

high voltage power fuses

types BA, DBA, BAL, CLS and BAL-LR

application
data

36-660-A

curves

This envelope contains . . .

time-current characteristic curves of high voltage power fuses and coordination charts as listed below:

fuse type	speed		voltage range kv	curve number ⁺	
	ratio■	designation		melting	total clearing
BA-200	6.5— 8	standard	2.4 to 34.5	1	2
BA-200	8 —10	time-lag	2.4 to 34.5	3	4
BA-400	6 —12.5	standard	2.4 to 34.5	5	6
BA-400	15 —19	time-lag	2.4 to 34.5	7	8
BA-800	9 —12.5	standard	2.4 to 14.4	9	9
DBA-1, 2 and 5	5.5—11.5	standard	2.4 to 138	10	
DBA-1		standard	2.4 to 23		11
DBA-1, 2 and 5		standard	34.5 to 69		12
DBA-2		standard	92 to 138		13
DBA-1, 2 and 5	14.5—19	time-lag	2.4 to 138	14	
DBA-1		time-lag	2.4 to 23		15
DBA-1, 2 and 5		time-lag	34.5 to 69		16
DBA-2		time-lag	92 to 138		17
BAL-PT, 10, 25, 200 and 300	7 — 9.5		2.4 to 23 ▲	18	19
CLS and BAL-LR			2.4 to 4.8	20	21
coordination and overload chart for transformers and fuses				22 (two copies)	
coordination chart for reclosing circuit breaker and fuse				23	

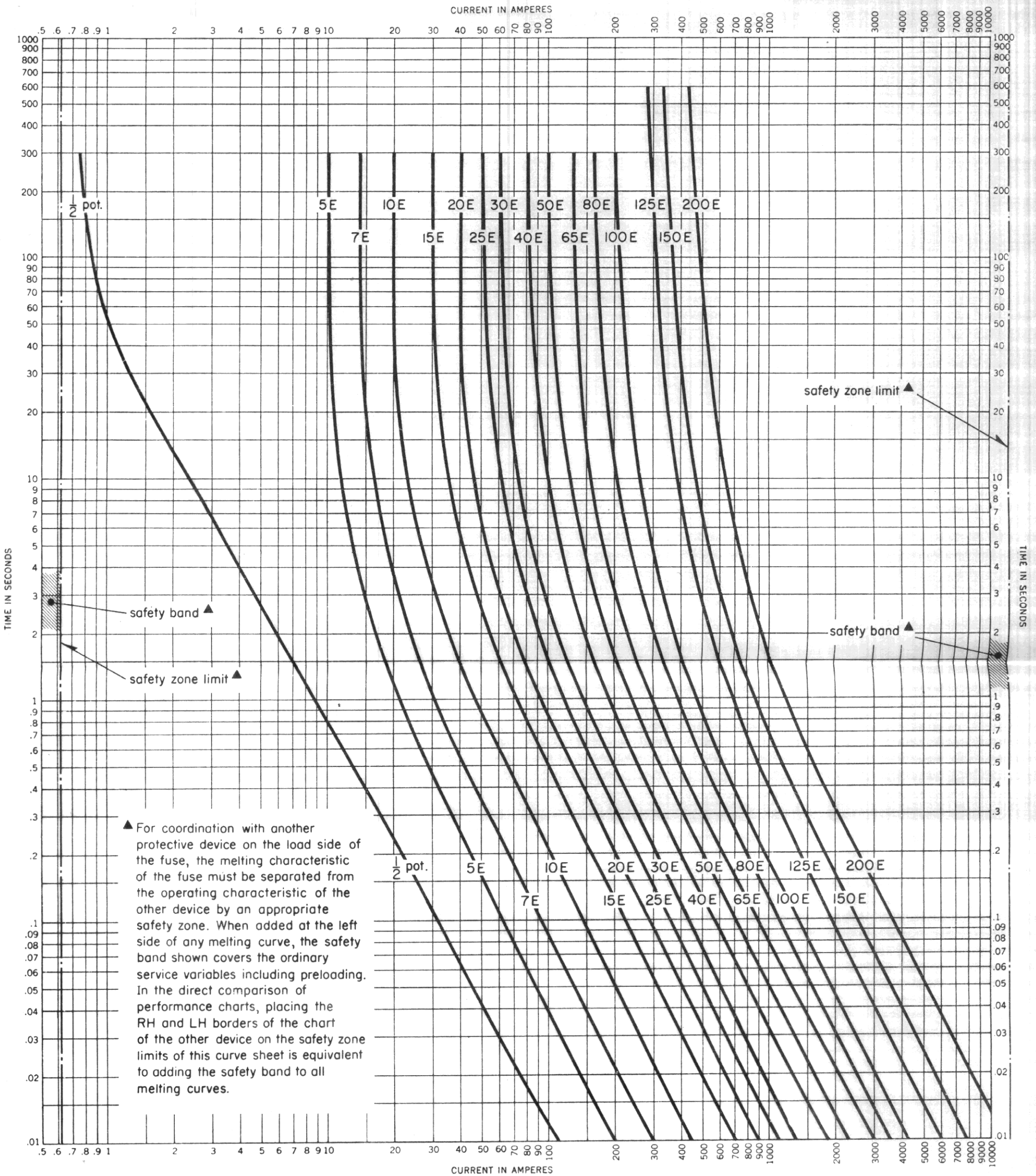
■ The speed ratio of a fuse is the ratio between the 0.1 second and the 300 to 600 second melting current.

▲ 23 kv for potential transformer (PT) fuses only.

✦ Individual replacement curves may be obtained through nearest district office.

These curves to be used in conjunction with application data 36-660.

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type BA-200 refill power fuses • standard speed refills

melting time-current characteristics

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 all variations should be positive.

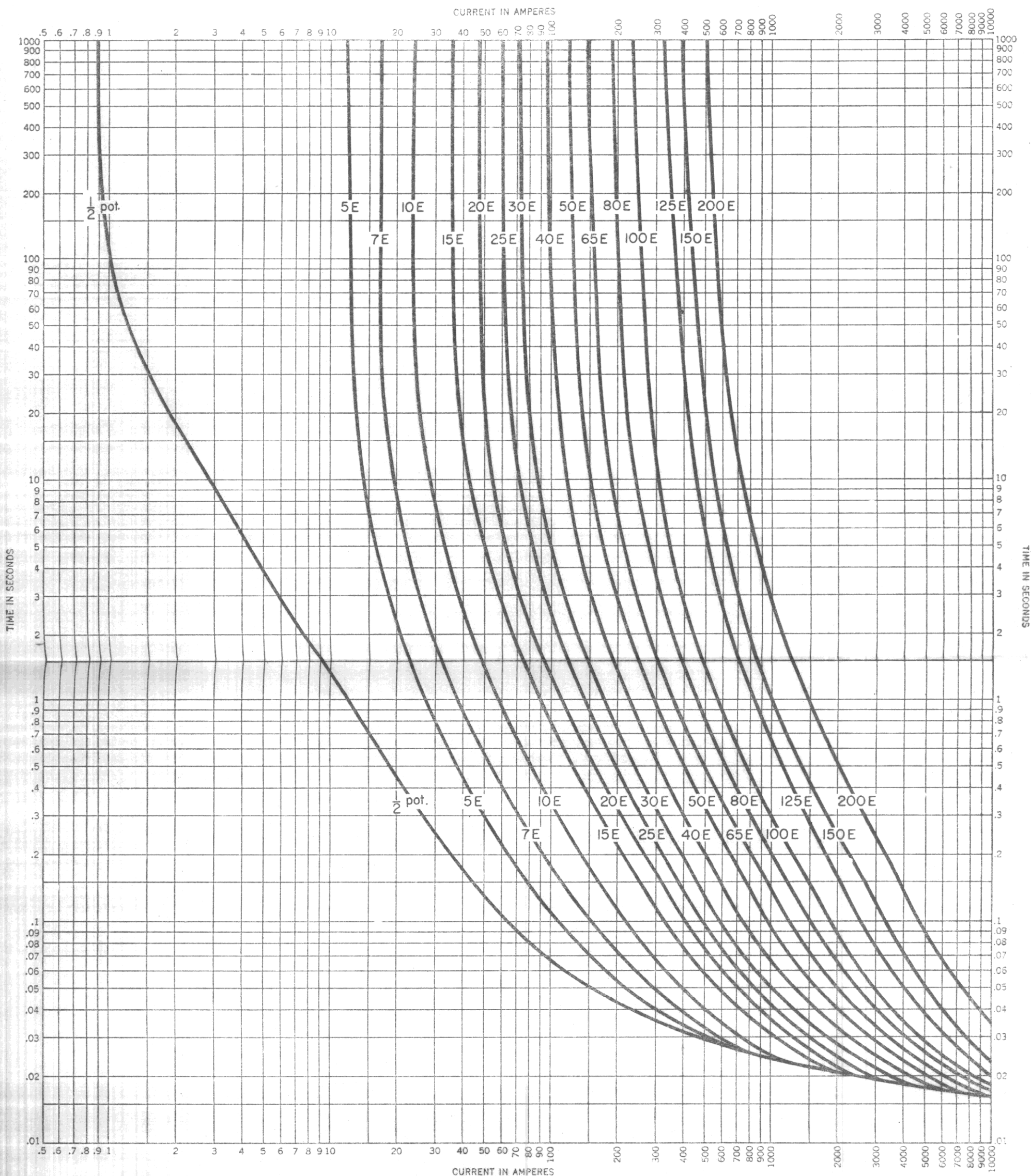
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 printed in U.S.A.

curve no.

1

reference no. 281158

January, 1961



type BA-200 refill power fuses • standard speed refills

total clearing time-current characteristics—2.4 to 34.5 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 all variations should be negative.

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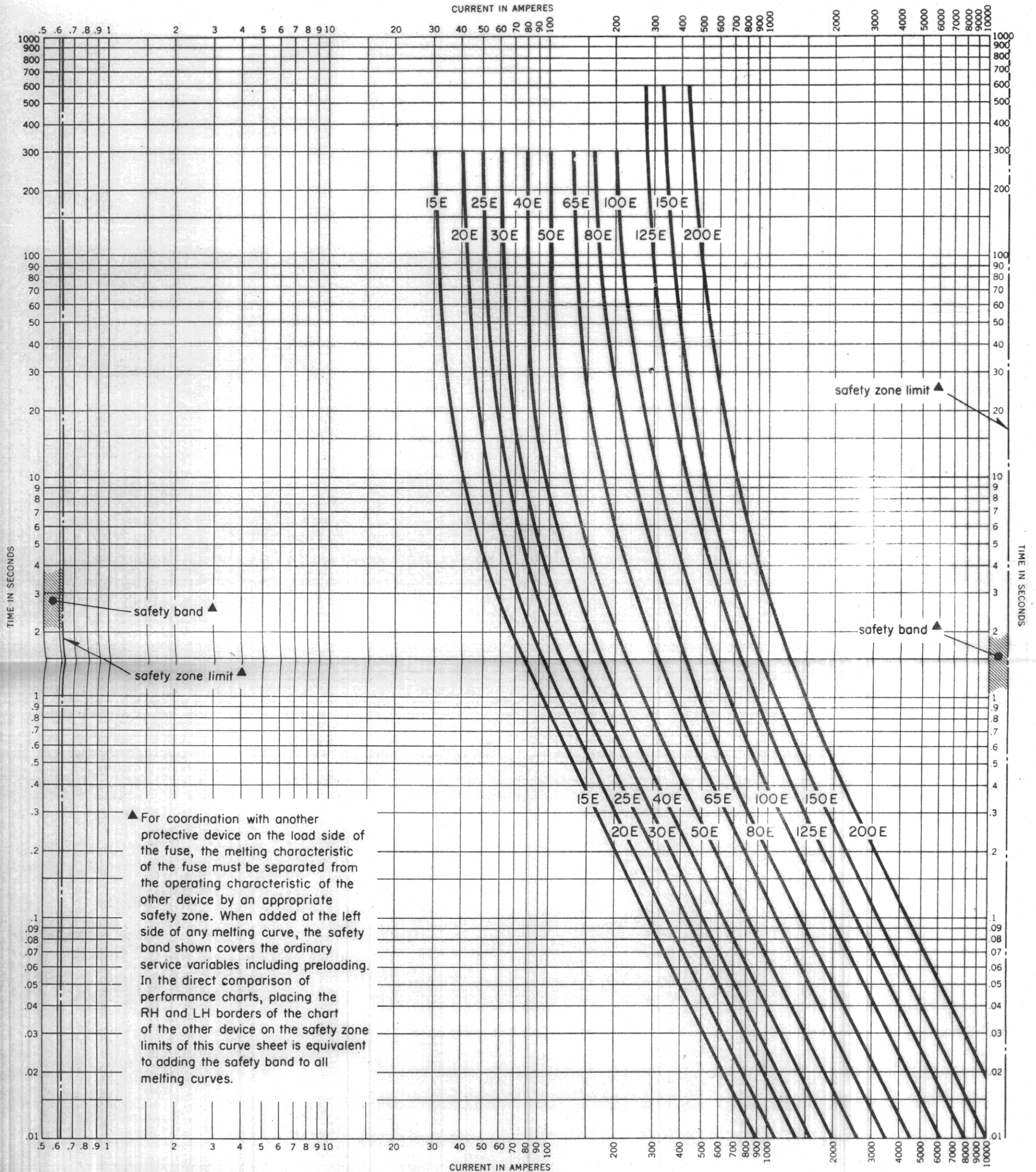
printed in U.S.A.

curve no.

2

reference no. 280216

January, 1961



type BA-200 refill power fuses • time lag refills

melting time-current characteristics

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 all variations should be positive.

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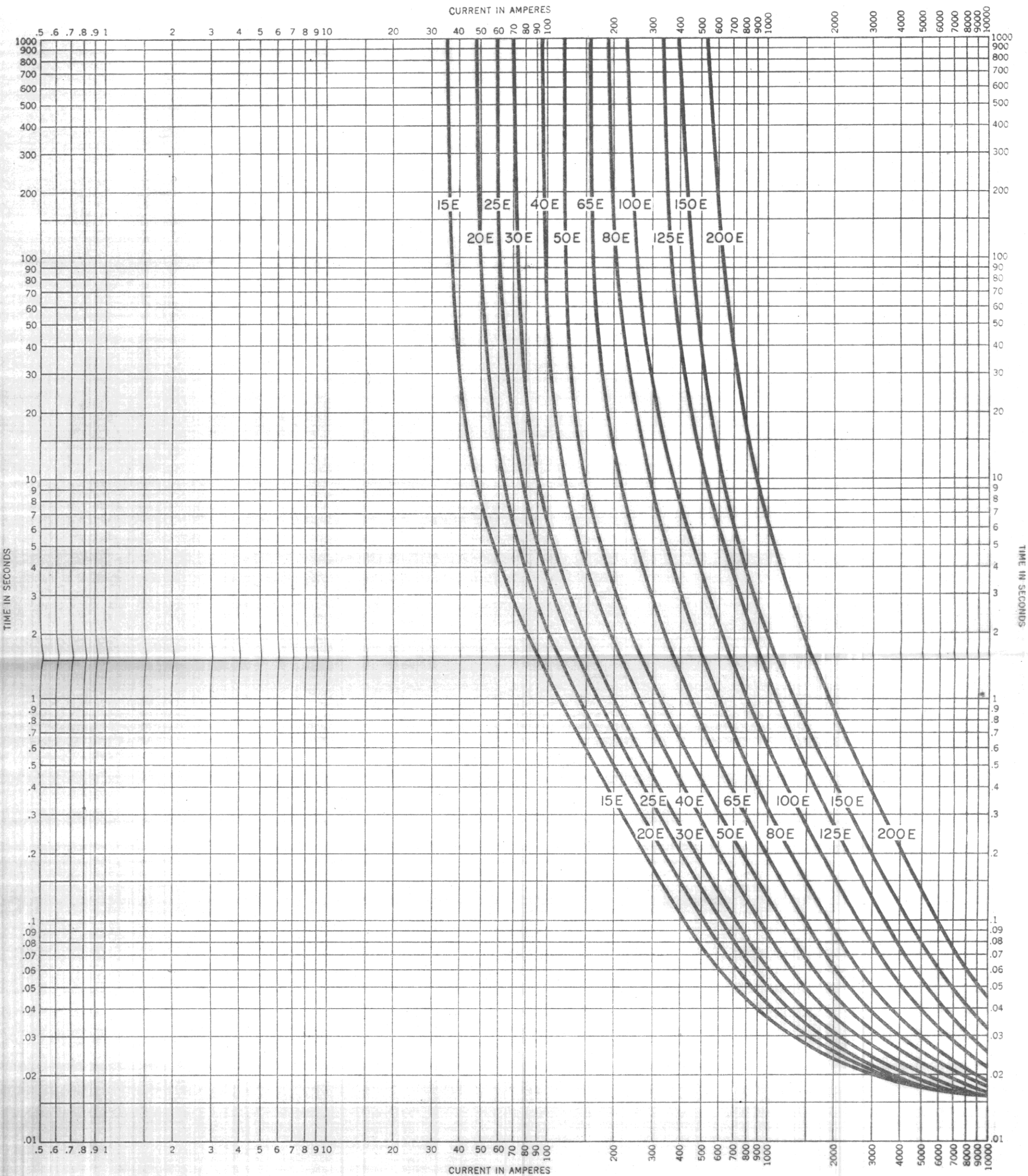
printed in U.S.A.

curve no.

3

reference no. 280209

January, 1961

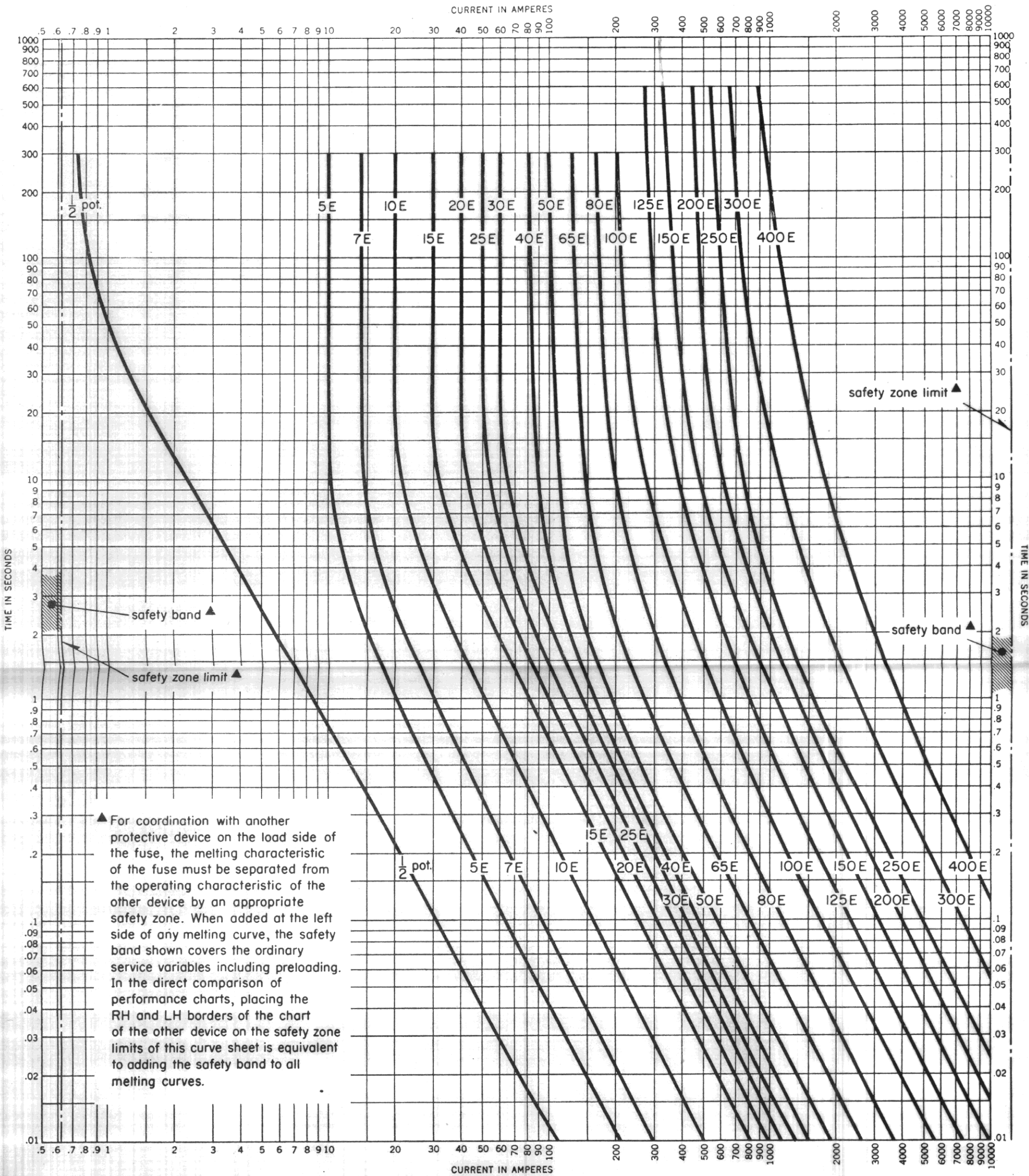


type BA-200 refill power fuses • time lag refills
2.4 to 34.5 kv

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 all variations should be negative.

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curve no. 4
reference no. 280211
January, 1961

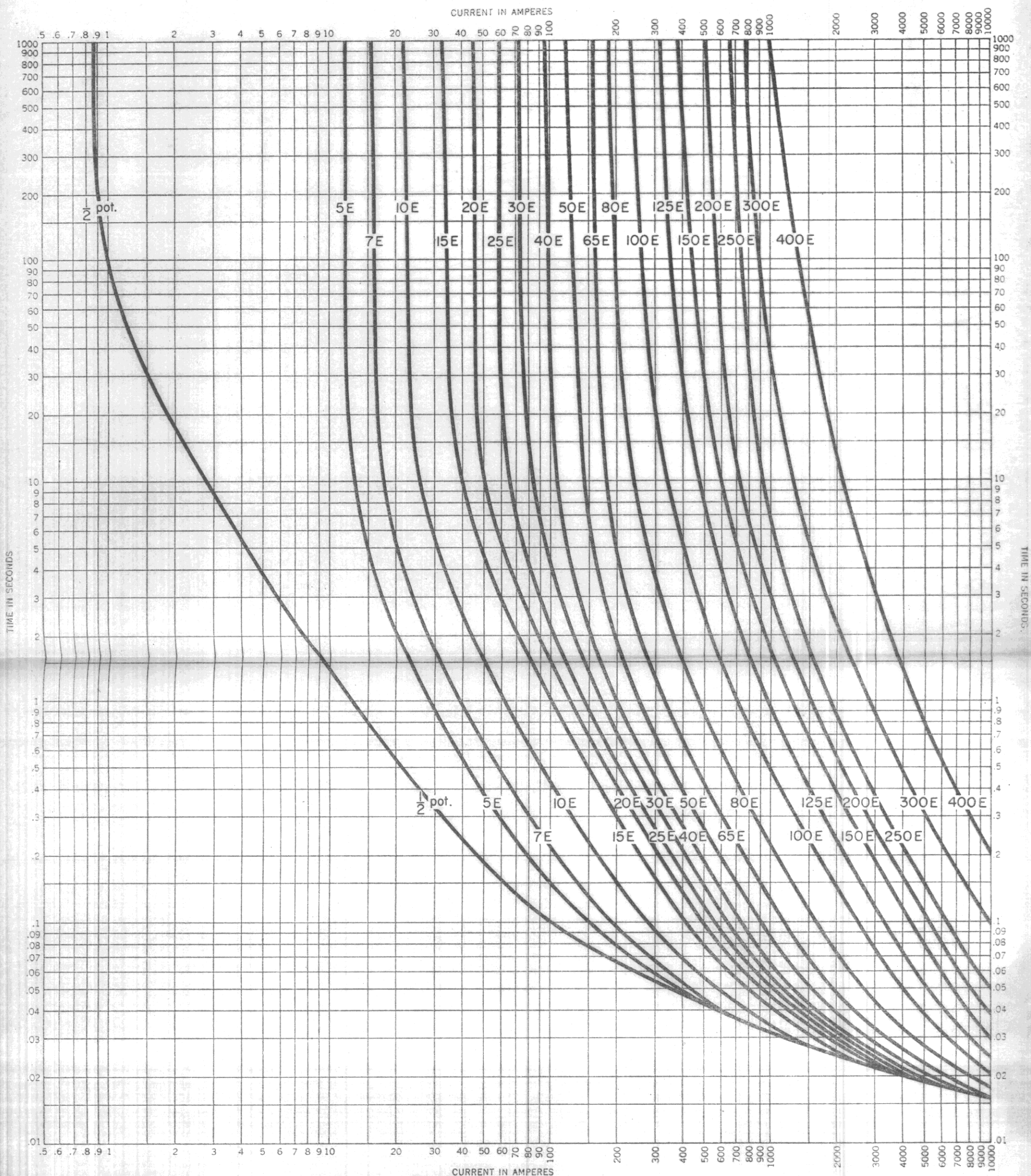


type BA-400 refill power fuses • standard speed refills
melting time-current characteristics

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 all variations should be positive.

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curve no. 5
reference no. 280212
January, 1961



type BA-400 refill power fuses • standard speed refills

total clearing time-current characteristics—2.4 to 34.5 kv

Curves are based on tests starting with fuse unit 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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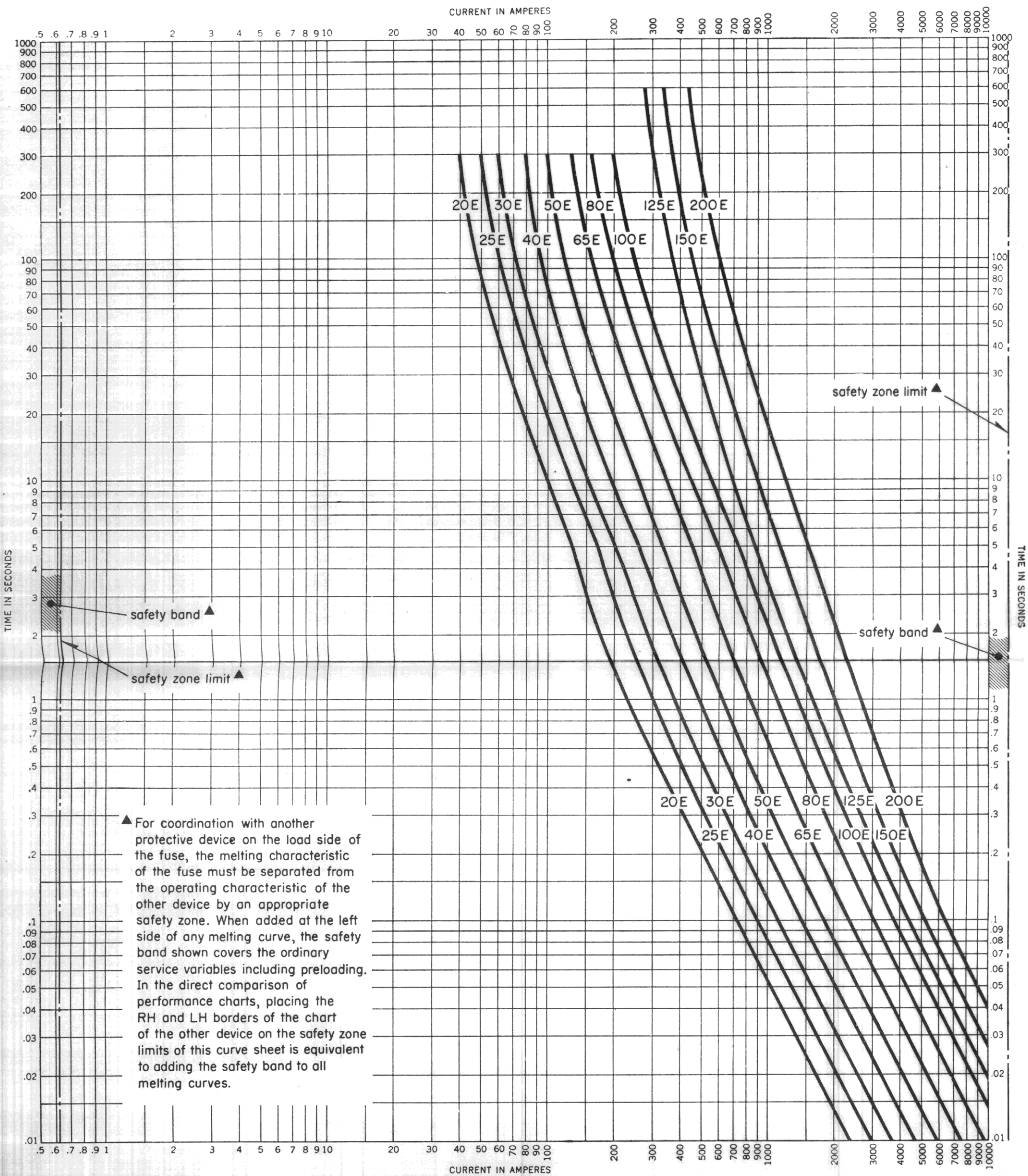
printed in U.S.A.

curve no.

6

reference no. 280214

January, 1961

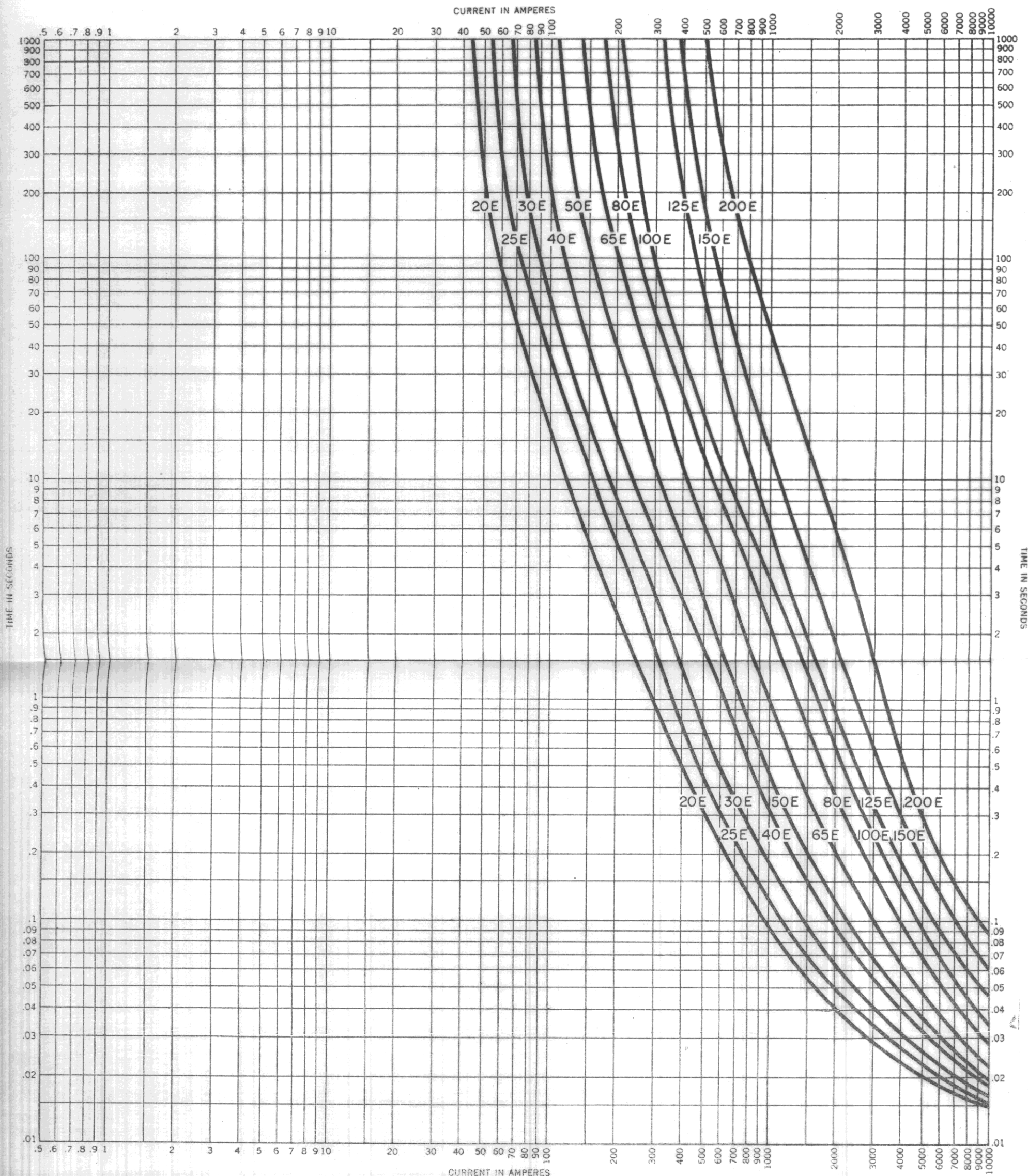


type BA-400 refill power fuses • time lag refills
melting time-current characteristics

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

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curve no. **7**
reference no. 369679
January, 1961



type BA-400 refill power fuses • time lag refills

total clearing time-current characteristics—2.4 to 34.5 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.

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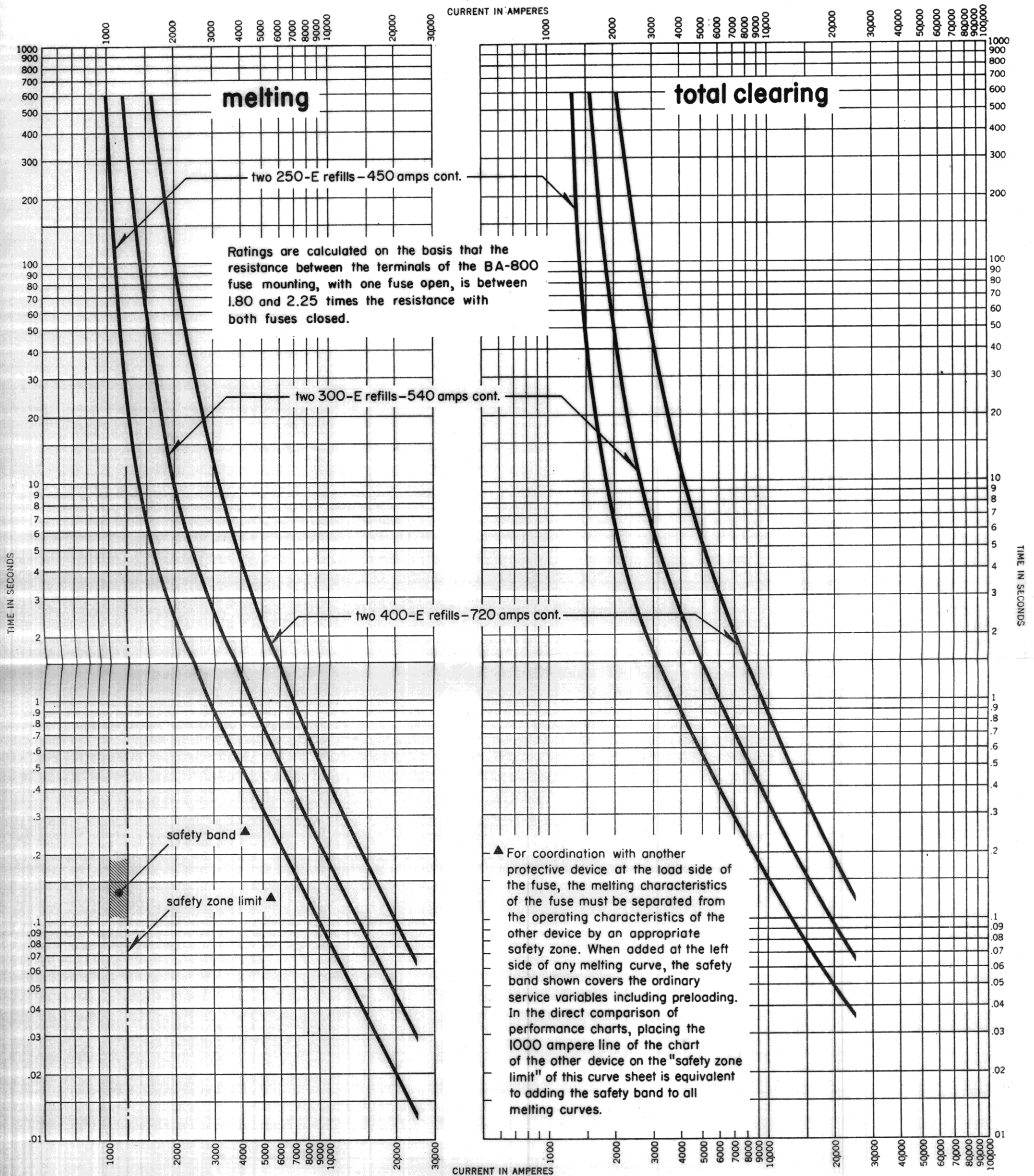
Printed in U.S.A.

curve no.

8

reference no. 369681

January, 1961



type BA-800 refill power fuse • two BA-400 fuse holders with standard speed refills

melting and total clearing time-current characteristics

Curves are calculated on the basis that the resistance between the terminals of the BA-800 fuse mounting, with one fuse open, is between 1.80 and 2.25 times the resistance with both fuses closed, conditions otherwise being the same as for BA-400 units.

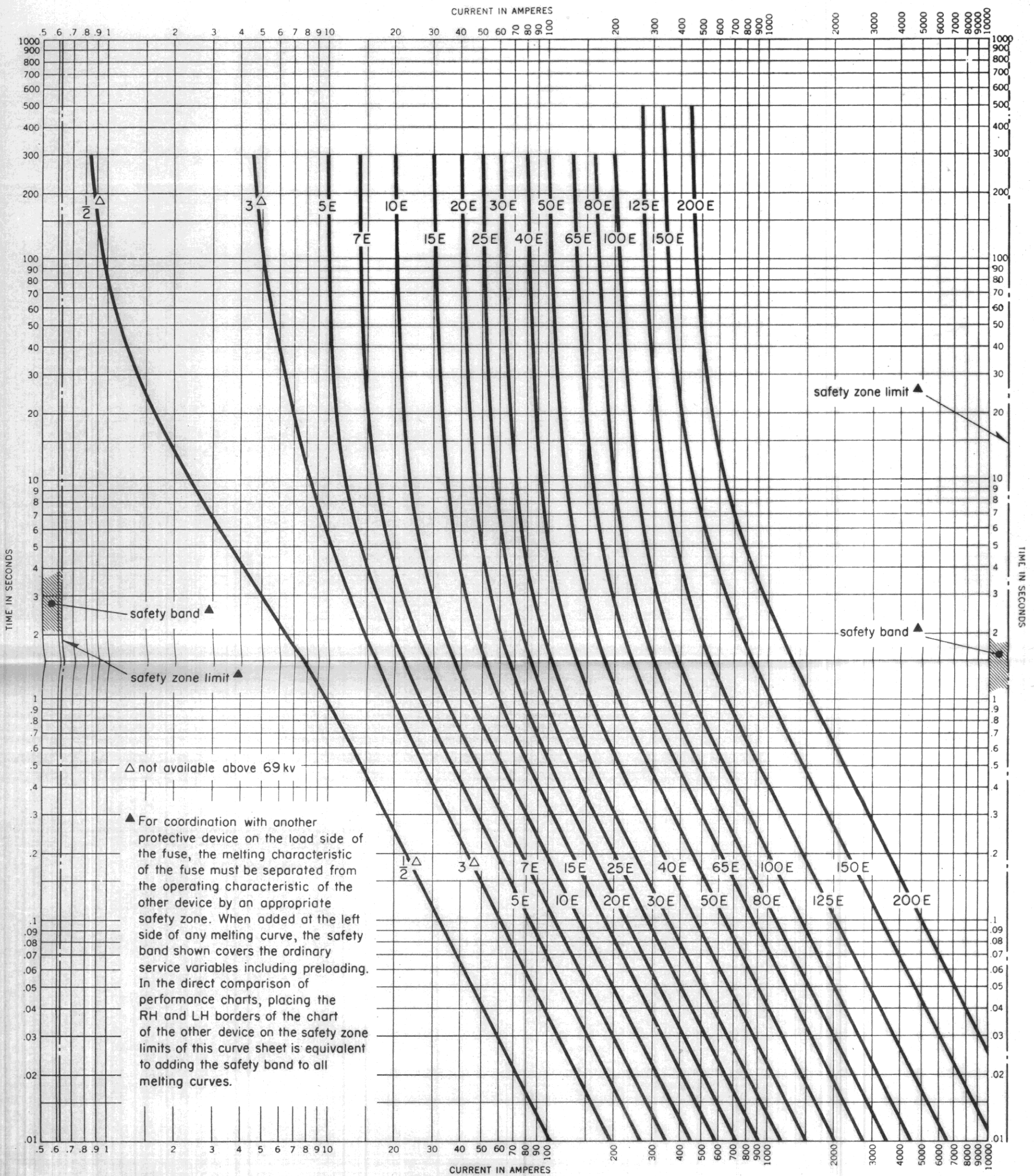
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curve no.

9

reference no. 459360

January, 1961

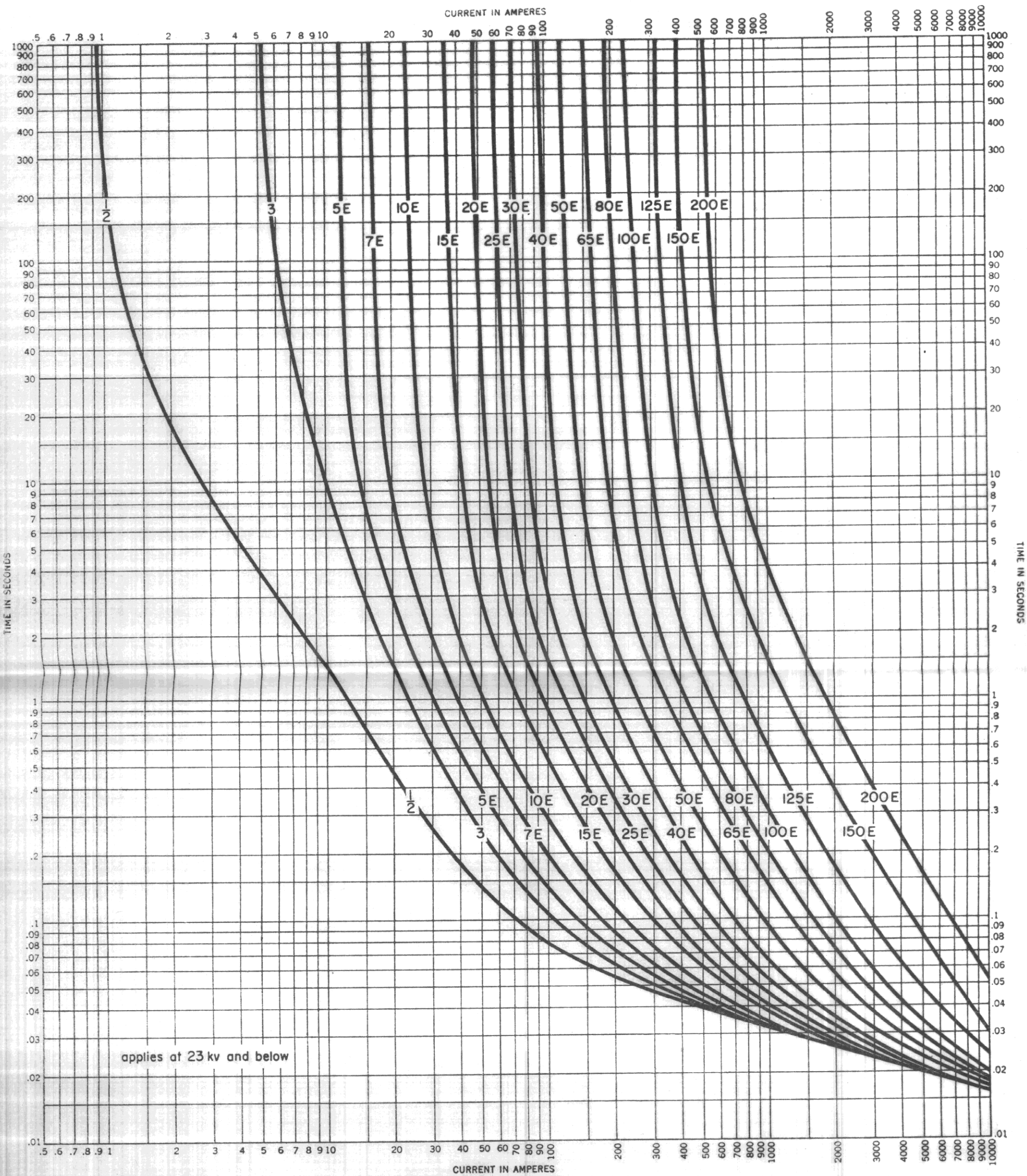


curve no.

10

reference no. 459351

January, 1961

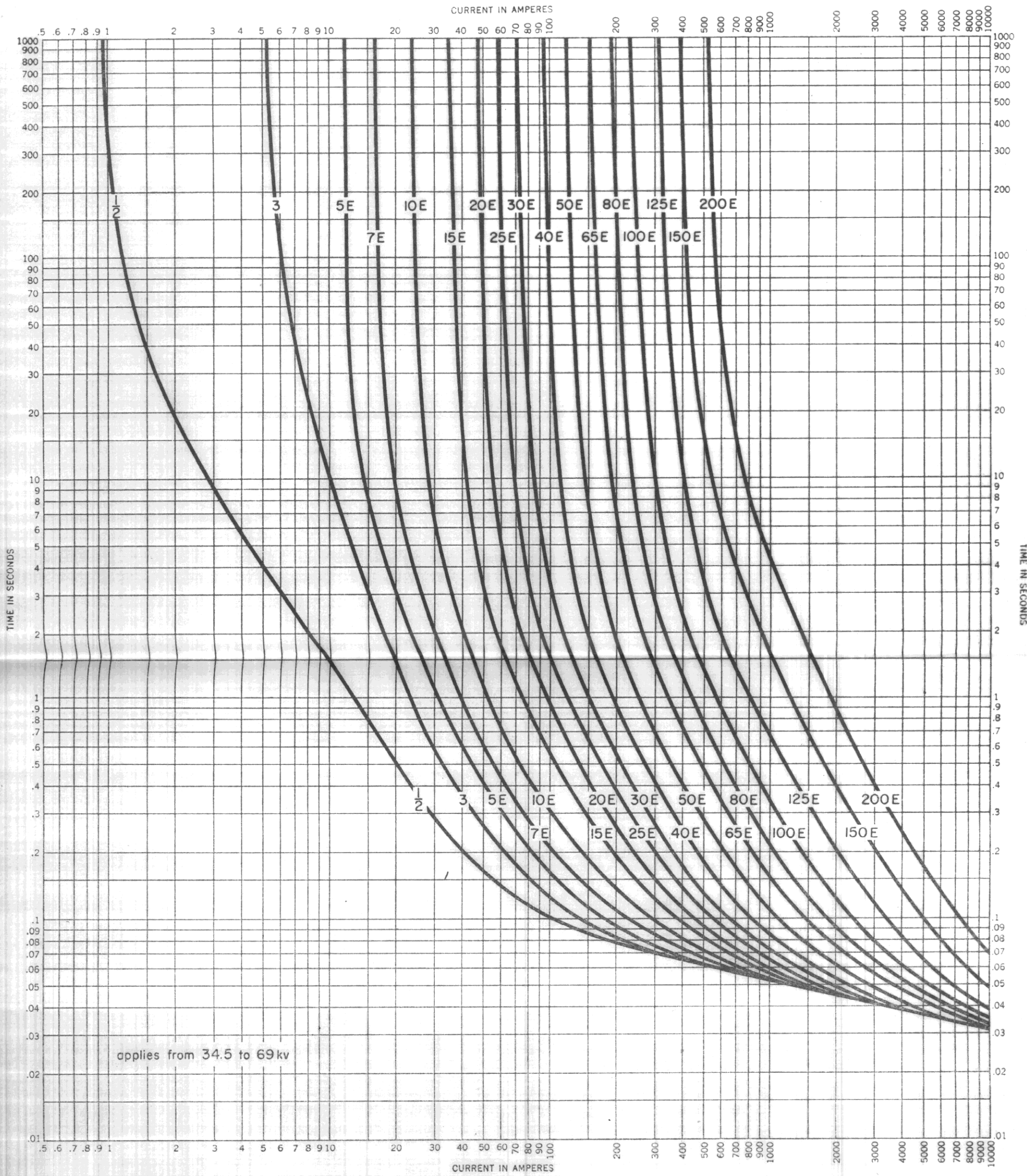


type DBA-1 dropout power fuses • standard speed fuse elements
total clearing time-current characteristics—2.4 to 23 kv

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 all variations should be negative.

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curve no. **11**
reference no. 459352
January, 1961



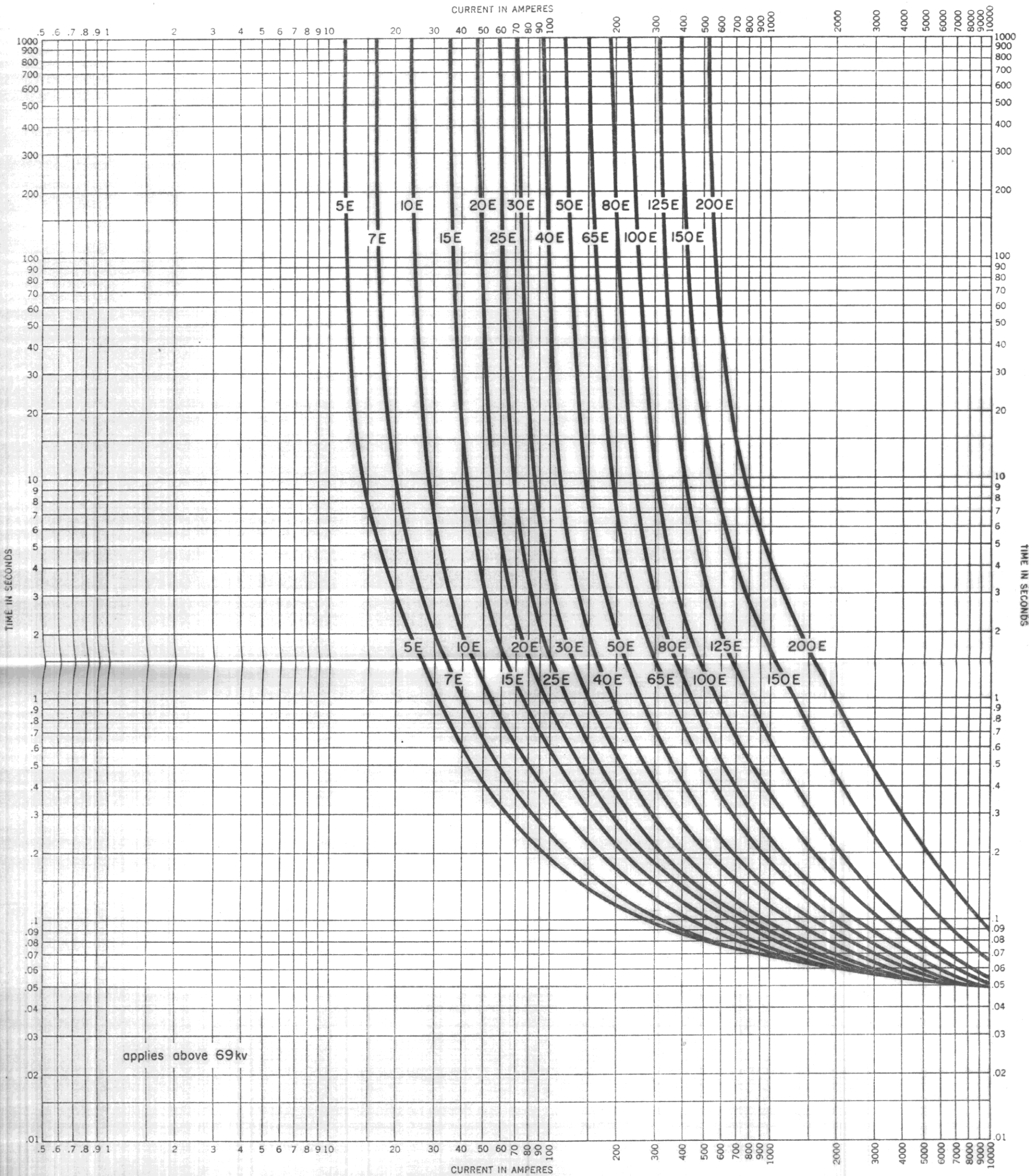
type DBA-1, -2 and -5 dropout power fuses • standard speed fuse elements
total clearing time-current characteristics—34.5 to 69 kv

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 all variations should be negative.

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curve no. **12**

reference no. 459353
January, 1961

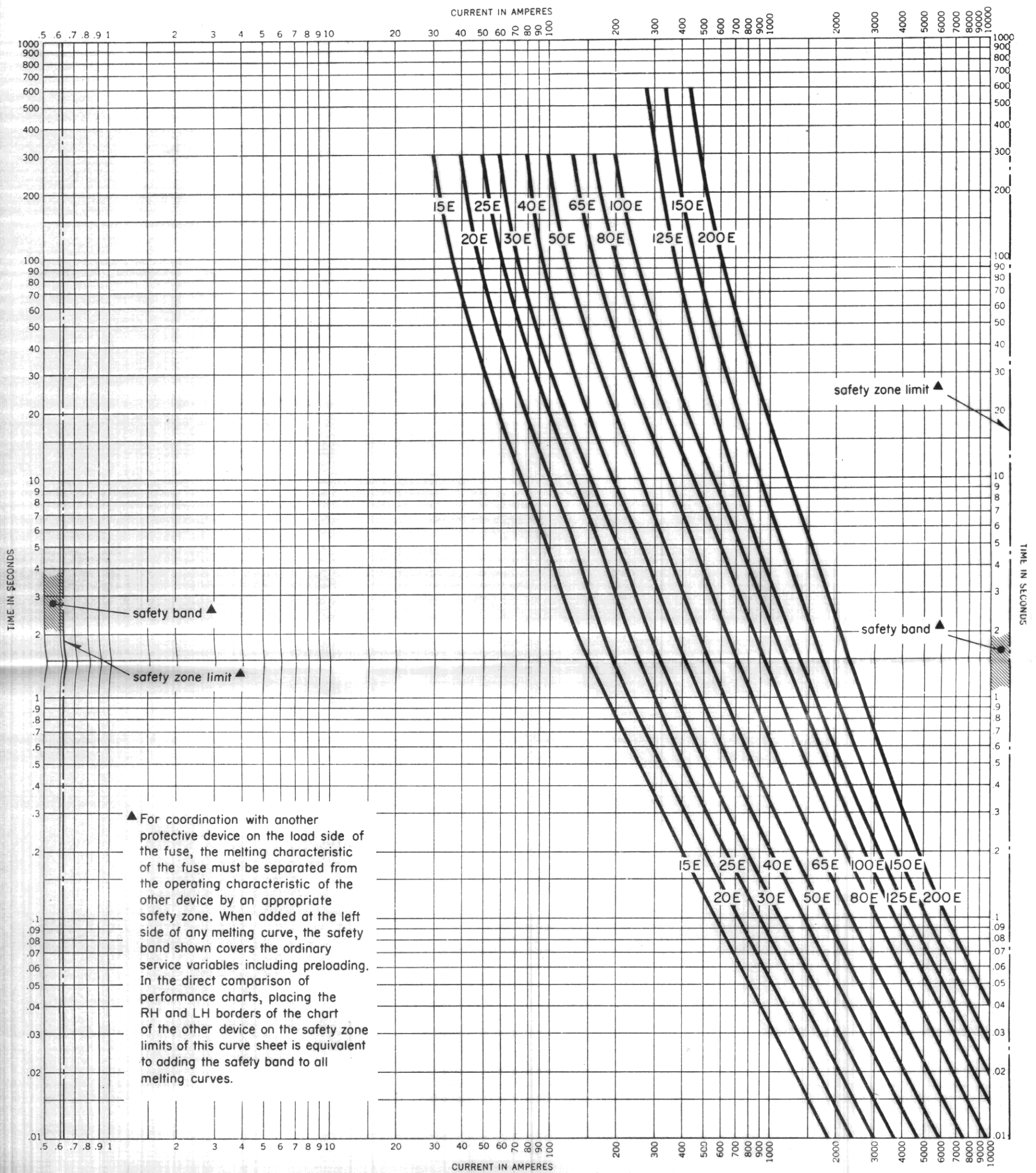


type DBA-2 dropout power fuses • standard speed fuse elements
total clearing time characteristics—92 to 138 kv

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 all variations should be negative.

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curve no. **13**
reference no. 459354
January, 1961



type DBA-1, -2 and -5 dropout power fuses • time lag fuse elements
melting time-current characteristics

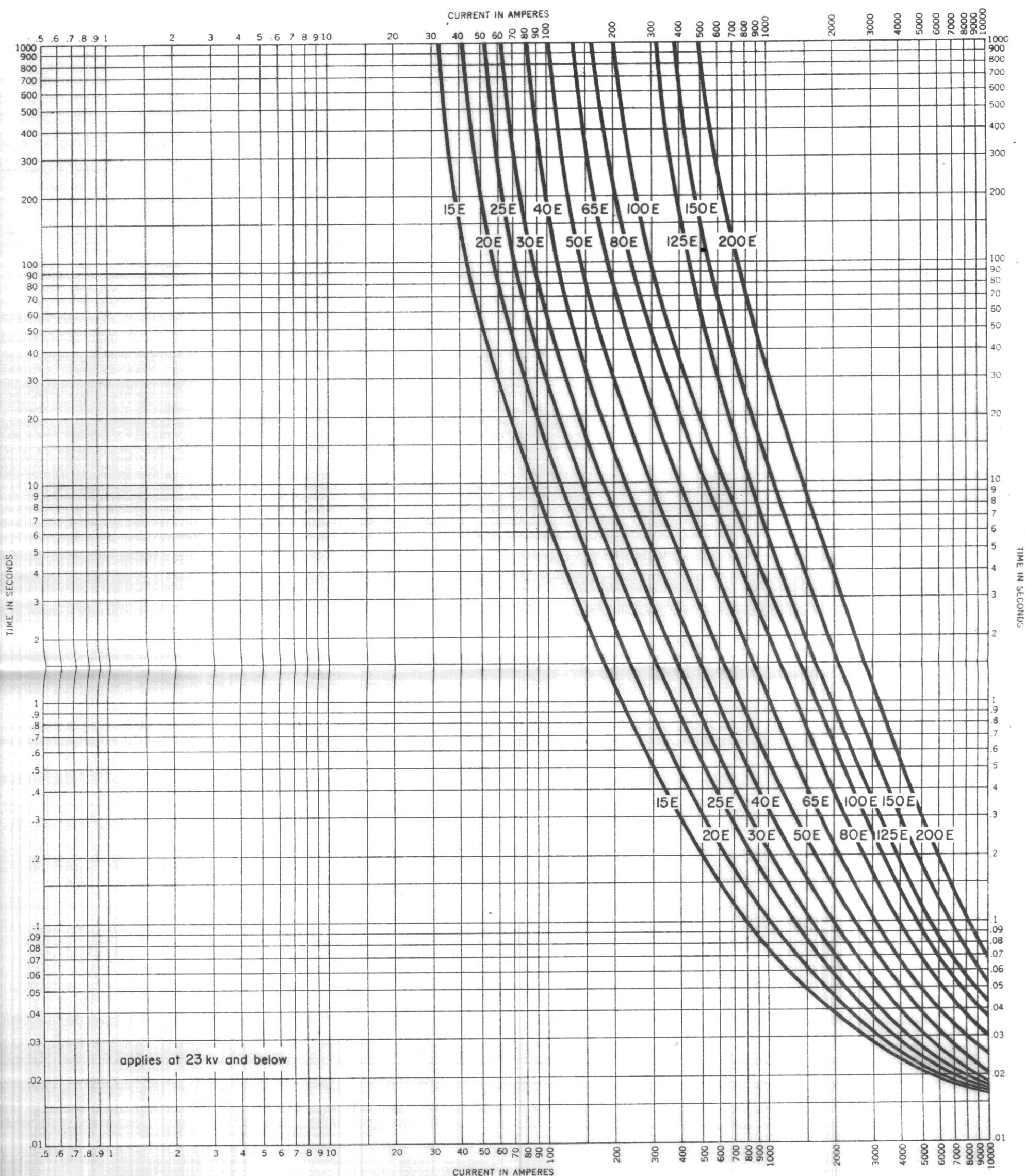
Curves are based on tests starting with fuse units at an ambient temperature of 25°C and without initial load. Curves are plotted to minimum test points so all variations should be positive.

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curve no. **14**

reference no. 459355

January, 1961



type DBA-1 dropout power fuses • time lag fuse elements

total clearing time-current characteristics—2.4 to 23 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 all variations should be negative.

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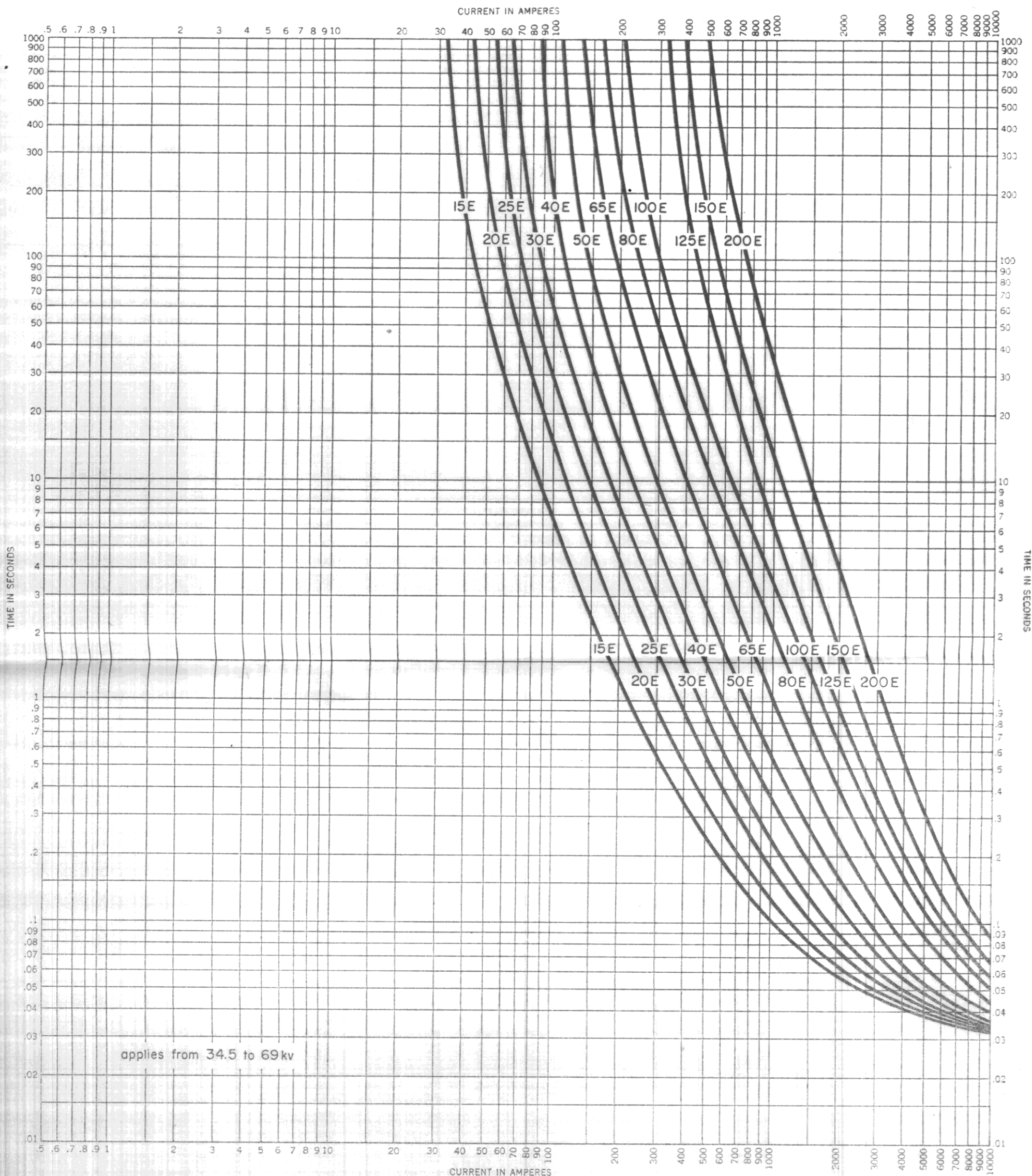
printed in U.S.A.

curve no.

15

reference no. 459356

January, 1961



type DBA-1, -2 and -5 dropout power fuses • time lag fuse elements
total clearing time-current characteristics—34.5 to 69 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 all variations should be negative.

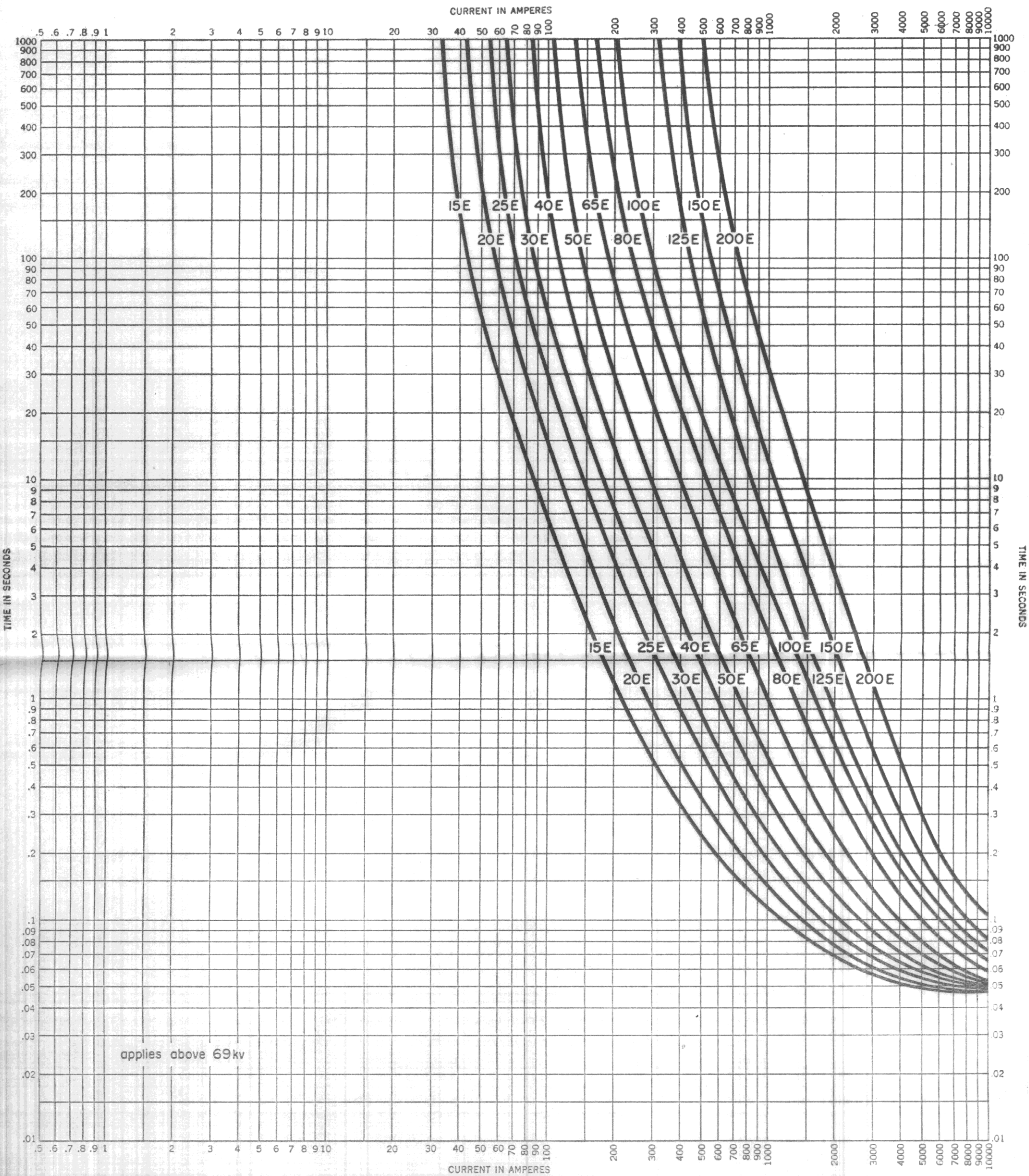
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 printed in U.S.A.

curve no.

16

reference no. 459357

January, 1961

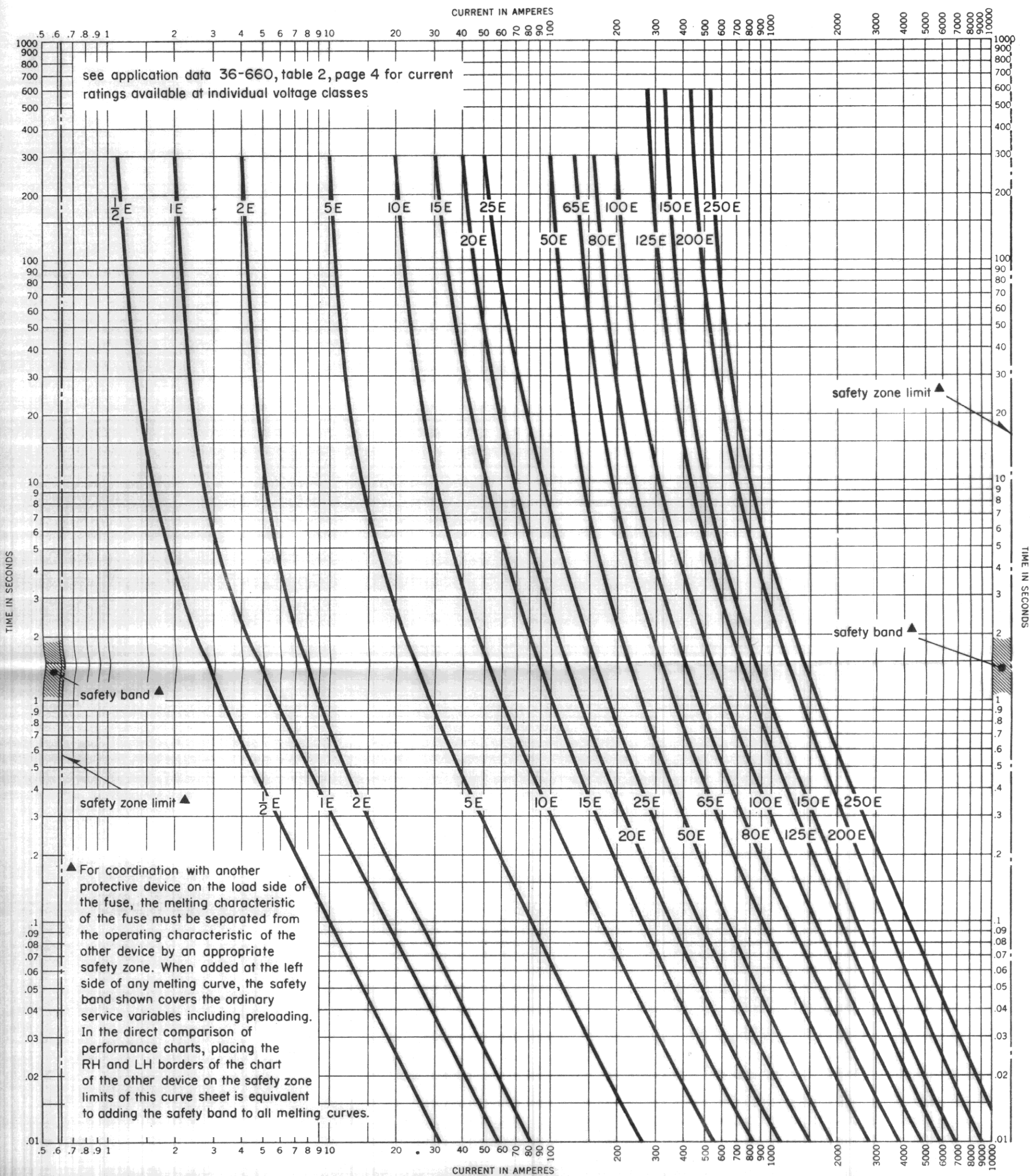


type DBA-2 dropout power fuses • time lag fuse elements
total clearing time-current characteristics—92 to 138 kv

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 all variations should be negative.

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curve no. **17**
reference no. 459358
January, 1961

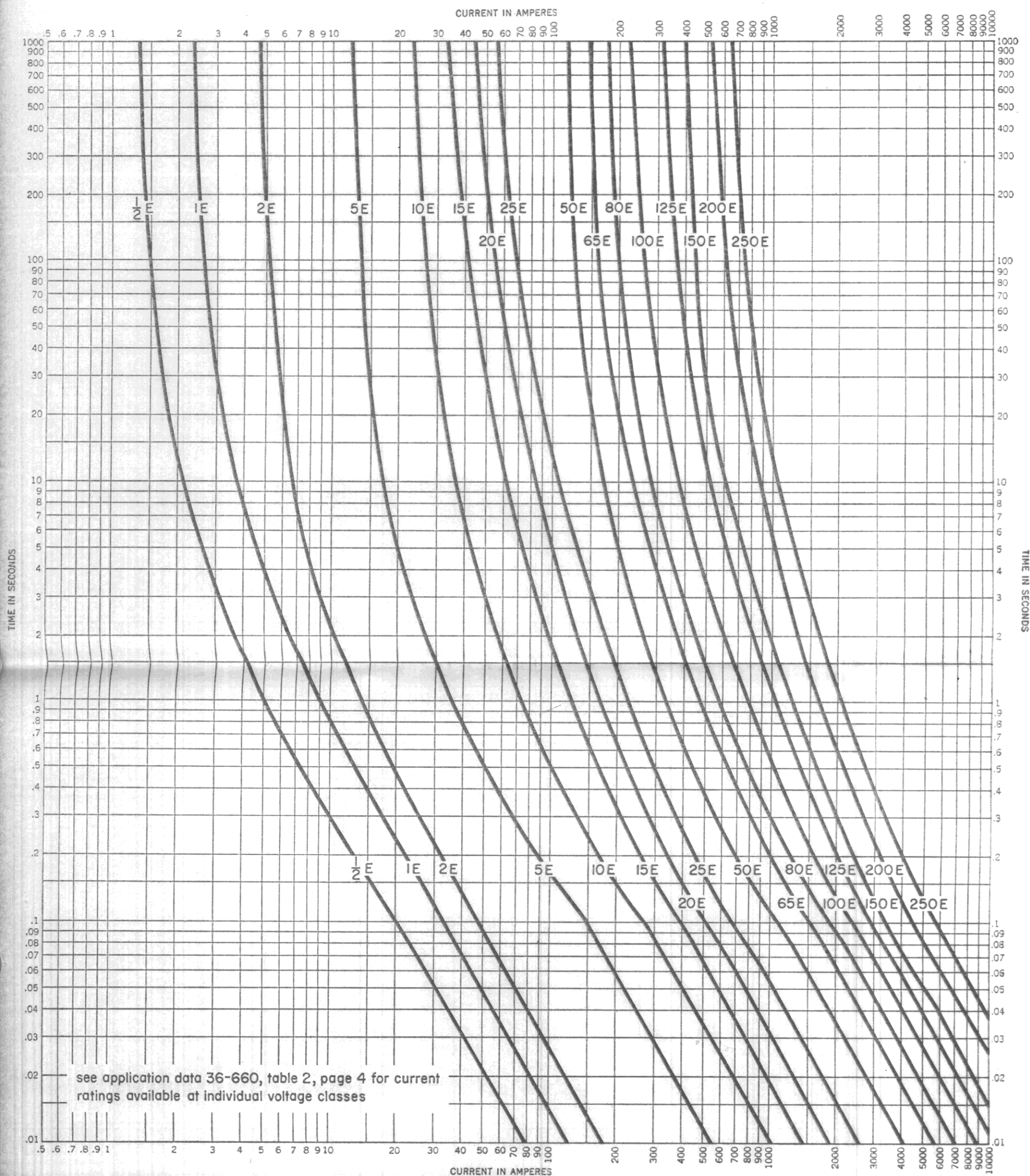


type BAL-PT, -10, -25, -200 and -300 current limiting power fuses
melting time-current characteristics

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. **18**
reference no. 459344
January, 1961



type BAL-PT, -10, -25, -200 and -300 current limiting power fuses

total clearing time-current characteristics—2.4 $\frac{1}{2}$ to 34.5 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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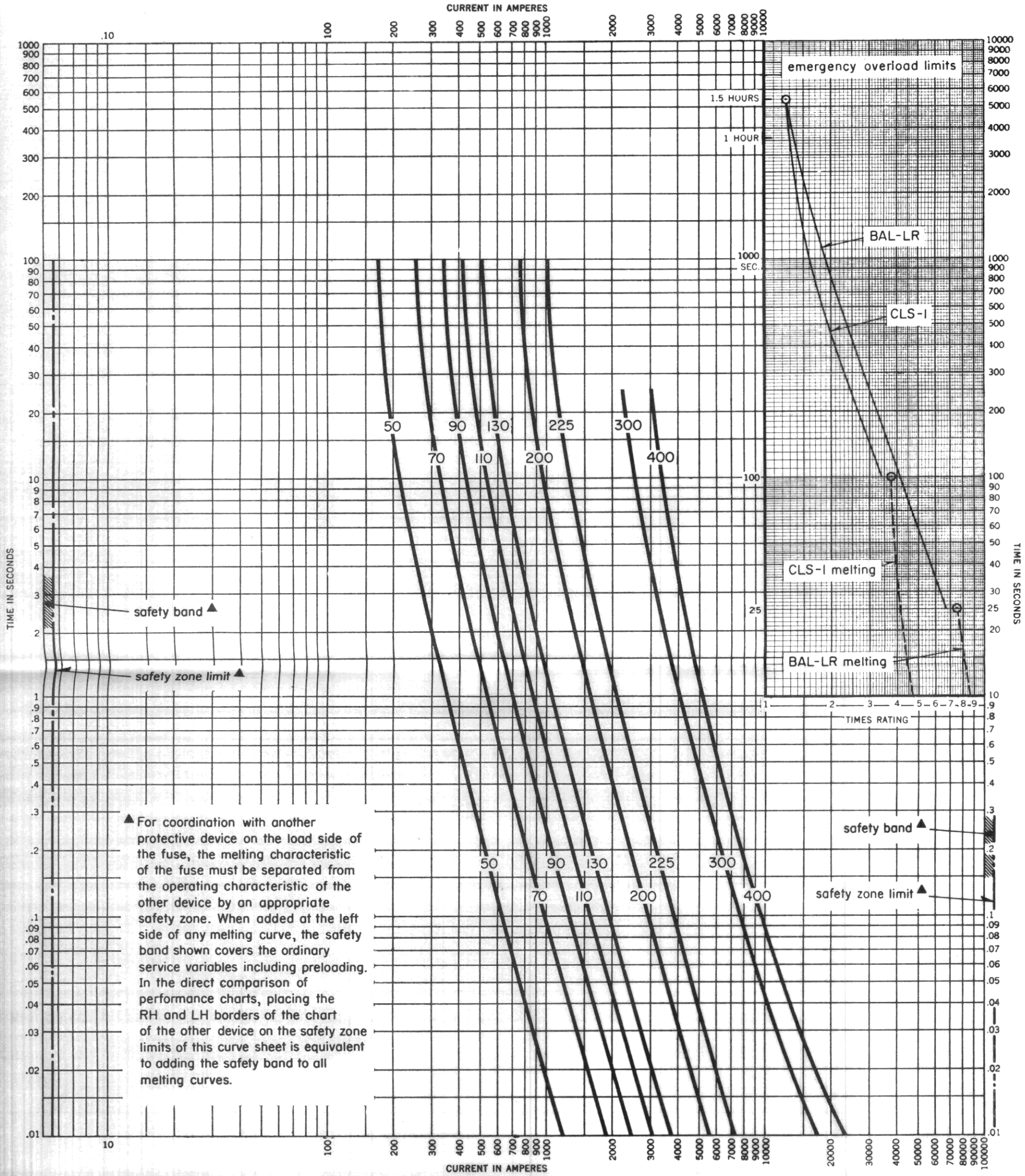
printed in U.S.A.

curve no.

19

reference no. 459292

January, 1961



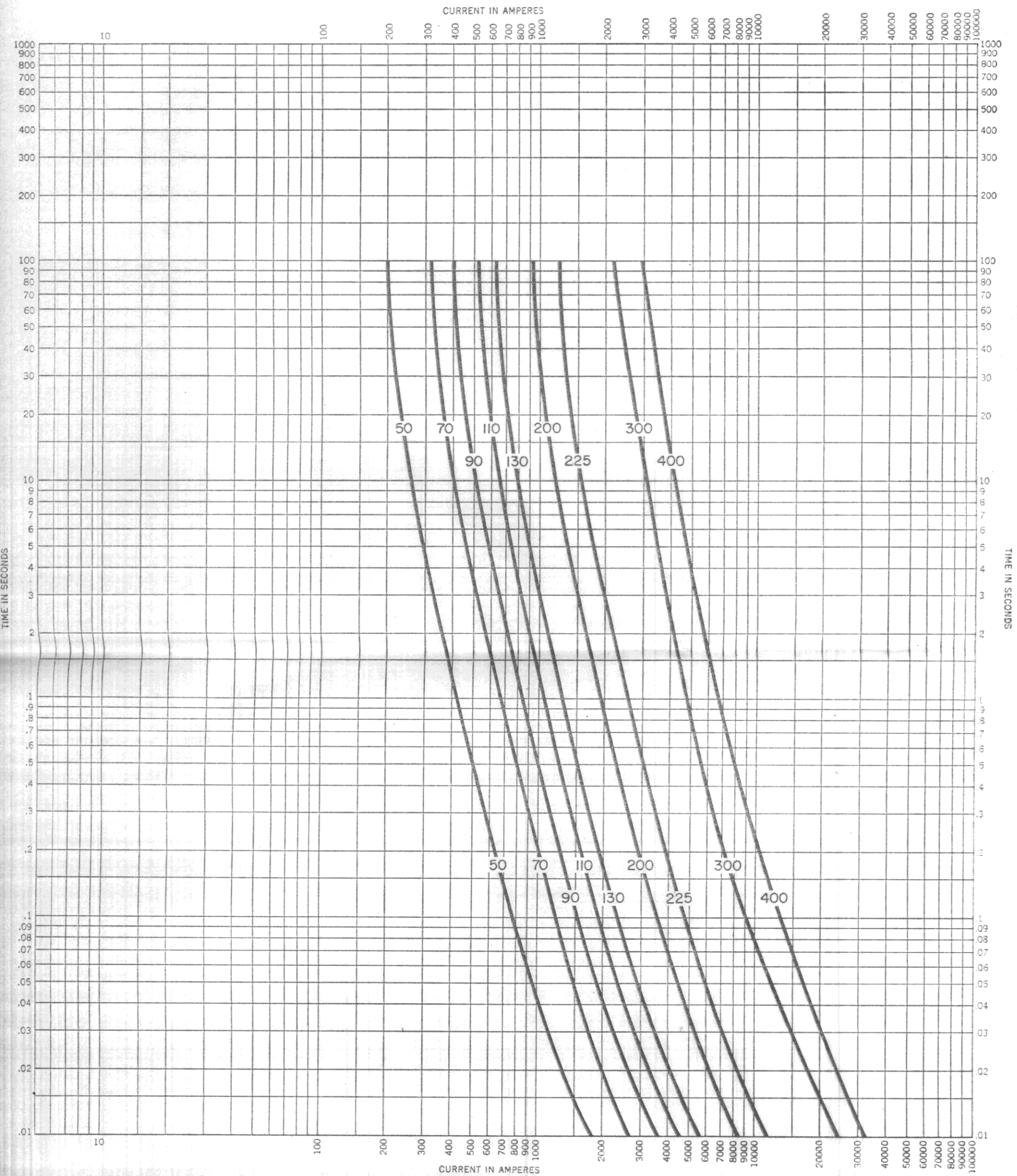
type CLS-1 and BAL-LR • current limiting fuses

melting time-current characteristics—2.0 to 5.5 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.

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curve no. **20**
reference no. 512853
January, 1961

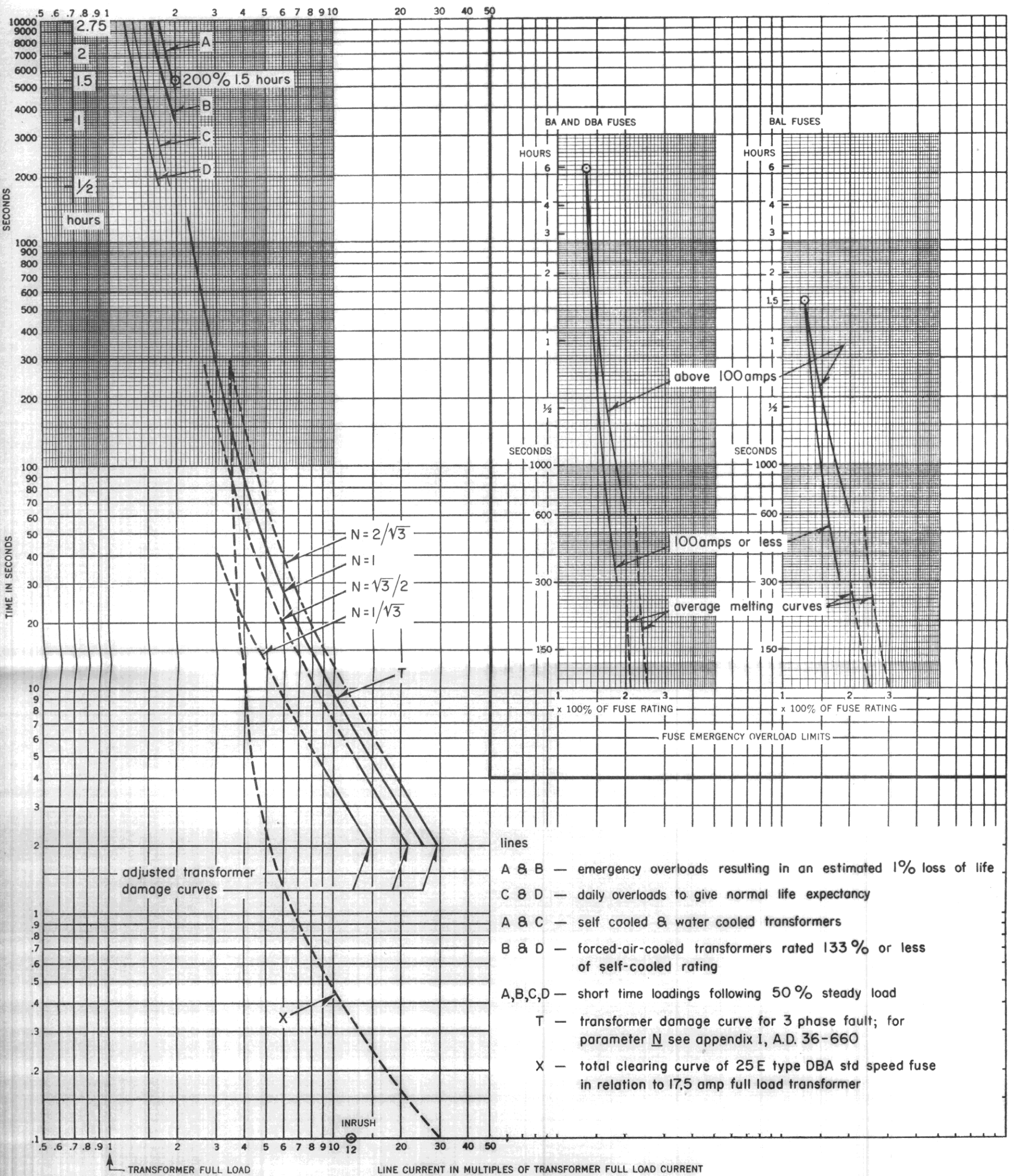


type CLS-1 and BAL-LR • current limiting fuses
total clearing time-current characteristics—2.0 to 5.5 kv

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.

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curve no. **21**
reference no. 512854
January, 1961



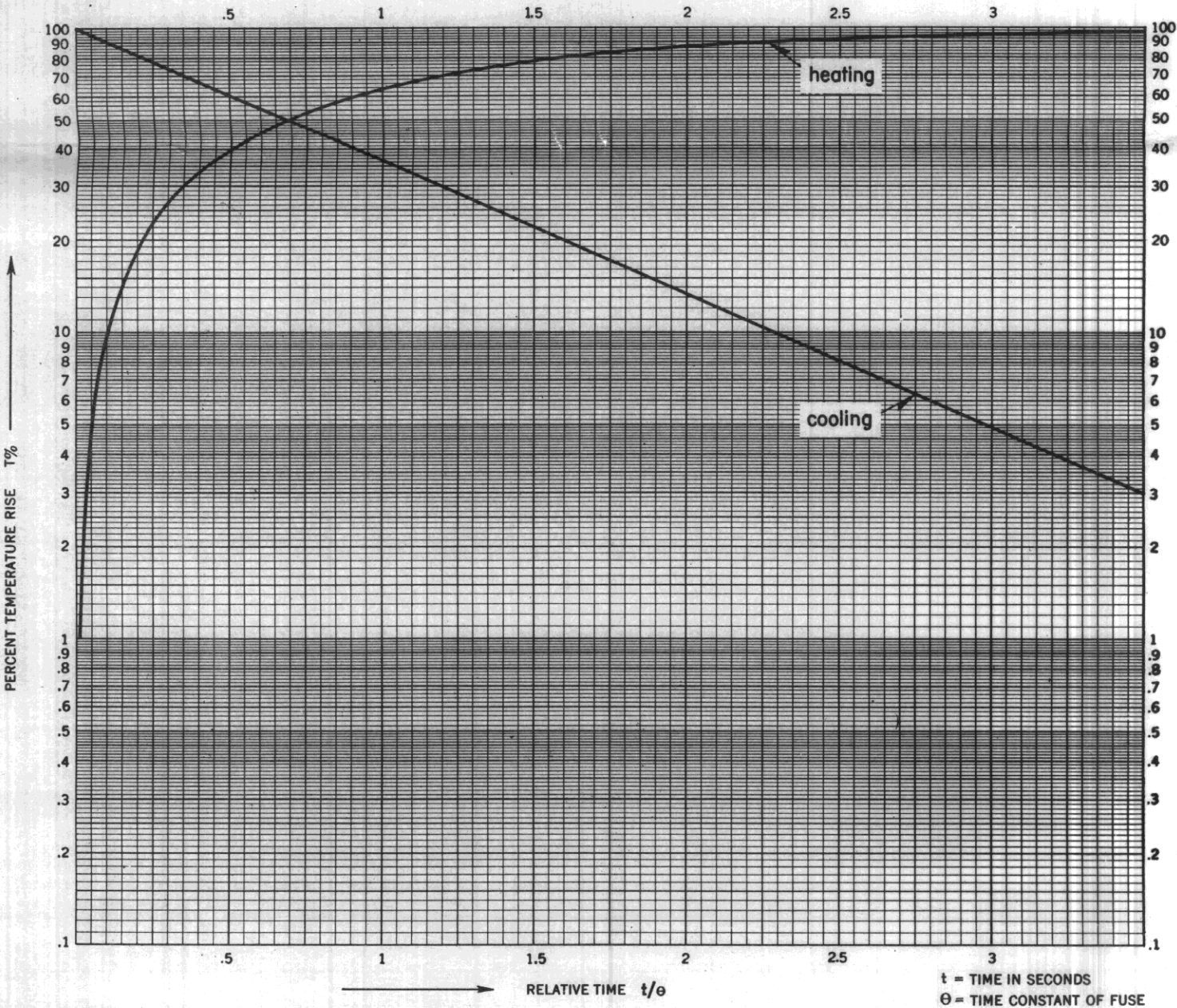
**transformer and fuse overload characteristics
and coordination chart**

recloser data: _____
fuse type and rating: _____
fuse speed ratio, S- _____
thermal time constant, $\theta = .10 \text{ S}^2$, _____ seconds
fault current _____ amps

period no.	recloser timing t		total time t	relative time t/ θ	resulting % temperature
	closed	open			
1▲					▲
2					
3					
4					
5					
6					
7					
normal melting time				M =	T _m =
q • x M					T _s =
total clearing time				N =	T _n =

▲ The first period may be so short that the intersection with curve A may be difficult to pinpoint. It should, therefore, be noted that, in Fig. 5, the initial portion of curve A coincides with the tangent which intersects the 100% level at the unit time constant. Consequently, the temperature level attained within such short times is determined simply by the formula $T\% = 100 \times t/\theta$.

● "q" is the coordination factor to take care of service variables. It is commonly estimated to be .75.



reclosing circuit breaker—fuse coordination chart