



Westinghouse Electric Corporation
Distribution and Control Business Unit
Greentree, PA 15220

Application Data
36-693

July, 1986
Supersedes AD 36-693
dated January, 1986
Mailed to: E/36-600C

Motor Starter Fuse
Performance Curves

Type CLS High Voltage Power Fuses

This envelope contains time-current characteristic curves and style number curve data guide of current limiting fuses as listed below.

Fuse Type	Amperes "R" Designation	Voltage Range kV	Curve Numbers		
			Melting	Total Clearing	Let- Thru
CLS-1, CLS-2, CLS-22	70● to 480 Amps 2R to 26R	2.8 to 5.08 kV●	1	2	9
CLS-1, CLS-2, CLS-15, CLS-25 CLS-13, HCLS-15●, HCLS-25●	25 to 450 Amps 2R to 24R	2.54 kV●	3	4	9
CLS-12①, CLS-14①, CLS-22①, CLS-24① CLS-700, HCLS-12, HCLS-22	30 to 800 Amps● 2R to 44R●	2.0 to 5.08 kV	5	6	9
CLS-18, CLS-28 14" Inch Clip Centers	15 to 225 Amps	8.3 kV	7	8	10
CLSS-18, CLSS-28	70 to 390● Amps	7.2 to 8.3 kV	13	14	None
Emergency Overload Limits	All	All	15		
CLS-650-3	650 Amps 36R	7.2 kV	16	16	..
CLS-800	800 Amps 44R	7.2 kV	17	18	10

"R" Designation - NEMA SG.2-46-10

The numerical and "R" signifies that the fuse will melt in a range of 15 to 35 seconds at a current value equal to 100 x "R" number.

Note: Check Price List for proper curve number assigned to style numbered fuse.

① These fuses are UL Rated.

● Changed or added since previous issue.

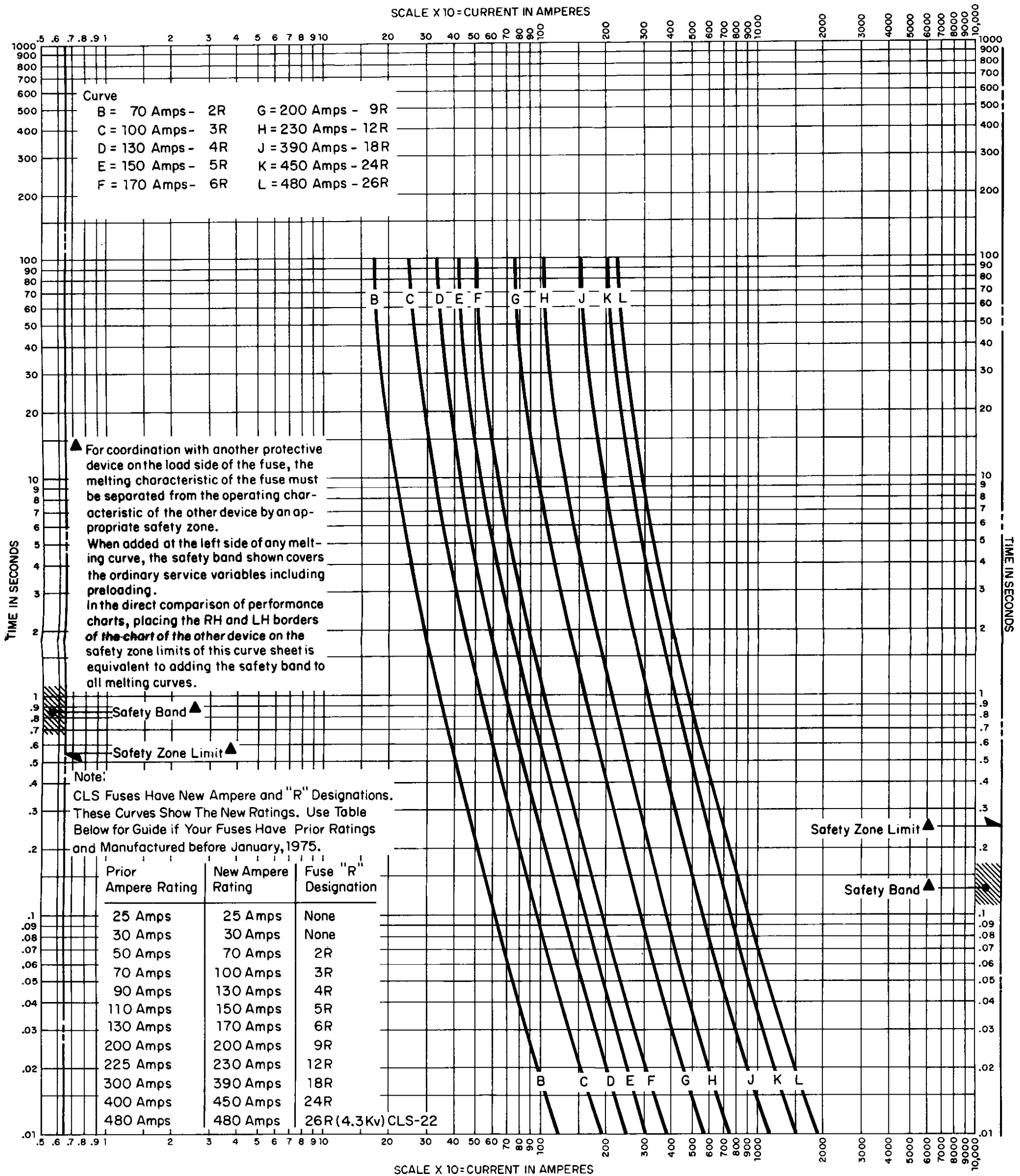


Style Number Index Curve Data Guide

Style Number Series	Curve Number
140D045●	5, 6, 9
151D207	1, 2, 9
151D240	5, 6, 9
151D241	5, 6, 9
151D256	7, 8, 10
151D257	5, 6, 9
151D933	5, 6, 9
151D961	5, 6, 9
151D962	5, 6, 9
151D963	13, 14
151D979	AD 36-711
304C463	1, 2, 9
449D597	5, 6, 9
591C142	3, 4, 9
591C143	3, 4, 9
591C155	3, 4, 9
591C157	3, 4, 9
591C812	3, 4, 9
591C813	3, 4, 9
676C546	1, 2, 9

*INCLUDE THIS PAGE
WITH THE TOTAL FILE
WHICH INCLUDES
THE ENVELOPE COVER*

*BUT NOT AS A
SEPARATE FILE*



Type CLS-1, CLS-2, CLS-22 Motor Starter Current Limiting Fuses

Melting Time-Current Characteristics, 2.8@ to 5.08@ kV

Curves are based on tests starting with fuse units at an ambient temperature of 25°C and without initial load. Curves are plotted to minimum test points so variations should be positive.

● Changed since previous issue.

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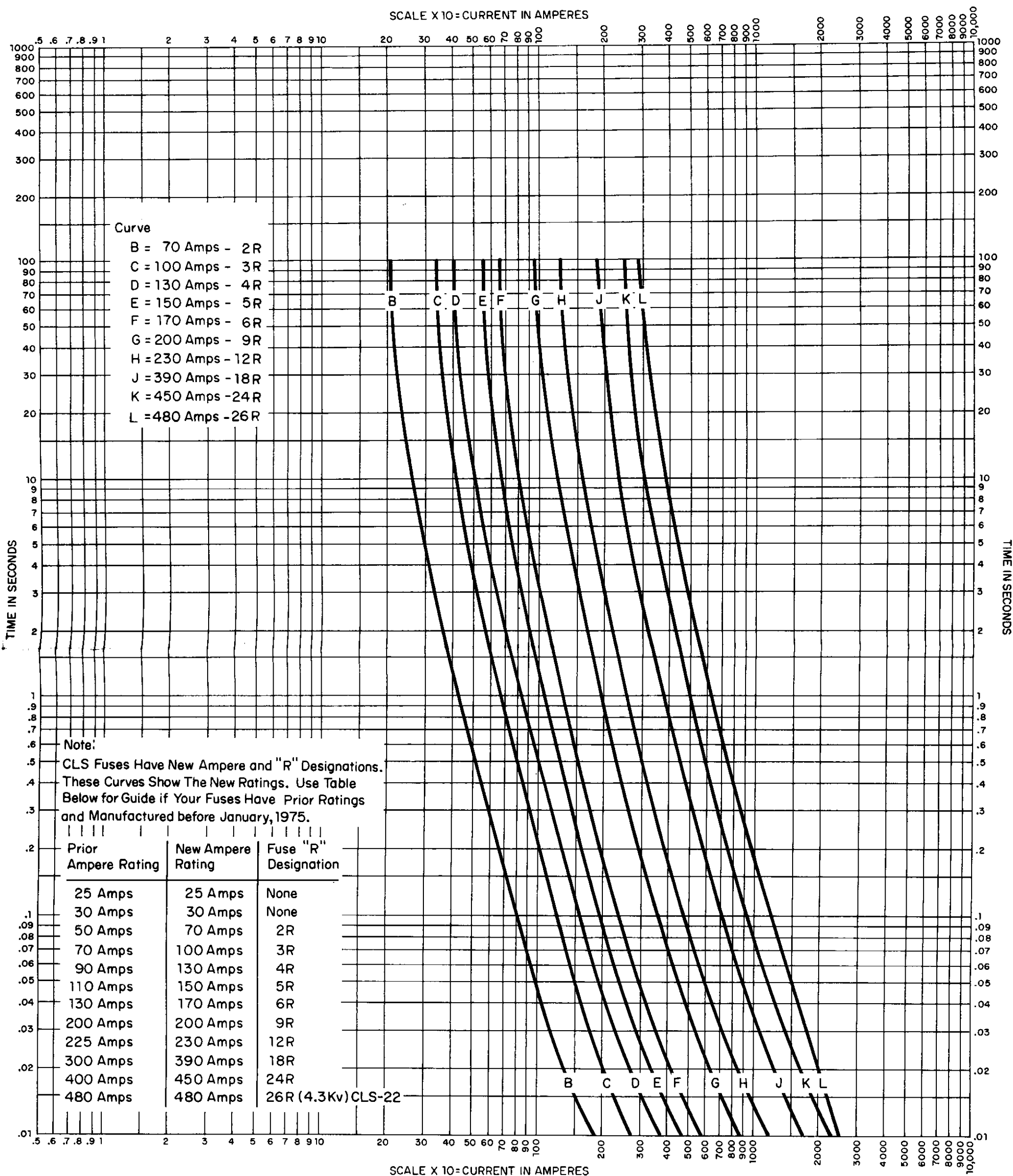
Supersedes Curve No. 1
dated January, 1986

July, 1986

1

Reference Data

Curve:	A	B, C, D, E, F, G, H	J, K	L
Ref. Curve No.	666647	512853	536863	639472
Date:	1-29-74	8-60	10-19-61	7-27-72



Type CLS-1, CLS-2, CLS-22 Motor Starter Current Limiting Fuses
Total Clearing Time-Current Characteristics, 2.8@ to 5.08@ kV

Curves are based on tests starting with fuse units at an ambient temperature of 25°C and without initial load. Curves are plotted to minimum test points so variations should be negative.

● Changed or added since previous issue.

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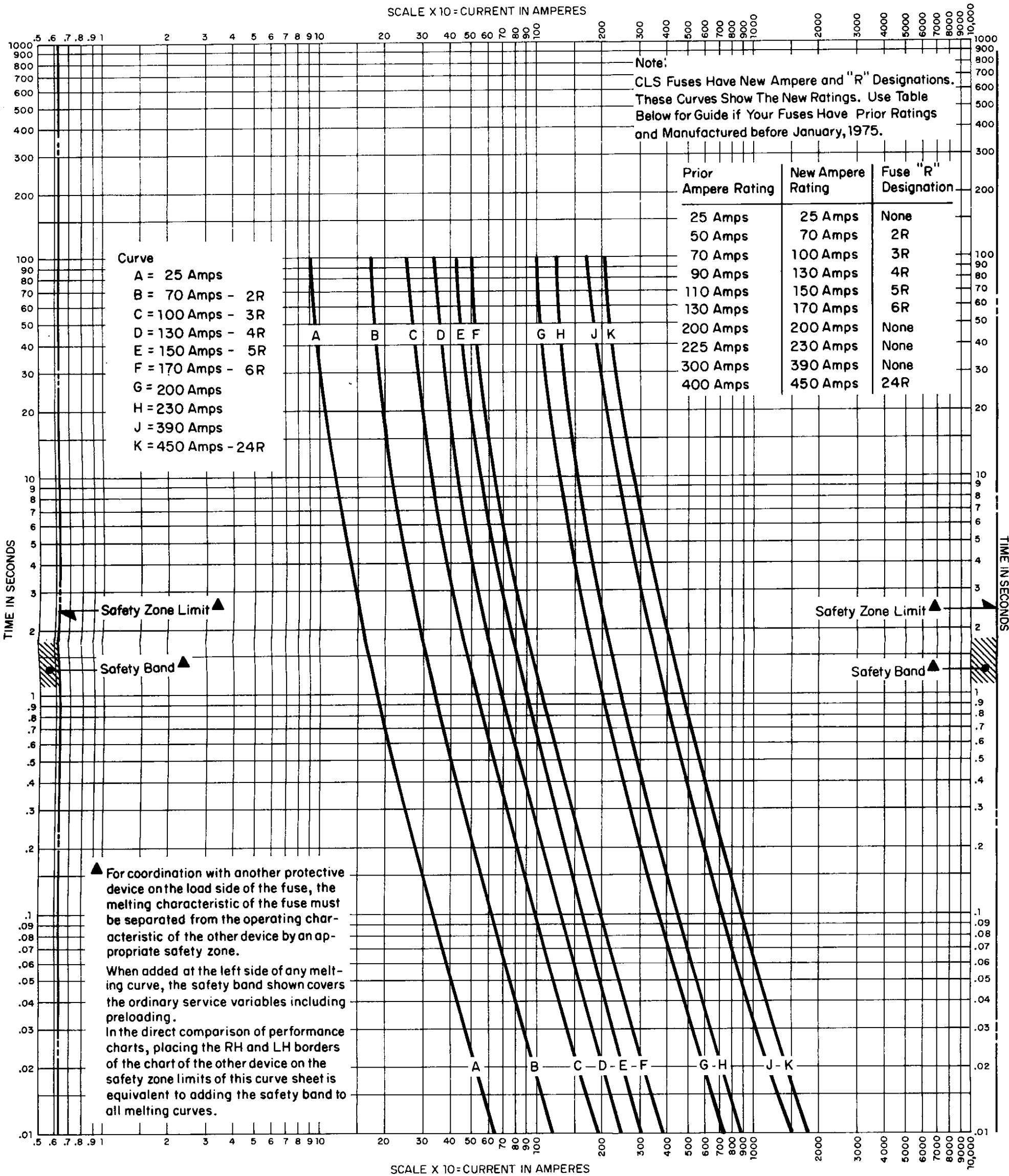
Supersedes Curve No. 2
 dated January, 1986

July, 1986

2

Reference Data

Curve:	A	B, C, D, E, F, G, H	J, K	L
Ref. Curve No.	666647	512854	536864	639472
Date:	1-29-74	8-60	10-19-61	7-27-72



Type CLS-1, CLS-2, CLS-15, CLS-25, HCLS-15, HCLS-25 and CLS-13
Motor Starter Current Limiting Fuses
Melting Time-Current Characteristics, 2.54 kV

Curves are based on tests starting with fuse units at an ambient temperature of 25°C and without initial load. Curves are plotted to minimum test points so variations should be positive.

● Changed since previous issue.

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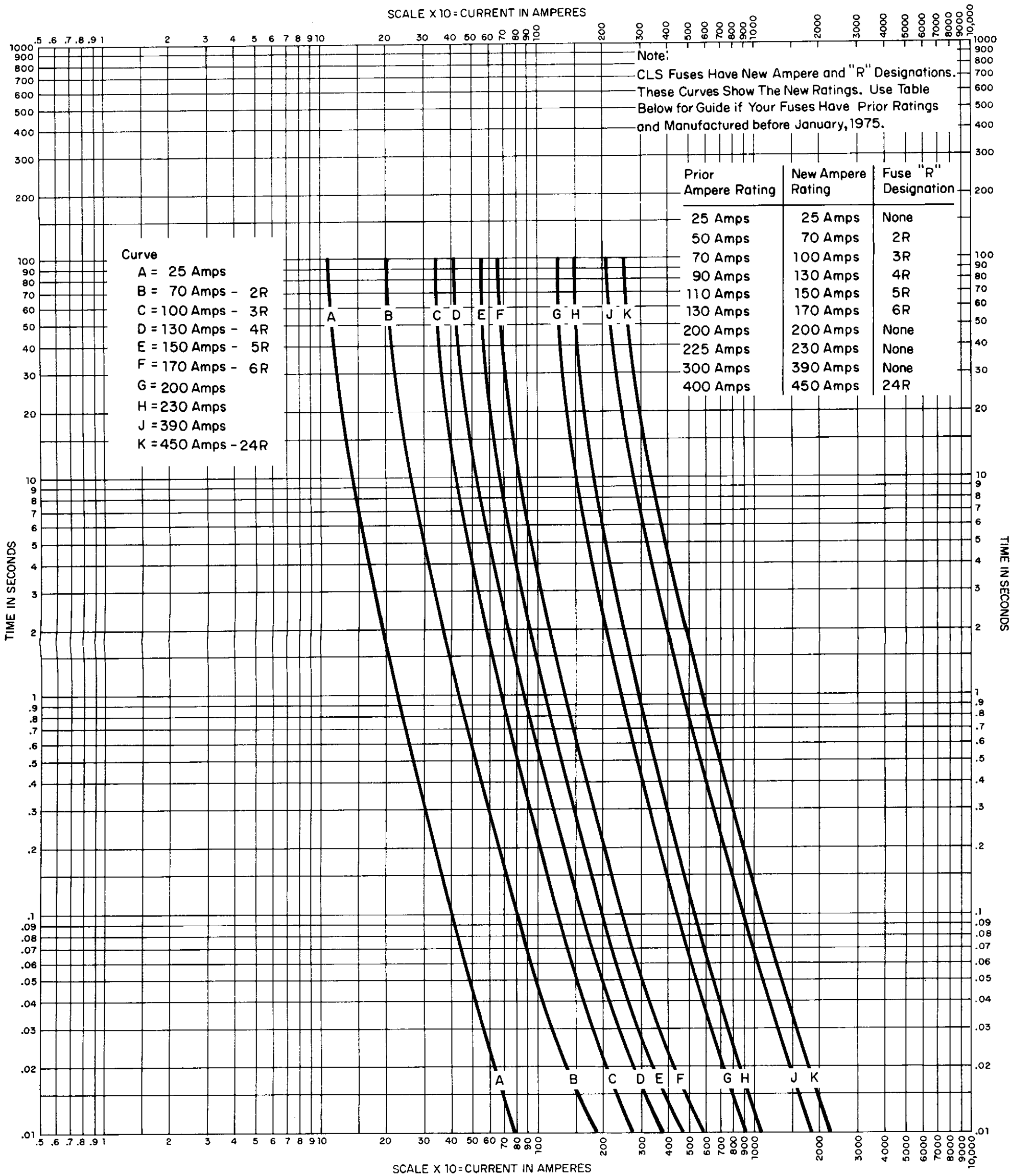
Supersedes Curve No. 3
dated January, 1986

July, 1986

3

Reference Data

Curve:	A	B, C, D, E, F	G, H, J, K
Ref. Curve No.	666647	512853	639405
Date:	1-29-74	8-60	8-30-71



Type CLS-1, CLS-2, CLS-15, CLS-25, HCLS-15, HCLS-25 and CLS-13
Motor Starter Current Limiting Fuses
Total Clearing Time-Current Characteristics, 2.54@ kV

Curves are based on tests starting with fuse units at an ambient temperature of 25°C and without initial load. Curves are plotted to minimum test points so variations should be negative.

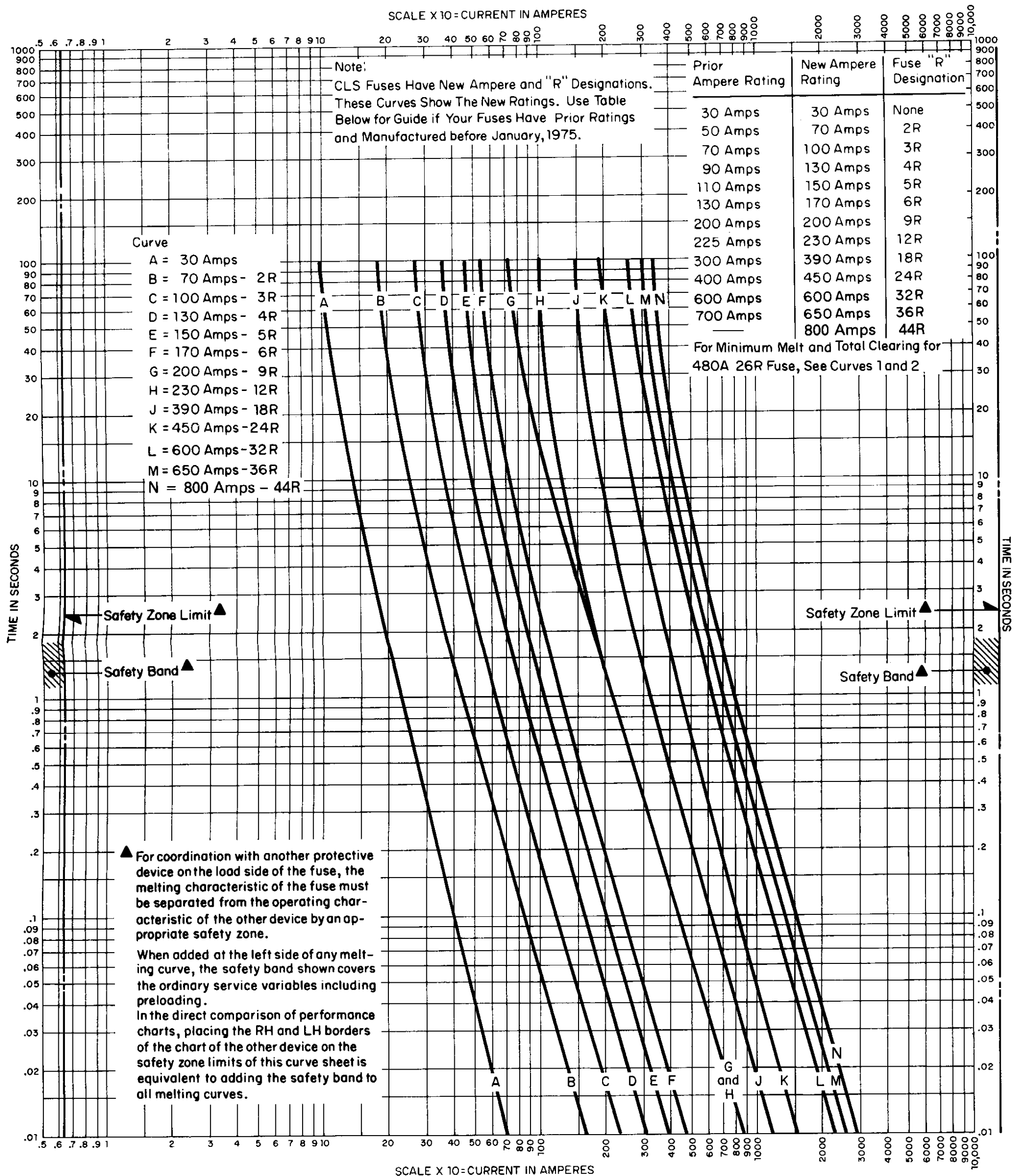
● Changed since previous issue.

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Supersedes Curve No. 4
dated January, 1986
July, 1986

4

Reference Data
Curve: A B, C, D, E, F G, H, J, K
Ref. Curve No. 666647 512854 639406
Date: 1-29-74 8-60 8-30-71



Type CLS-12, CLS-14, CLS-22, CLS-24, CLS-700, HCLS-12 and HCLS-22 Motor Starter Current Limiting Fuses
Melting Time-Current Characteristics, 5.08 kV@

Curves are based on tests starting with fuse units at an ambient temperature of 25°C and without initial load. Curves are plotted to minimum test points so variations should be positive.

● Changed since previous issue.

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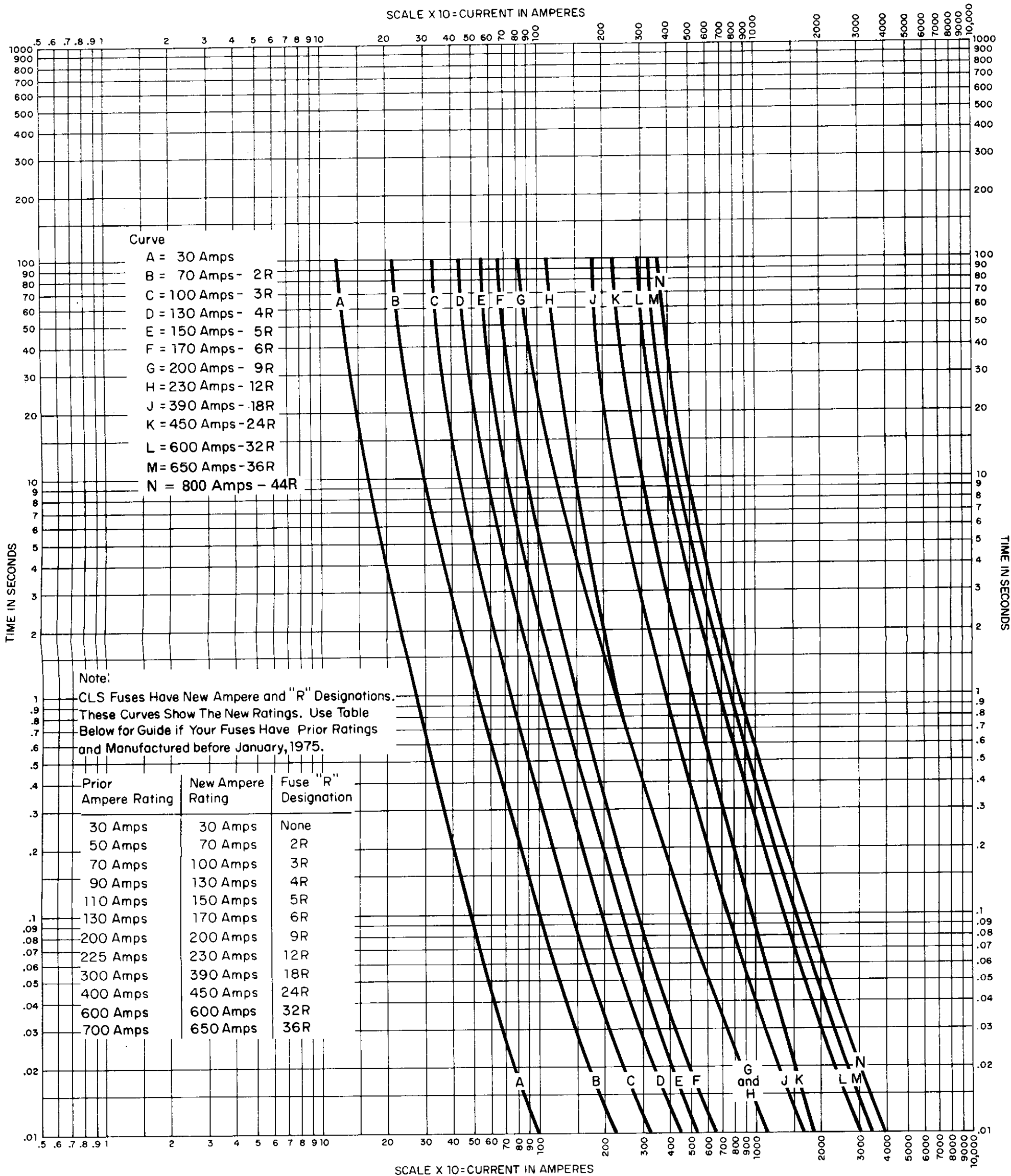
Supersedes Curve No. 5
 dated January, 1986

July, 1986

5

Reference Data

Curve:	A, B, C, D, E, F, G, J	G, H	K	L, M
Ref. Curve No.	666906	667003	666910	667000
Date:	2-8-77	6-16-78	9-8-77	6-15-78



Type CLS-12, CLS-14, CLS-22, CLS-24, CLS-700, HCLS-12 and HCLS-22 Motor Starter Current Limiting Fuses

Total Clearing Time-Current Characteristics, 5.08 kV

Curves are based on tests starting with fuse units at an ambient temperature of 25°C and without initial load. Curves are plotted to maximum test points so variations should be negative.

● Changed since previous issue.

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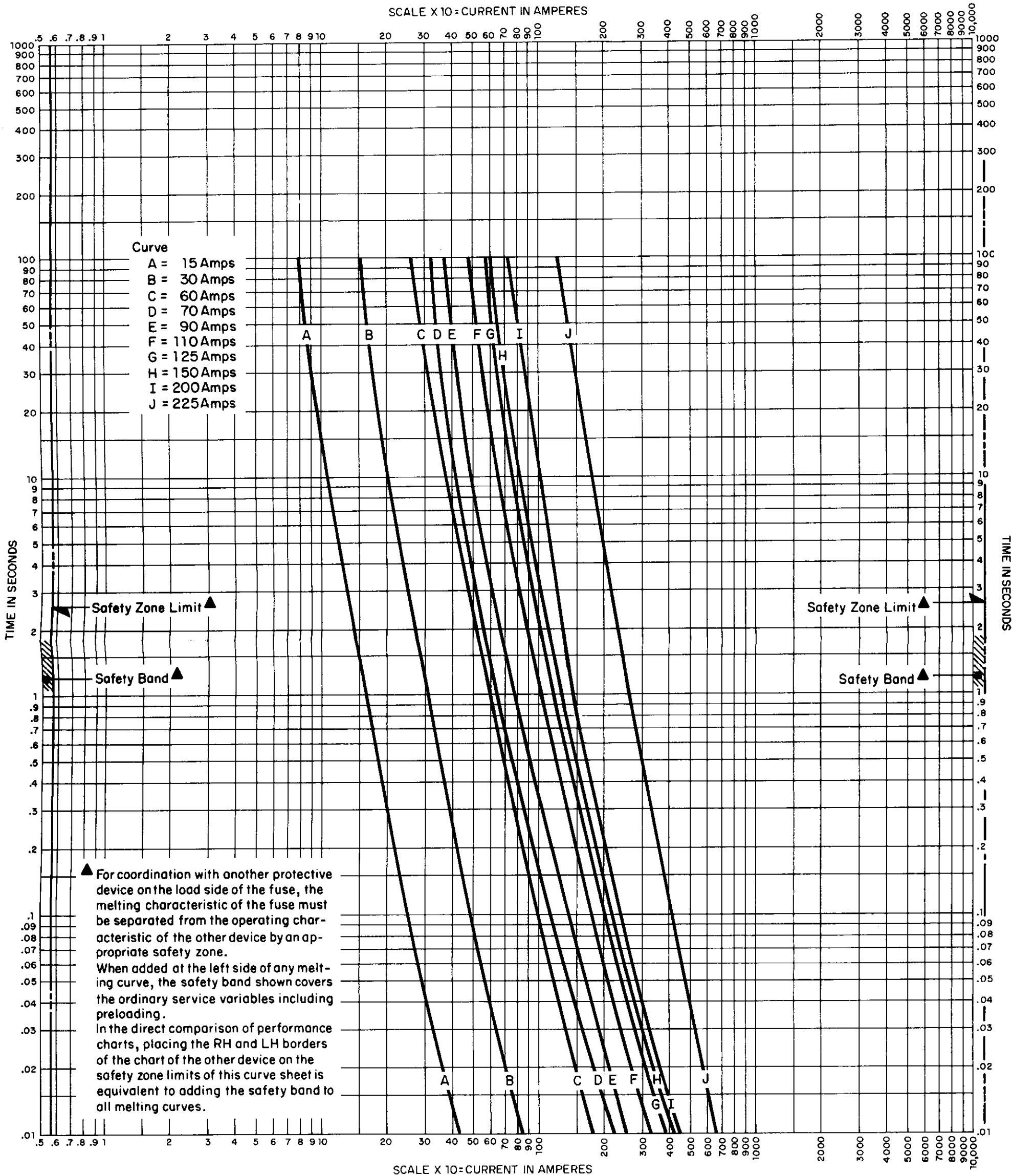
Supersedes Curve No. 6
dated January, 1986

July, 1986

6

Reference Data

Curve:	A, B, C, D, E, F, J	G, H	K	L, M
Ref. Curve No.	666907	667004	666910	667001
Date:	2-8-77	6-16-78	9-8-77	6-16-78



Type CLS-18 and CLS-28 Motor Starter Current Limiting Fuses
Melting Time-Current Characteristics, 8.3 Kv

Curves are based on tests starting with fuse units at an ambient temperature of 25°C and without initial load. Curves are plotted to minimum test points so variations should be positive.

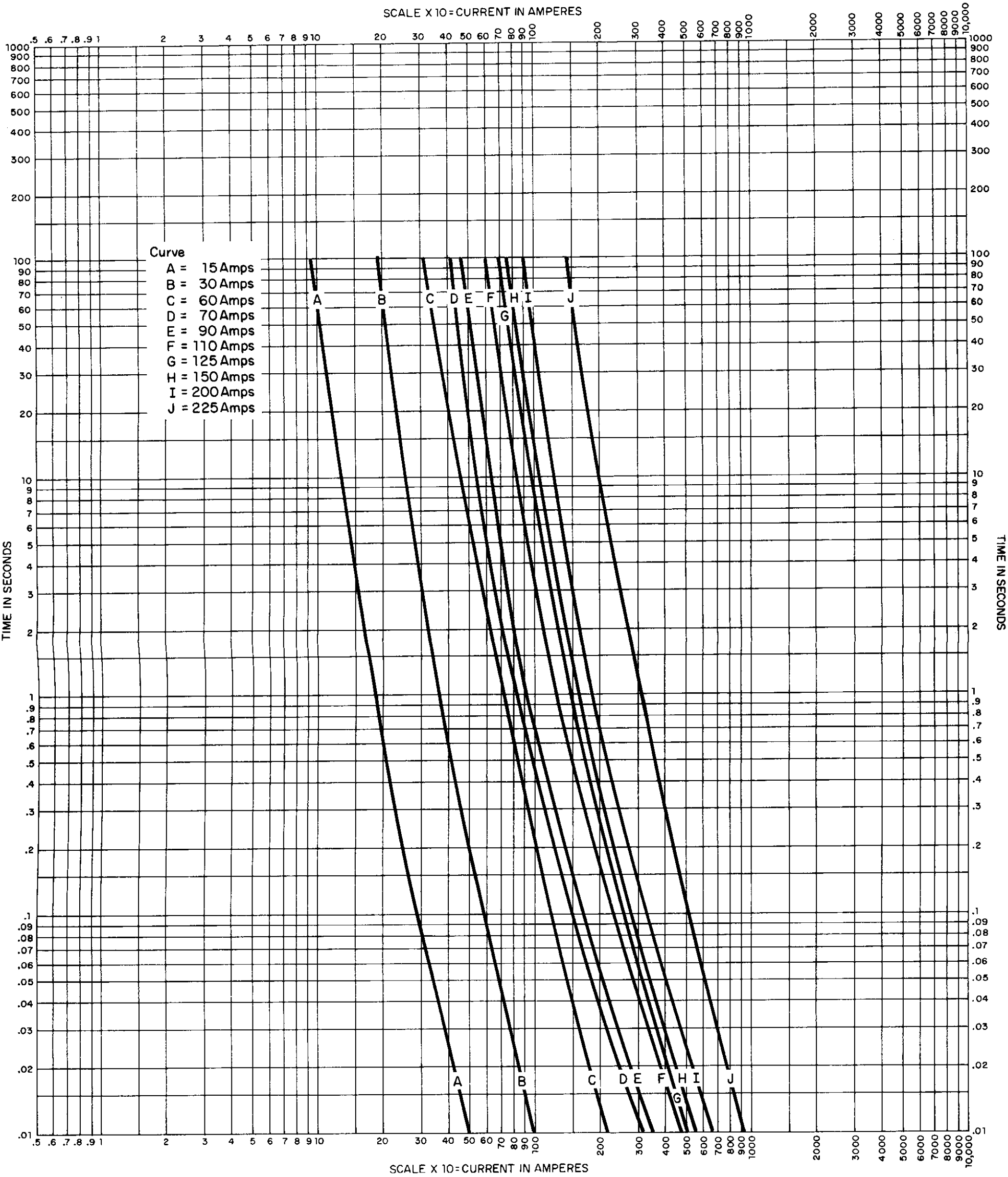
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Supersedes Curve No. 7
dated December, 1979

January, 1986

Reference Data

Curve: A, B, C, D, E, F, G, H, I, J
Ref. Curve No. 666642
Date: 10-29-73



Type CLS-18, CLS-28 Motor Starter Current Limiting Fuses
Total Clearing Time-Current Characteristics, 8.3 Kv

Curves are based on tests starting with fuse units at an ambient temperature of 25°C and without initial load. Curves are plotted to minimum test points so variations should be negative.

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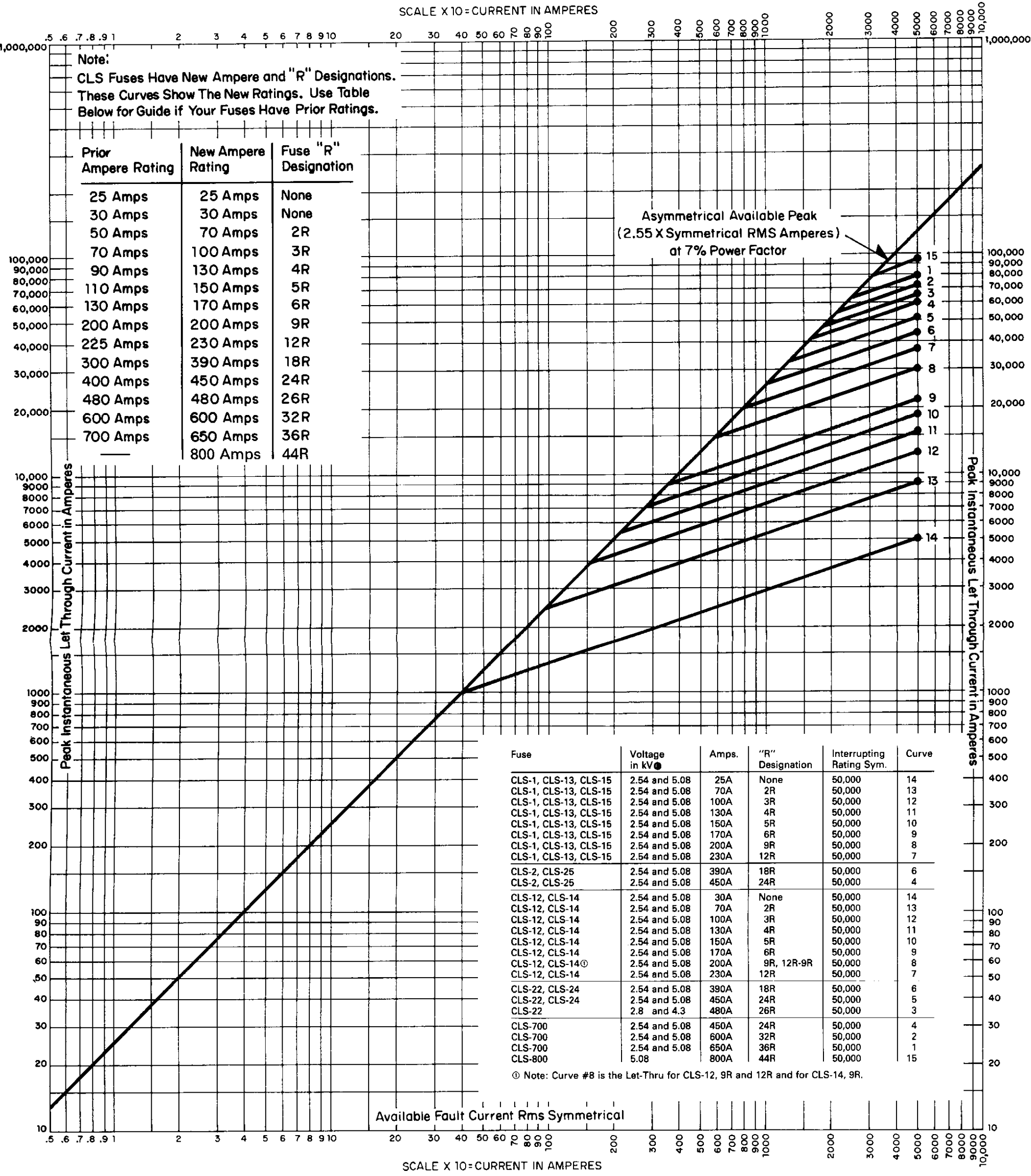
Supersedes Curve No. 8
dated December, 1979

January, 1986

Reference Data

Curve: A, B, C, D, E, F, G, H, I, J
Ref. Curve No. 666643
Date: 10-29-73

SCALE X 10 = CURRENT IN AMPERES



Note:
CLS Fuses Have New Ampere and "R" Designations.
These Curves Show The New Ratings. Use Table
Below for Guide if Your Fuses Have Prior Ratings.

Prior Ampere Rating	New Ampere Rating	Fuse "R" Designation
25 Amps	25 Amps	None
30 Amps	30 Amps	None
50 Amps	70 Amps	2R
70 Amps	100 Amps	3R
90 Amps	130 Amps	4R
110 Amps	150 Amps	5R
130 Amps	170 Amps	6R
200 Amps	200 Amps	9R
225 Amps	230 Amps	12R
300 Amps	390 Amps	18R
400 Amps	450 Amps	24R
480 Amps	480 Amps	26R
600 Amps	600 Amps	32R
700 Amps	650 Amps	36R
	800 Amps	44R

Fuse	Voltage in kV	Amps.	"R" Designation	Interrupting Rating Sym.	Curve
CLS-1, CLS-13, CLS-15	2.54 and 5.08	25A	None	50,000	14
CLS-1, CLS-13, CLS-15	2.54 and 5.08	70A	2R	50,000	13
CLS-1, CLS-13, CLS-15	2.54 and 5.08	100A	3R	50,000	12
CLS-1, CLS-13, CLS-15	2.54 and 5.08	130A	4R	50,000	11
CLS-1, CLS-13, CLS-15	2.54 and 5.08	150A	5R	50,000	10
CLS-1, CLS-13, CLS-15	2.54 and 5.08	170A	6R	50,000	9
CLS-1, CLS-13, CLS-15	2.54 and 5.08	200A	9R	50,000	8
CLS-1, CLS-13, CLS-15	2.54 and 5.08	230A	12R	50,000	7
CLS-2, CLS-25	2.54 and 5.08	390A	18R	50,000	6
CLS-2, CLS-25	2.54 and 5.08	450A	24R	50,000	4
CLS-12, CLS-14	2.54 and 5.08	30A	None	50,000	14
CLS-12, CLS-14	2.54 and 5.08	70A	2R	50,000	13
CLS-12, CLS-14	2.54 and 5.08	100A	3R	50,000	12
CLS-12, CLS-14	2.54 and 5.08	130A	4R	50,000	11
CLS-12, CLS-14	2.54 and 5.08	150A	5R	50,000	10
CLS-12, CLS-14	2.54 and 5.08	170A	6R	50,000	9
CLS-12, CLS-14	2.54 and 5.08	200A	9R, 12R-9R	50,000	8
CLS-12, CLS-14	2.54 and 5.08	230A	12R	50,000	7
CLS-22, CLS-24	2.54 and 5.08	390A	18R	50,000	6
CLS-22, CLS-24	2.54 and 5.08	450A	24R	50,000	5
CLS-22	2.8 and 4.3	480A	26R	50,000	3
CLS-700	2.54 and 5.08	450A	24R	50,000	4
CLS-700	2.54 and 5.08	600A	32R	50,000	2
CLS-700	2.54 and 5.08	650A	36R	50,000	1
CLS-800	5.08	800A	44R	50,000	15

Ⓢ Note: Curve #8 is the Let-Thru for CLS-12, 9R and 12R and for CLS-14, 9R.

Available Fault Current Rms Symmetrical

SCALE X 10 = CURRENT IN AMPERES

Type CLS Motor Starter Current Limiting Fuses
Let-Thru Current Curves, 2.54 to 5.08 kV

● Changed since previous issue.
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Supersedes Curve No. 9
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July, 1986

9

Reference Data	1 and 2	3	4 Thru 14
Curve:			
Ref. Curve No.	667002	667008	639315
Date:	6-16-78	9-13-79	2-22-71

Type CLS-18, CLS-28 and CLS-800® Motor Starter Current Limiting Fuses

Let-Thru Current Characteristics, 7.2-8.3 kV

● Added since previous issue.

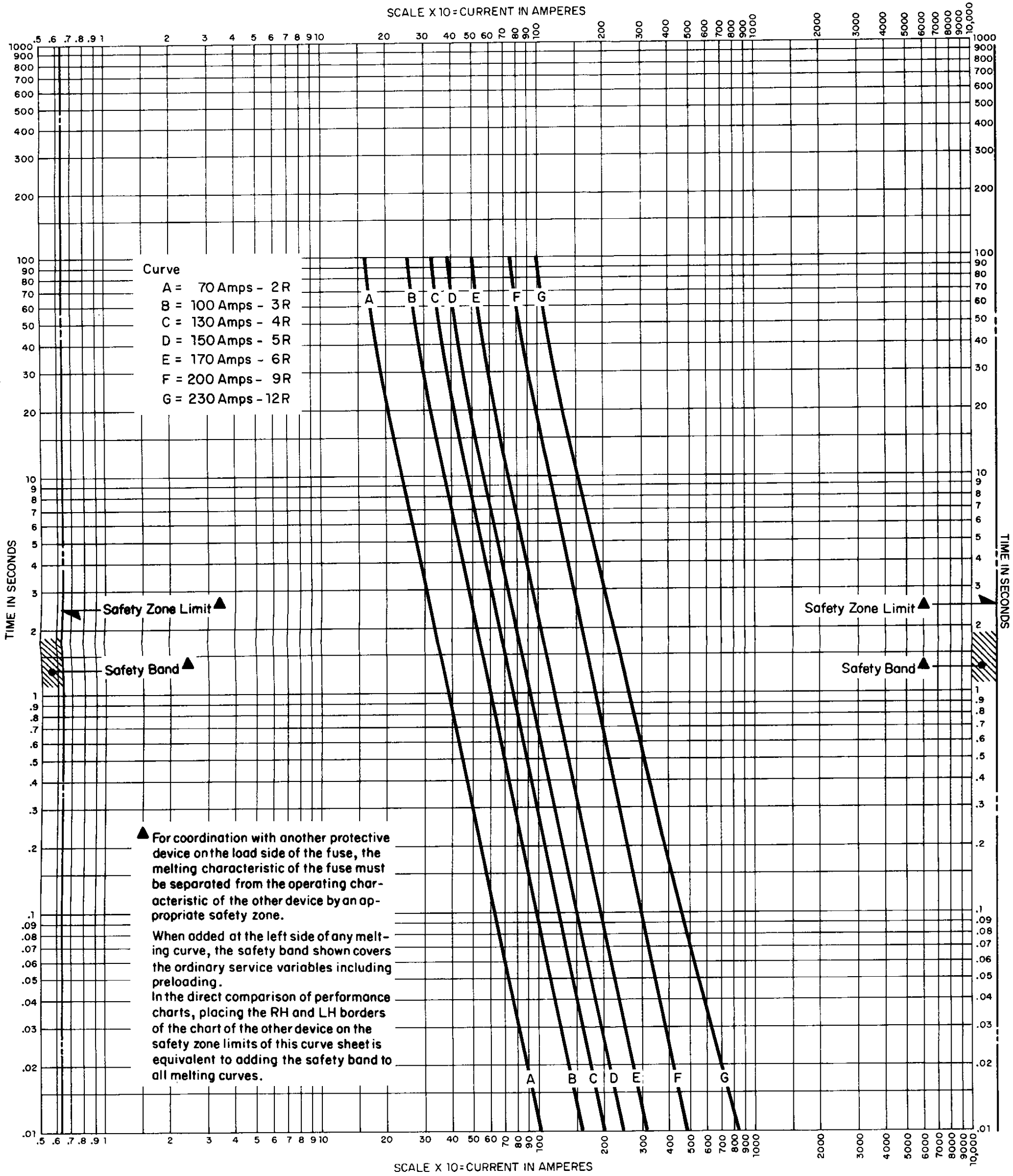
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**Supersedes Curve No. 10
dated January, 1986**

July, 1986

Reference Data
Curve: 1 Thru 9
Ref. Curve No. 666798
Date: 12-2-75

10



Type CLSS-18 and CLSS-28
Melting Time-Current Characteristics, 7.2 and 8.3 Kv

Curves are based on tests starting with fuse units at an ambient temperature of 25°C and without initial load. Curves are plotted to minimum test points so variations should be positive.

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Supersedes Curve No. 13
dated December, 1979

January, 1986

Reference Data
Curve: A, B, C, D, E, F, G
Ref. Curve No. 667006
Date: 1-5-79

Type CLSS-18 and CLSS-28

Total Clearing Time-Current Characteristics, 7.2 and 8.3 Kv

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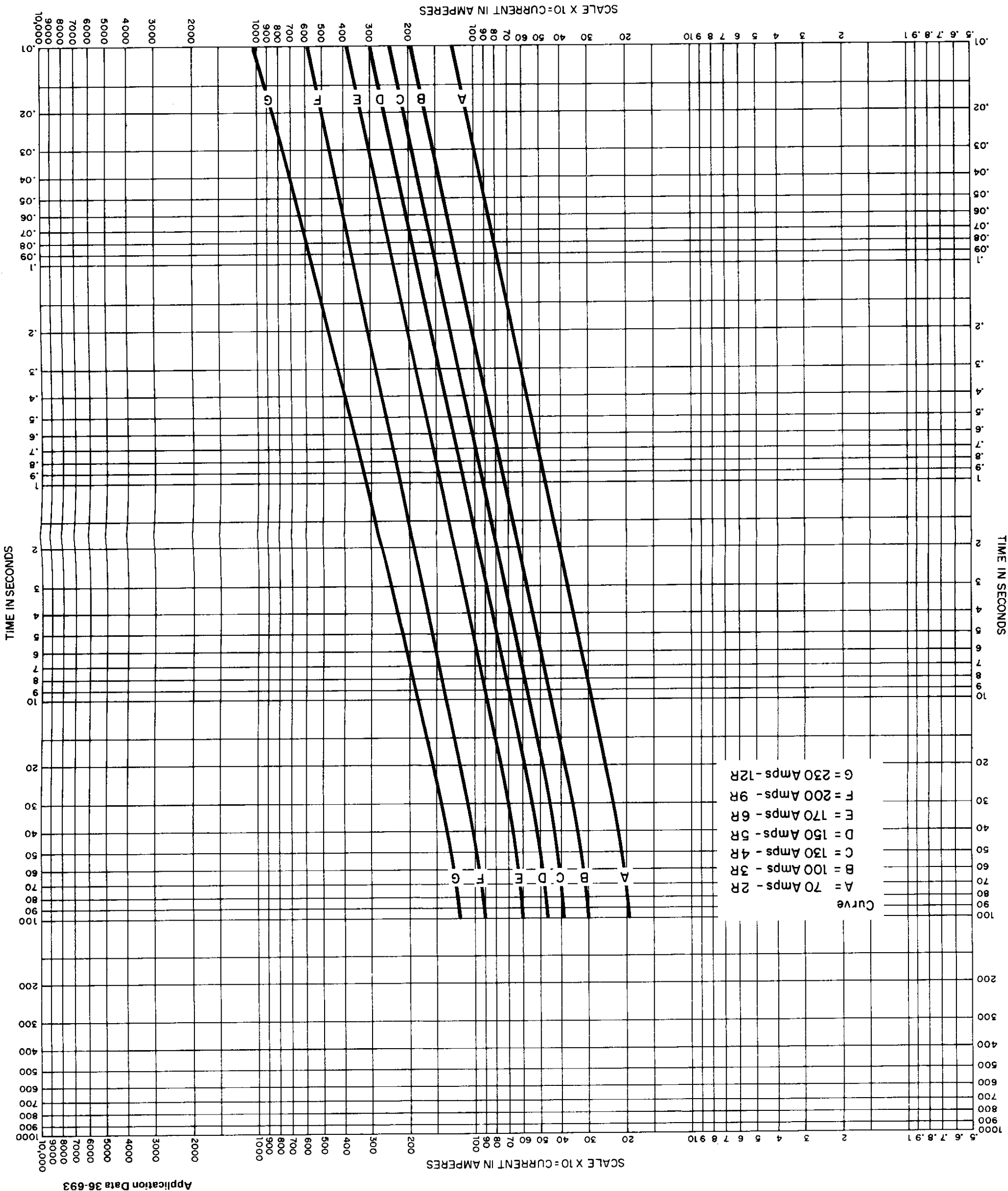
Reference Data

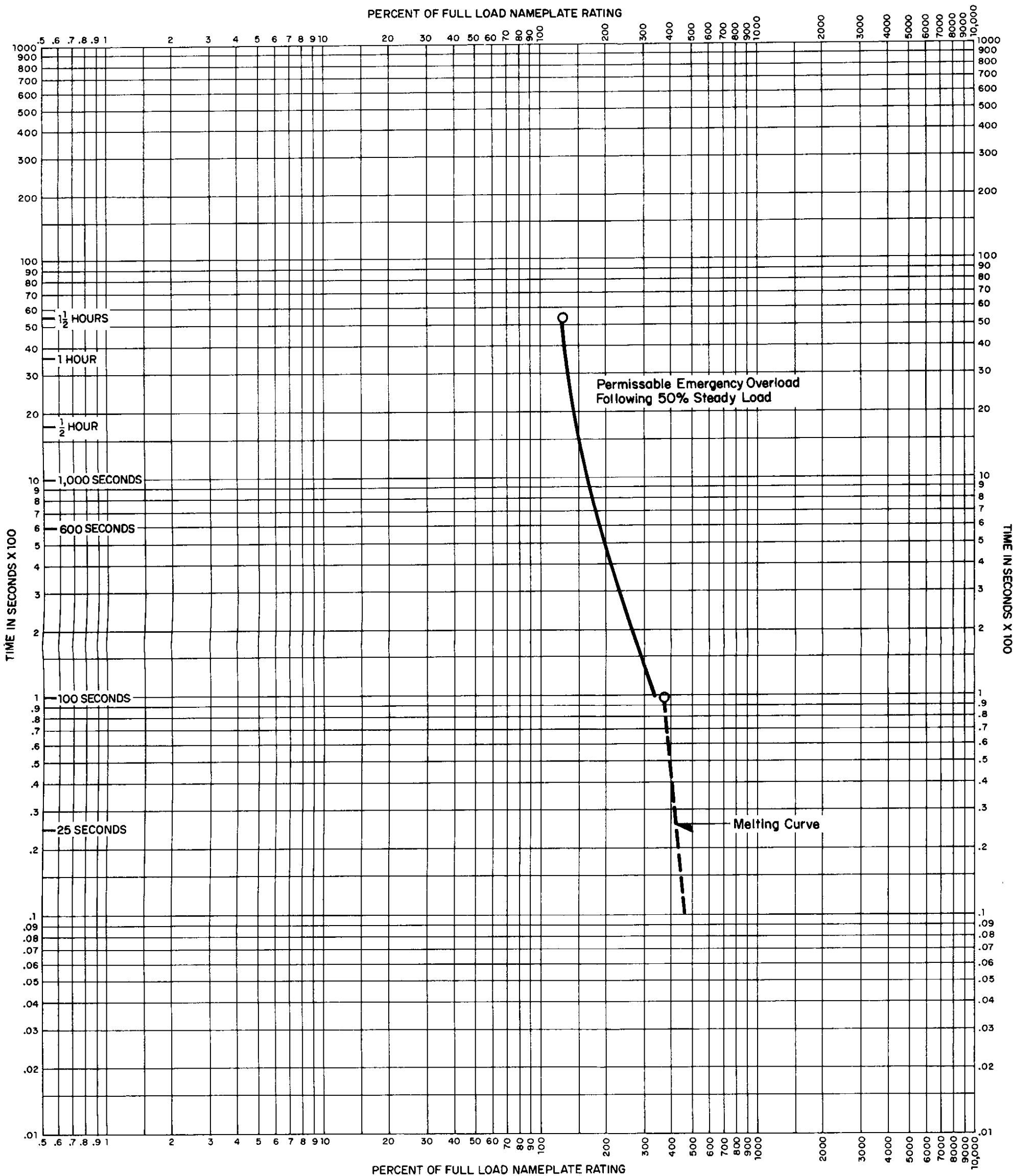
Curve: A, B, C, D, E, F, G
Ref. Curve No. 667007
Date: 1-5-79
666910
9-8-77

January, 1986

Supersedes Curve No. 14
dated December, 1979

14





Type CLS Motor Starter Current Limiting Power Fuses
Emergency Overload Time-Current Characteristics

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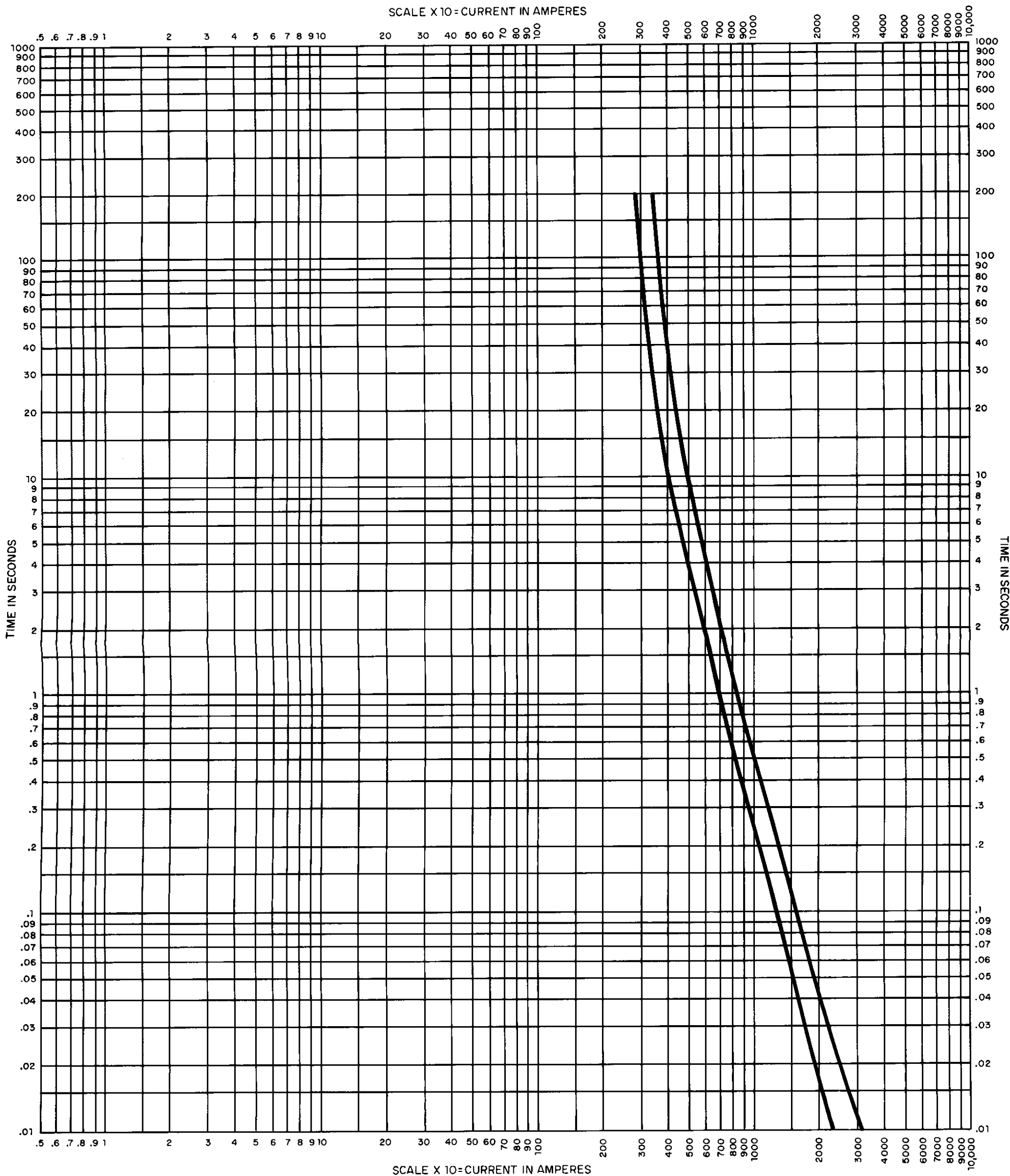
Supersedes Curve No. 15
dated December, 1979

January, 1986

Reference Data

Curve: 1
Ref. Curve No. 512853
Date: 8-60

15



Type CLS-650-3 Motor Starter Fuse
Minimum Melting and Total Clearing Time-Current Characteristics, 7.2 kV

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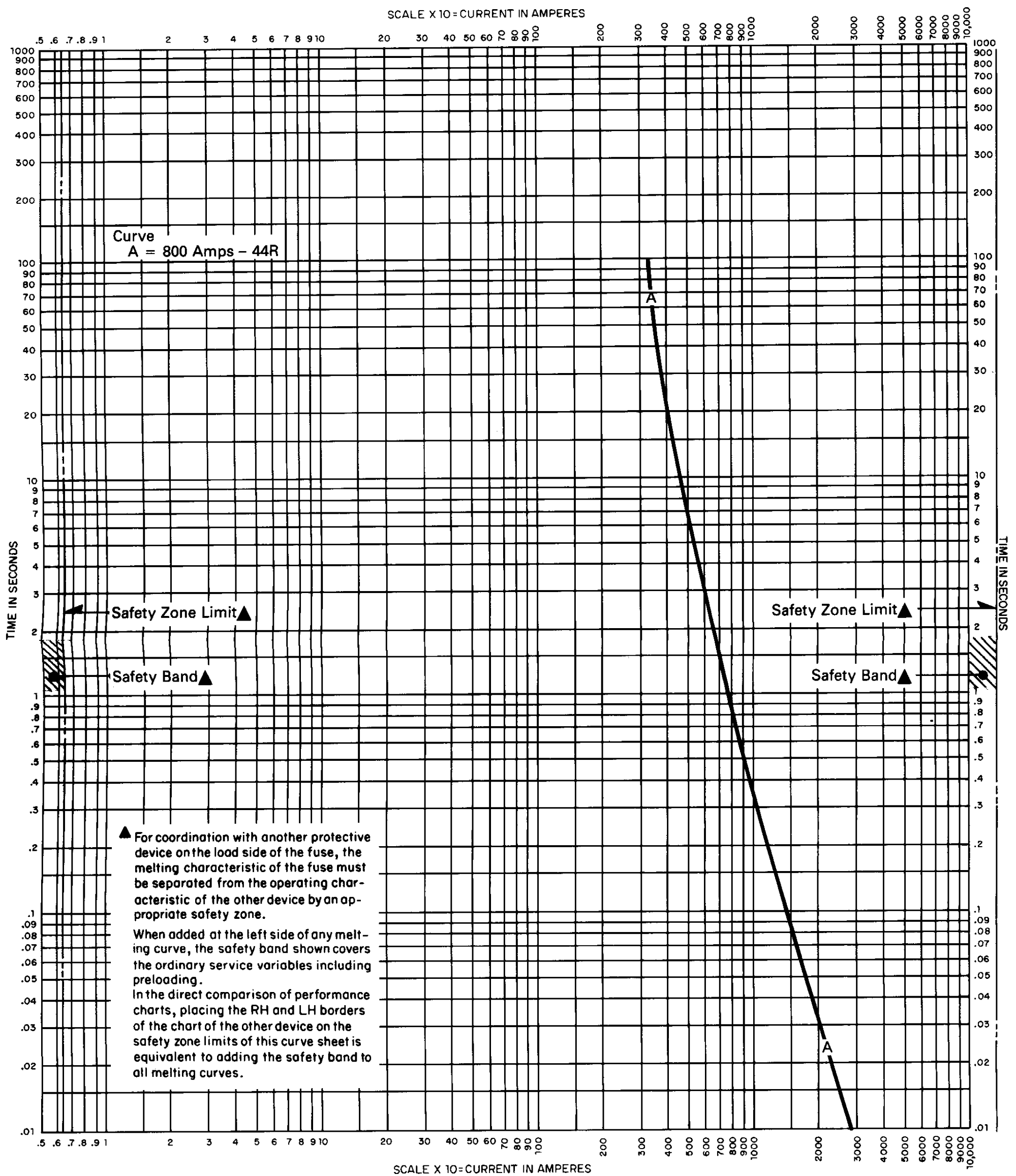
Curve No.
New Information

16

January, 1986

Reference Data

Ref. Curve No. 705456
Date: 9-1-83



Type CLS-800 Motor Starter Current Limiting Fuses

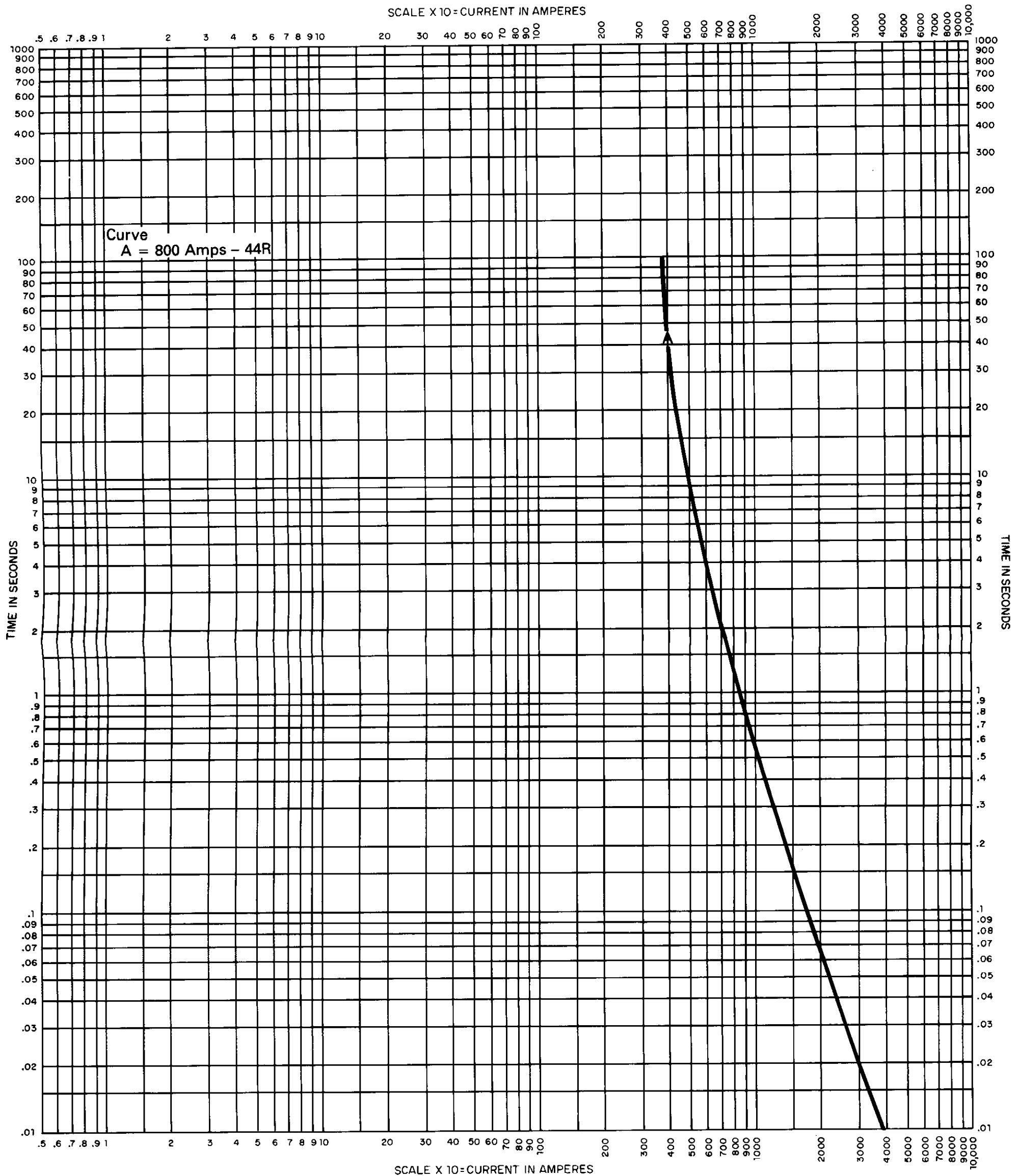
Melting Time-Current Characteristics, 7.2 kV

Curves are based on tests starting with fuse units at an ambient temperature of 25°C and without initial load. Curves are plotted to minimum test points so variations should be positive.

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Curve No.
New Information
January, 1986

17



Type CLS-800 Motor Starter Current Limiting Fuses
Total Clearing Time-Current Characteristics, 7.2 kV

Curves are based on tests starting with fuse units at an ambient temperature of 25°C and without initial load. Curves are plotted to maximum test points so variations should be negative.

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Curve No.
New Information
January, 1986

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