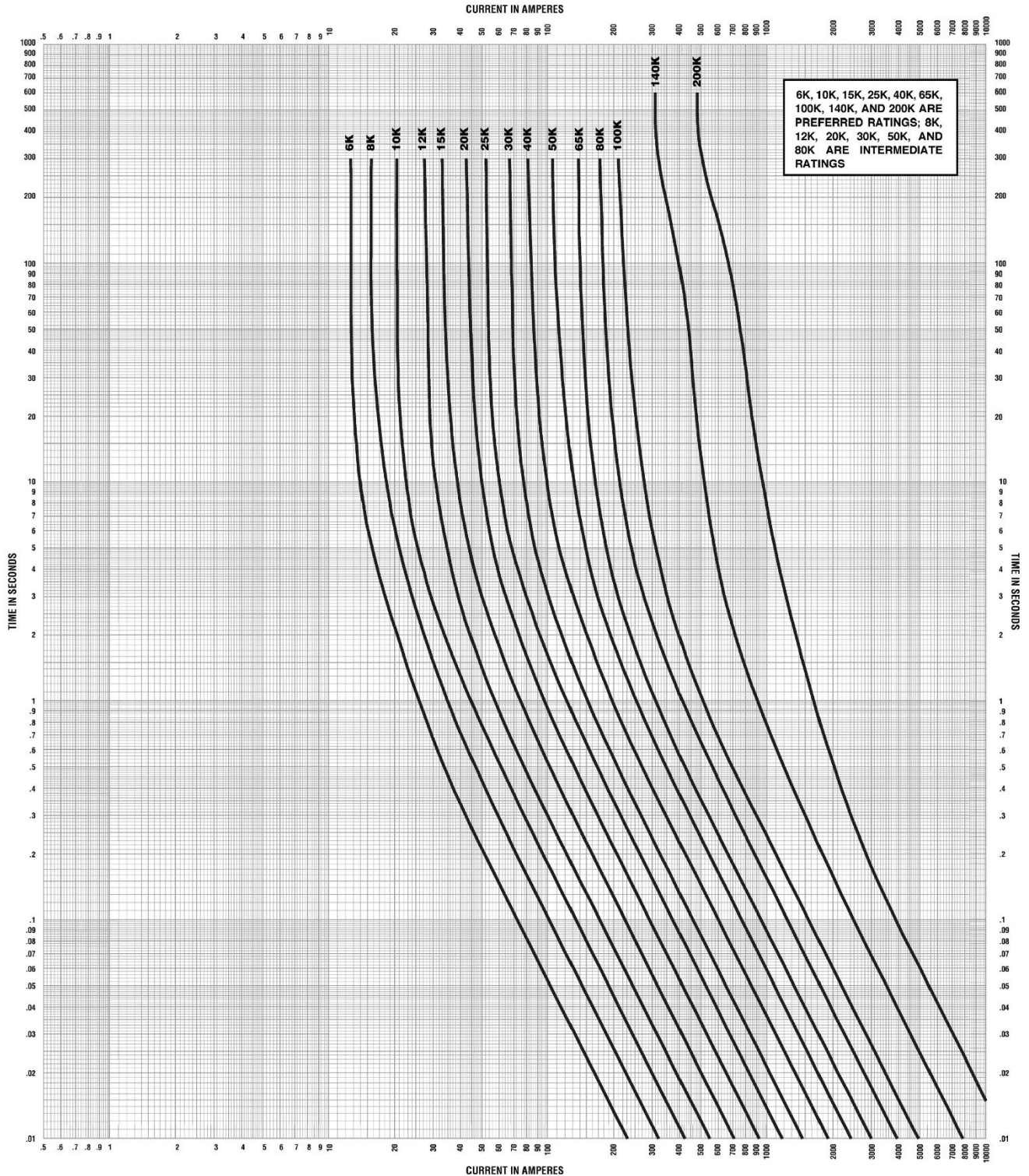
MAXIMUM CLEAR TIME CURRENT CHARACTERISTIC CURVES
 HIGH SURGE TYPE H FUSE LINK

DRAWN BY: RJC
 DATE: 4-16-96
 REPLACES: 11/91 REV 01
 DWG NO.: 42 39033 B 00

CHK'D:
 DATE:
 REQ NO.: 16566
 TESTS MADE AT RATED Volts ac at LOW pf at 25°C with no initial load
 Standards used as basis for data: ANSI C37.47-1991 (R1992)
 MAXIMUM TEST POINTS PLOTTED SO VARIATIONS SHOULD BE MINUS
 THIS DRAWING WAS PRODUCED ON A CAD SYSTEM, ANY MANUAL REVISION WILL VOID IT.

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 Reference Data

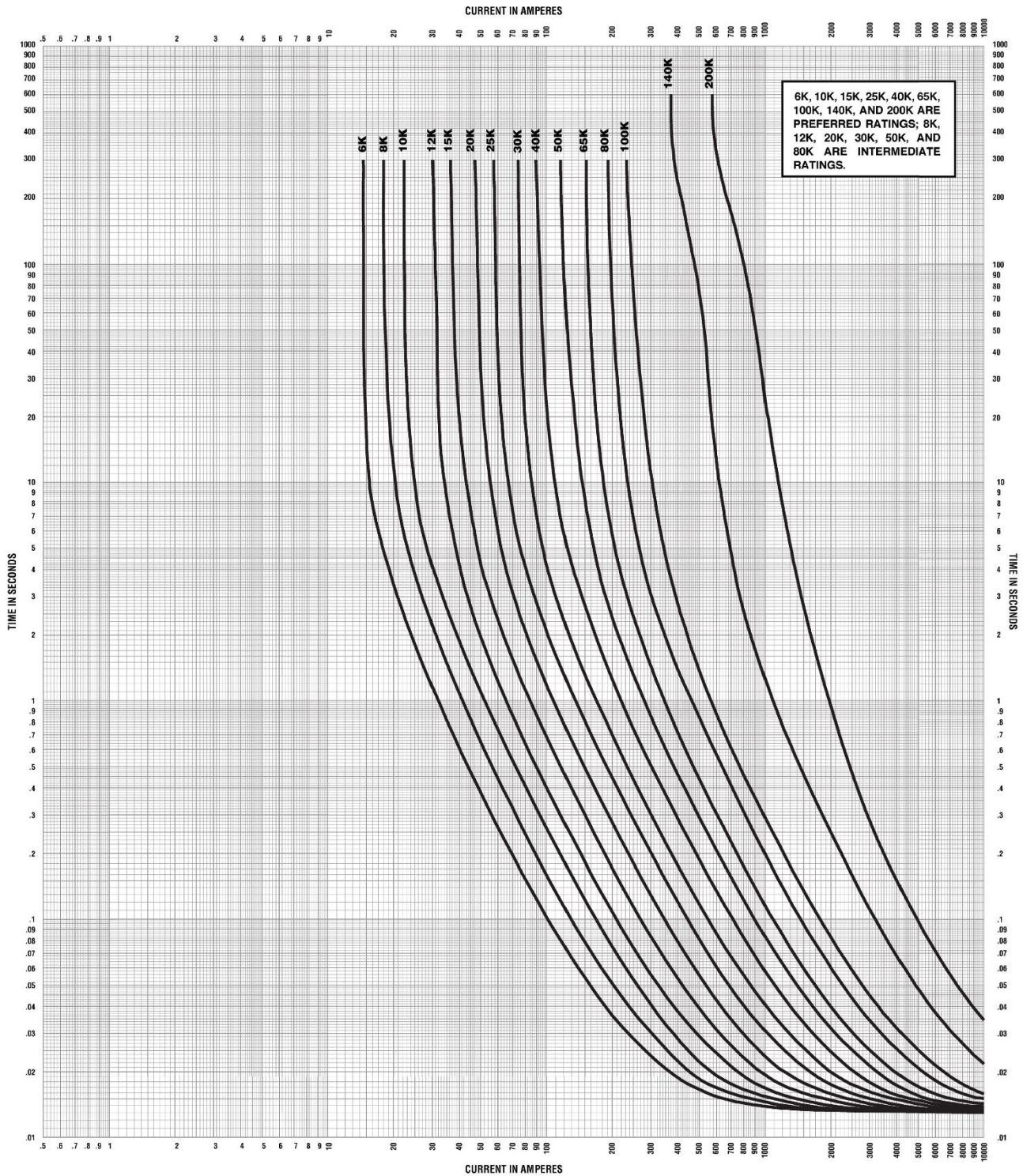
Appendix E. S&C Minimum Melting Time-Current Fuse Curves – Type K



Minimum Melting Time-Current Characteristic Curves

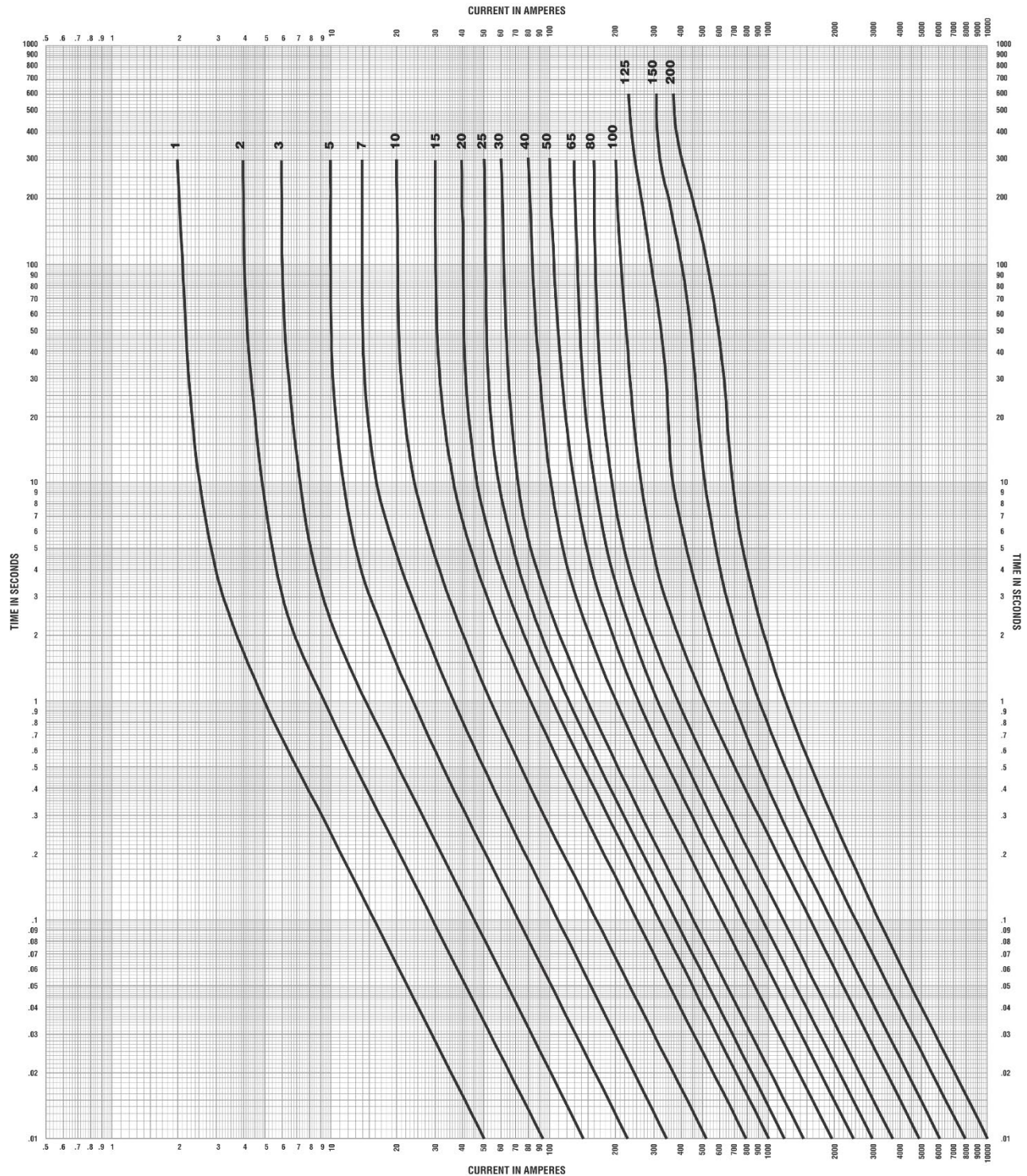
Positrol® Fuse Links-S&C "K" Speed

Appendix F. S&C Total Clearing Time-Current Fuse Curves – Type K



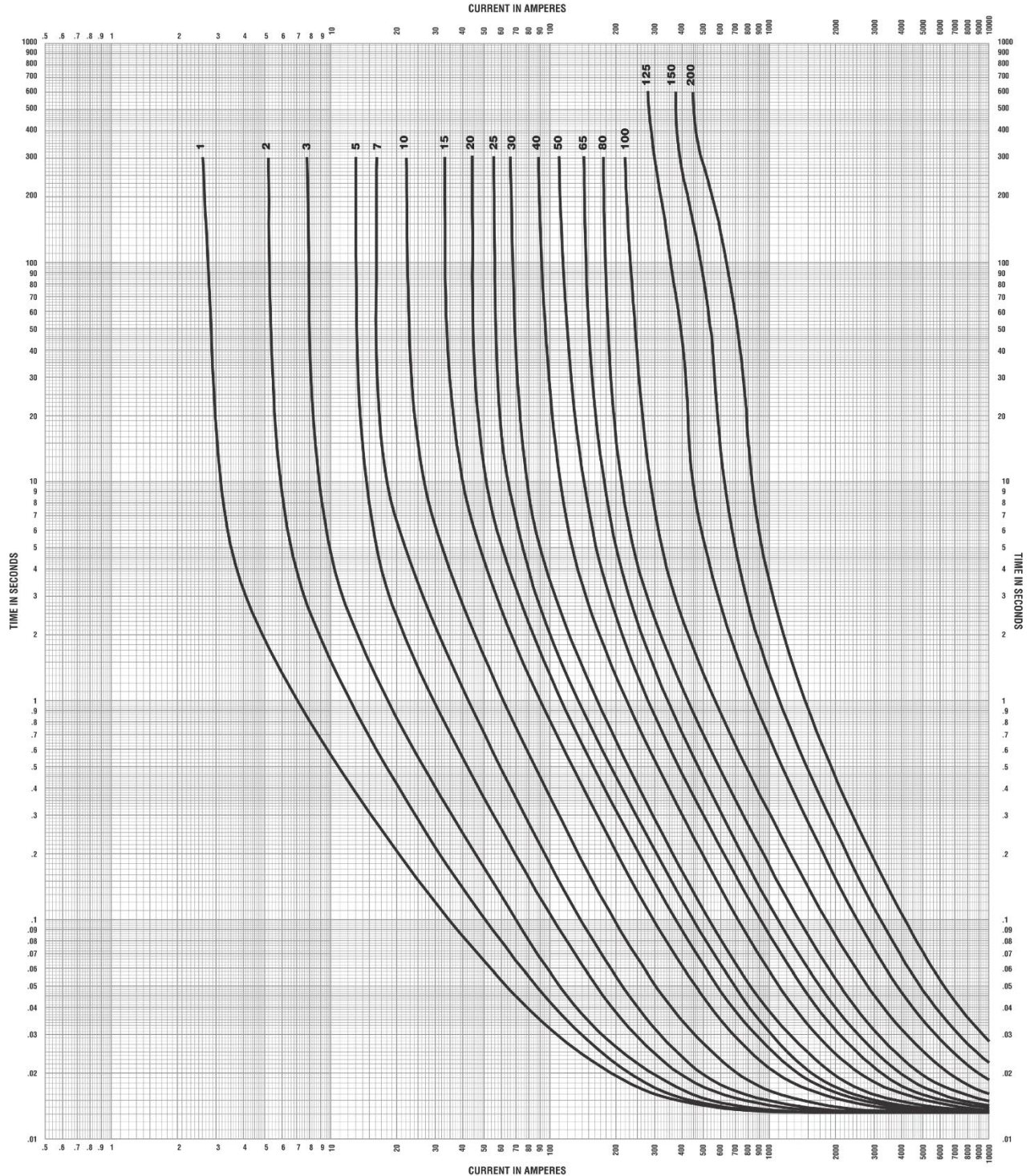
Total Clearing Time-Current Characteristic Curves
Positrol® Fuse Links-S&C "K" Speed

Appendix G. S&C Minimum Melting Time-Current Fuse Curves – Type Std. Speed



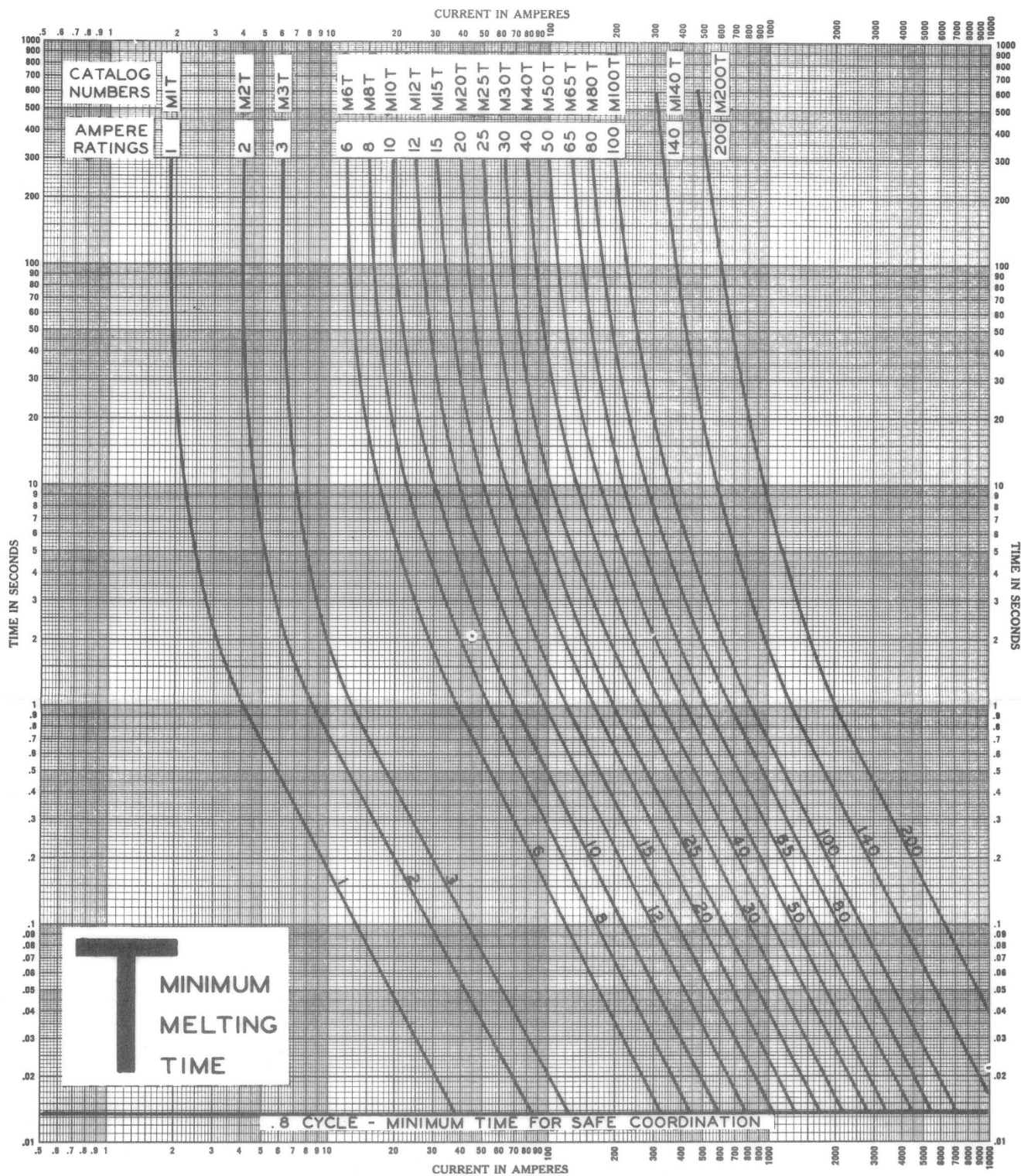
Minimum Melting Time-Current Characteristic Curves
Positrol® Fuse Links-S&C Standard Speed

Appendix H. S&C Total Clearing Time-Current Fuse Curves – Type Std. Speed



Total Clearing Time-Current Characteristic Curves
Positrol® Fuse Links-S&C Standard Speed

Appendix I. Hubbell Minimum Melting Time-Current Fuse Curves – Type T



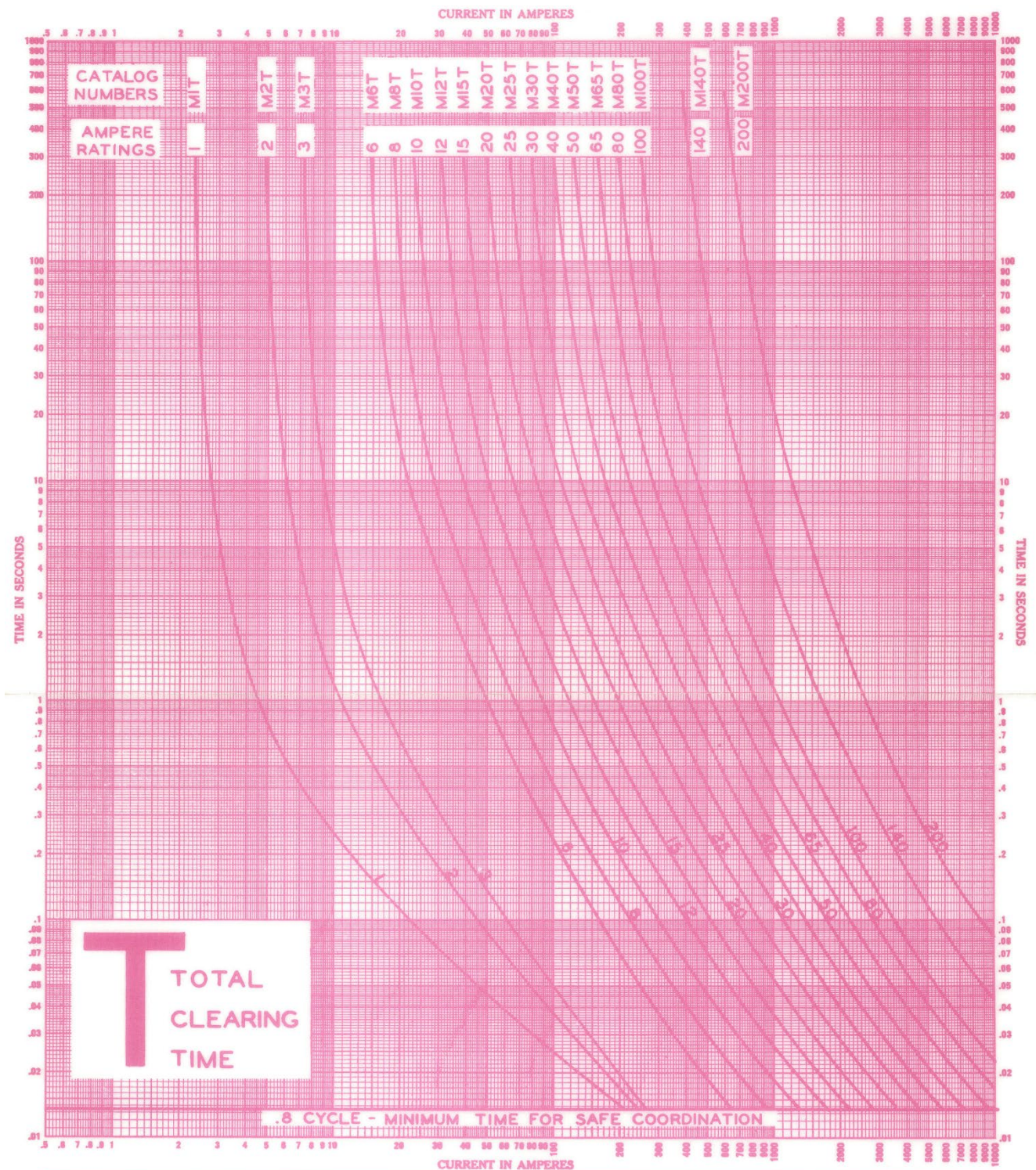
MINIMUM MELTING Time-Current Characteristic Curves
 For: CHANCE TYPE "T" (SLOW) Fuse Links In Chance Cutouts
 Basis for data: ANSI/IEEE Standard C37.41 - 1988

1. Tests made at less than rated cutout voltage starting at 25C with no initial load.
2. Curves are plotted to minimum test points so variations should be plus.

30005



Appendix J. Hubbell Total Clearing Time-Current Fuse Curves – Type T



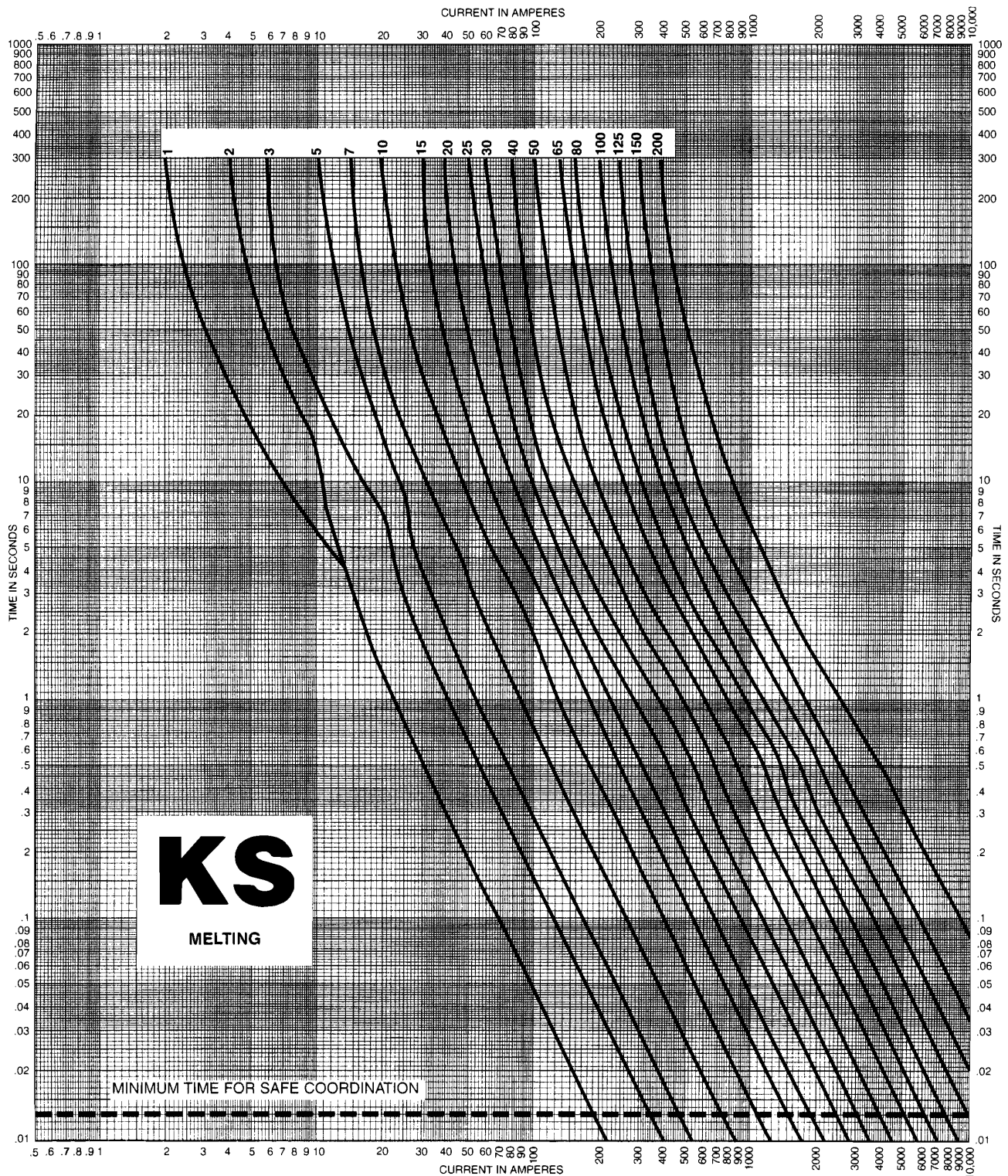
TOTAL CLEARING Time-Current Characteristic Curves
For: CHANCE TYPE "T" (SLOW) Fuse Links In Chance Cutouts
Basis for data: ANSI/IEEE Standard C37.41 - 1988
1. Tests made at rated cutout voltage starting at 25C with no initial load.
2. Curves are plotted to maximum test points so variations should be minus.

30006



Centralls, MO Rev. A. 3/95

Appendix K. Eaton Minimum Melting Time-Current Fuse Curves – Type KS

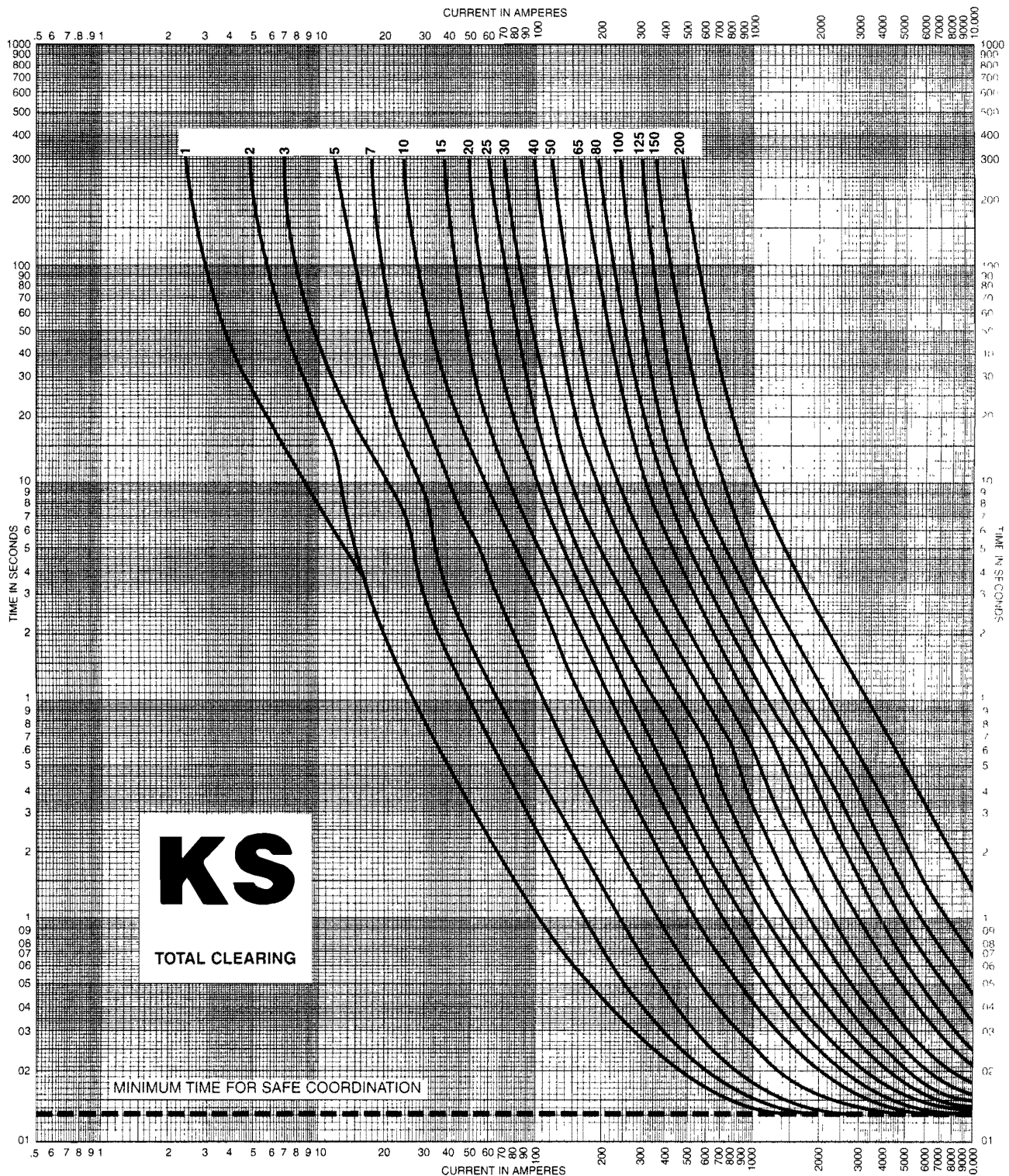


For KEARNEY TYPE KS MINIMUM TIME-CURRENT CHARACTERISTIC CURVES
Basis for Data Standards ANSI C37.42 Dated 1981
Curves are plotted to MINIMUM Test points so variations should be PLUS

EATON

No. K-21000 A
Date 2-24-81
Supersedes 6-25-74

Appendix L. Eaton Total Clearing Time-Current Fuse Curves – Type KS



For <u>KEARNEY TYPE KS</u> Fuse Links In <u>KEARNEY CUTOUTS</u>		EATON
BASIS FOR DATA Standards <u>ANSI C37.42</u> Dated <u>1981</u>		
Curves are plotted to <u>MAXIMUM</u> Test points so variations should be <u>MINUS</u>		
No. <u>K-21000 B</u> Date <u>2-24-81</u> Supersedes <u>6-25-74</u>		