



GE Limitamp Control CR7160 and CR194

Time Current Curves Motor Overload and Phase Overcurrent Protection

COORDINATION OF LIMITAMP CONTROL

Over current protective devices in Limitamp control consist of (1) thermal overload relays that provide protection up to approximately ten times motor full-load current and/or (2) solid-state three-phase overload relays and (3) current limiting power fuses that provide protection from that point to rated interrupting capacity of the equipment.

To coordinate operation of Limitamp control with protective devices closer to the source of the power system, it is necessary to know how the control devices operate and to identify their specific characteristics.

Overload Relays

Overload relays provided in Limitamp control have inverse time characteristics and are ambient compensated. Limitamp control utilizes the CR324C thermal type overload relays, CR324CX solid state overload relays or GE Multilin multifunction protective relays. These relays, operating from current transformers in the control equipment, carry current proportional to the motor circuit current. When motor overloads occur, these relays operate to open the power contactor. The time required for operation varies inversely with the magnitude of the overload.

The CR324C and CR324CX relays have operating characteristics as seen on curves GES-7202 and GES-9922 respectively.

Contact GE Multilin for curves on any Multilin relay that is supplied in the Limitamp control.

Power Fuses

Power fuses are R-rated current limiting type. Coordination between fuses and overload relays is such that the latter open the contactor on all overcurrents that would otherwise melt the fuses in 100 seconds or longer and the fuses interrupt all overcurrents of magnitude greater than intended for contactor interruption.

The power fuse curves included in this folder show the characteristics for the minimum melting and the maximum total clearing time for fuses commonly used in Limitamp.

For more complete data on R-Rated fuses see GET-2664. Information on other fuses may be found at <http://www.geindustrial.com/cwc/products> under fuses.

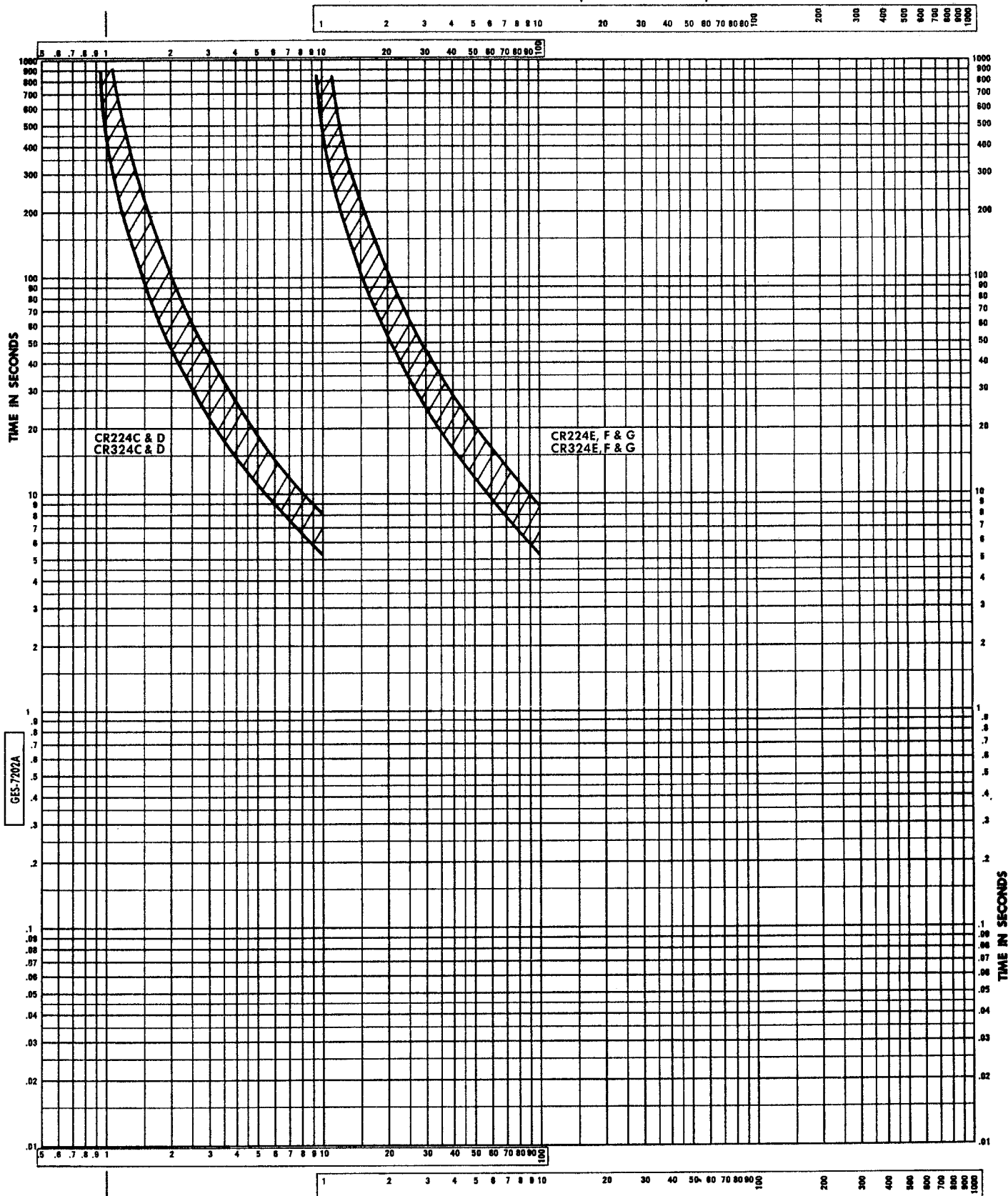
Curve Index

| Time current Curves | Publication No. |
|--|------------------------|
| CR324 C,D,E,F, and G Thermal Overload Relays | GES-7202 |
| CR324 CX Solid State Overload Relay | GES-9922 |
| 5 kV Bolt-on Fuse Minimum Melting Time | GES-8124 |
| 7.2 kV Bolt-on Fuse Minimum Melting Time | GES-8125 |
| 5 kV Bolt-on Fuse Maximum Total-clearing Time | GES-8126 |
| 7.2 kV Bolt-on Fuse Maximum Total-clearing Time | GES-8127 |
| R Rated Current Interrupter Maximum Total-clearing Time | GES-8128 |
| R Rated Current Interrupter Minimum Melting Time | GES-8129 |
| 5 kV Bolt-on Power Fuse | GES-8130 |
| 5.5 kV Bolt-on Current Limiting Fuse Minimum Melting Time | GES-8140 |
| 5.5 kV Bolt-on Current Limiting Fuse Maximum Total-clearing Time | GES-8141 |



GE Industrial Systems

MULTIPLES OF CURRENT RATING (TRIP CURRENT)



MULTIPLES OF CURRENT RATING (TRIP CURRENT)

GE
**GE Electrical
 Distribution & Control**

Current Rating
 0.41 to 270 amperes

Frequency Rating
 25 to 60 Hertz

Thermal Overload Relays
 Type CR224, CR324

CR224C, D, E, F and G
CR324C, D, E, F and G
Time-current Curves

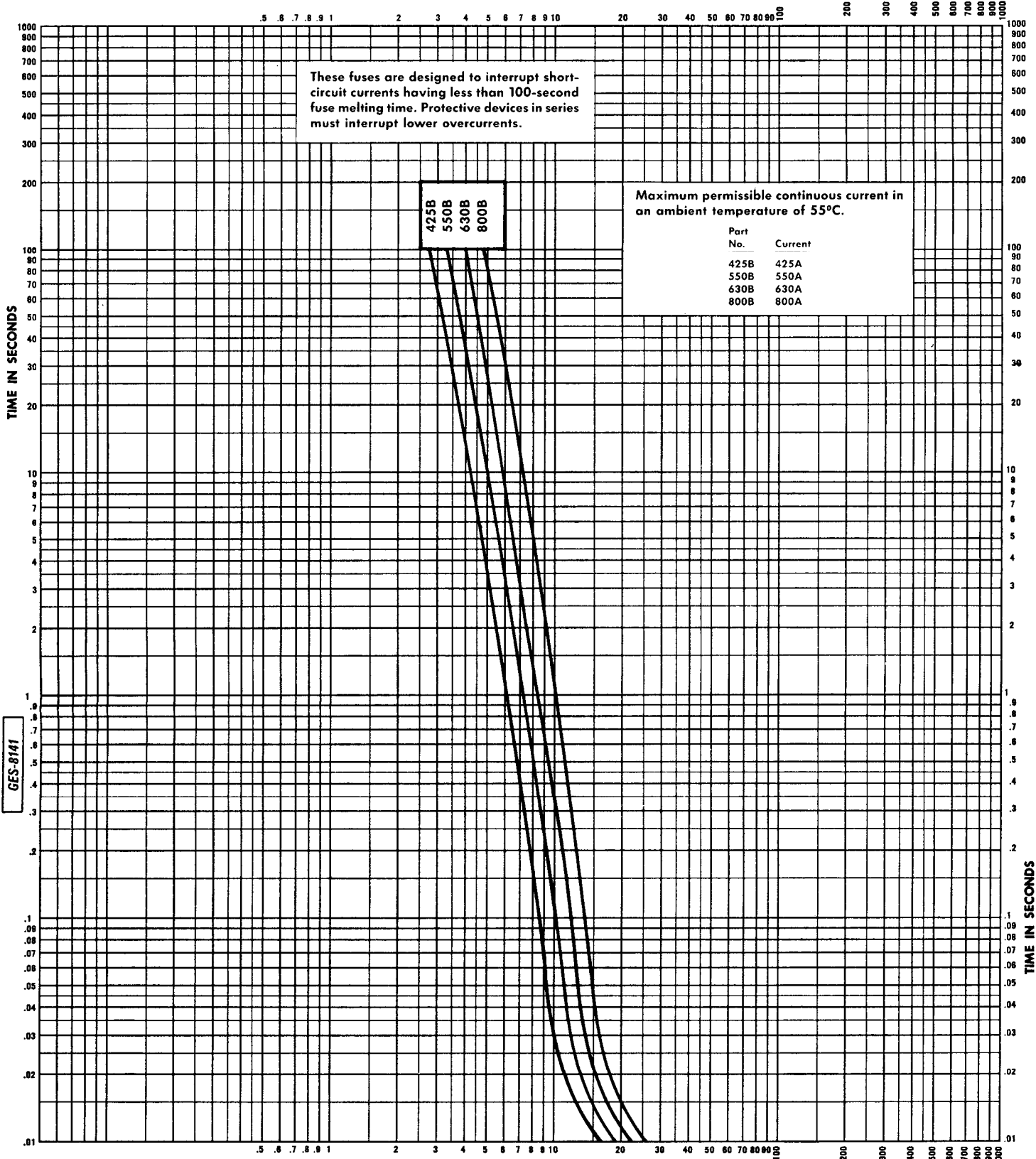
(Curves show relay in 40 C ambient)

GES-7202A
 This revision reflects text change only

Adjustments
 Current setting: Customer adjustable 90 to 110% of heater current rating. Curves shown at 100%.

11M, 10/93

SYMMETRICAL RMS CURRENT IN KILO AMPERES



SYMMETRICAL RMS CURRENT IN KILO AMPERES



**GE Electrical
Distribution & Control**

Current Rating
Limit as indicated

**Current-limiting
Motor-starting Fuse
5.5 kV Max**

55A213937P __ B

**Bolt-on Mounting with Indicator/Striker
Maximum Total-clearing Time-current Curves**

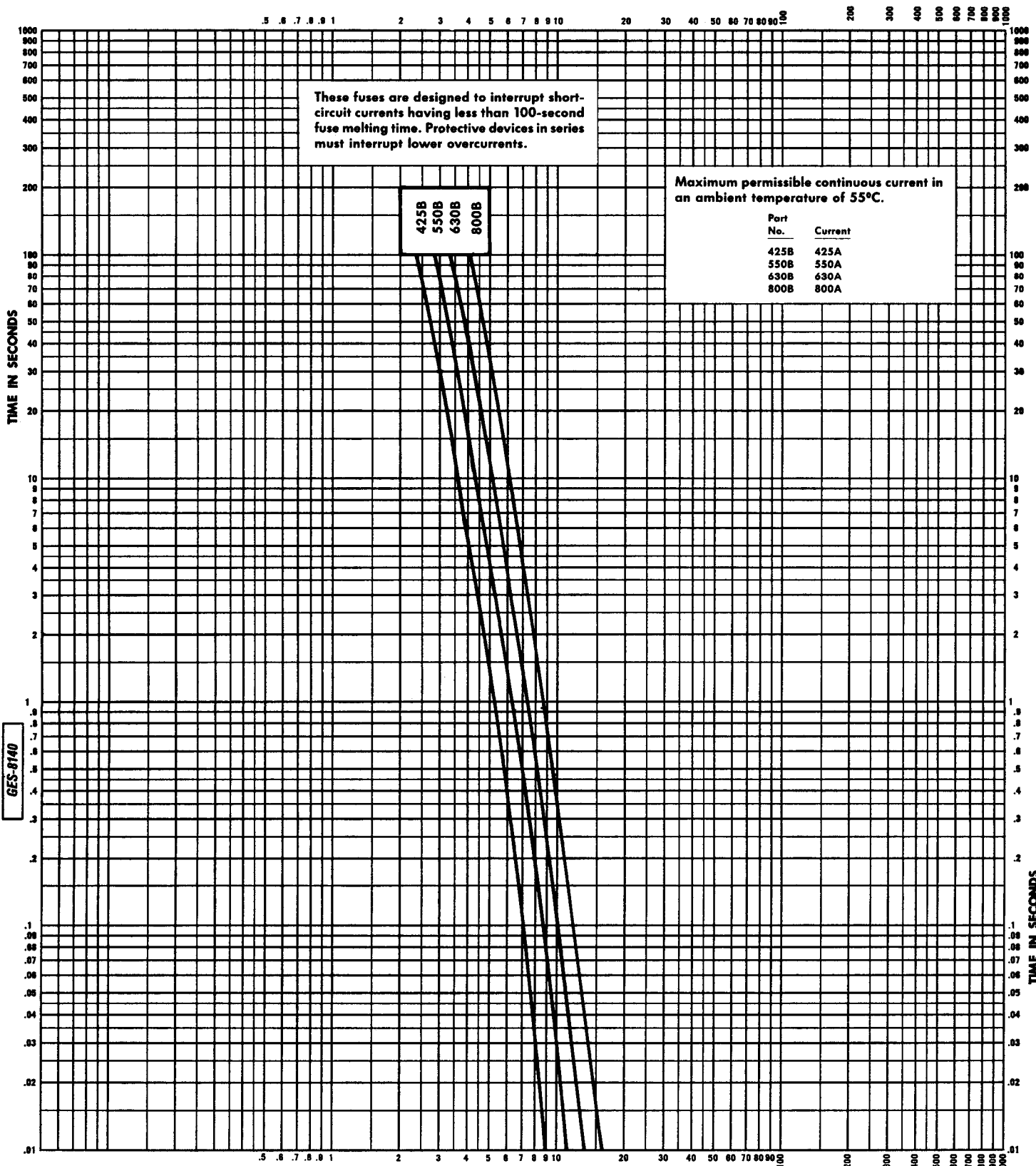
At 60 Hertz and 55° C

GES-8141A


This revision reflects text change only

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SYMMETRICAL RMS CURRENT IN KILO AMPERES

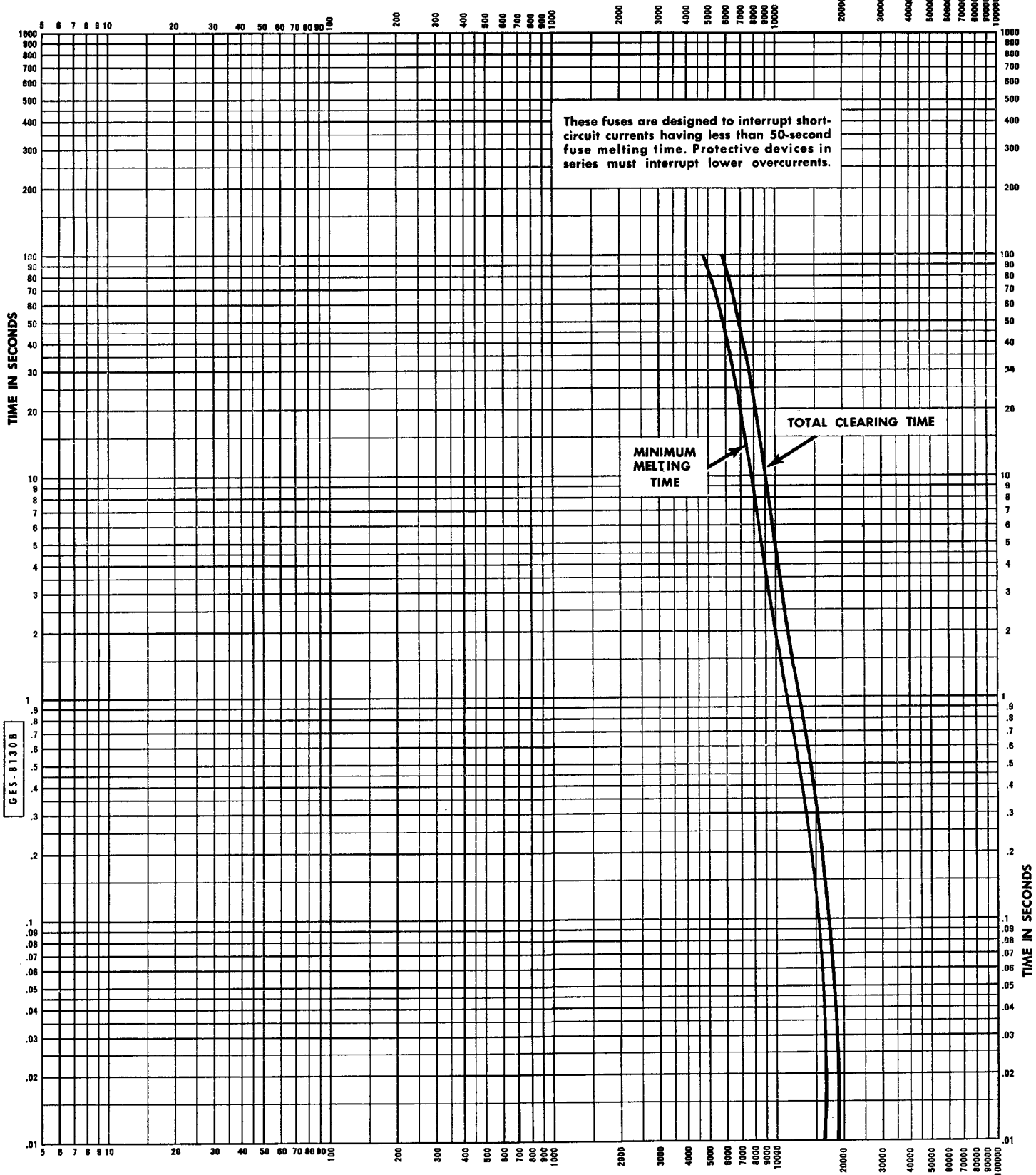


SYMMETRICAL RMS CURRENT IN KILO AMPERES

| | | |
|--|---|---|
|  GE Electrical Distribution & Control | Current-limiting Motor-starting Fuse 5.5 kV Max 55A213937P__B Bolt-on Mounting with Indicator/Striker Minimum Melting Time-current Curves At 60 Hertz and 55° C with no initial load. | GES-8140A This revision reflects text change only |
| Current Rating Limit as indicated | | |

(3M, 10/93)

SYMMETRICAL RMS CURRENT IN AMPERES



SYMMETRICAL RMS CURRENT IN AMPERES

GE
GE Electrical
Distribution & Control

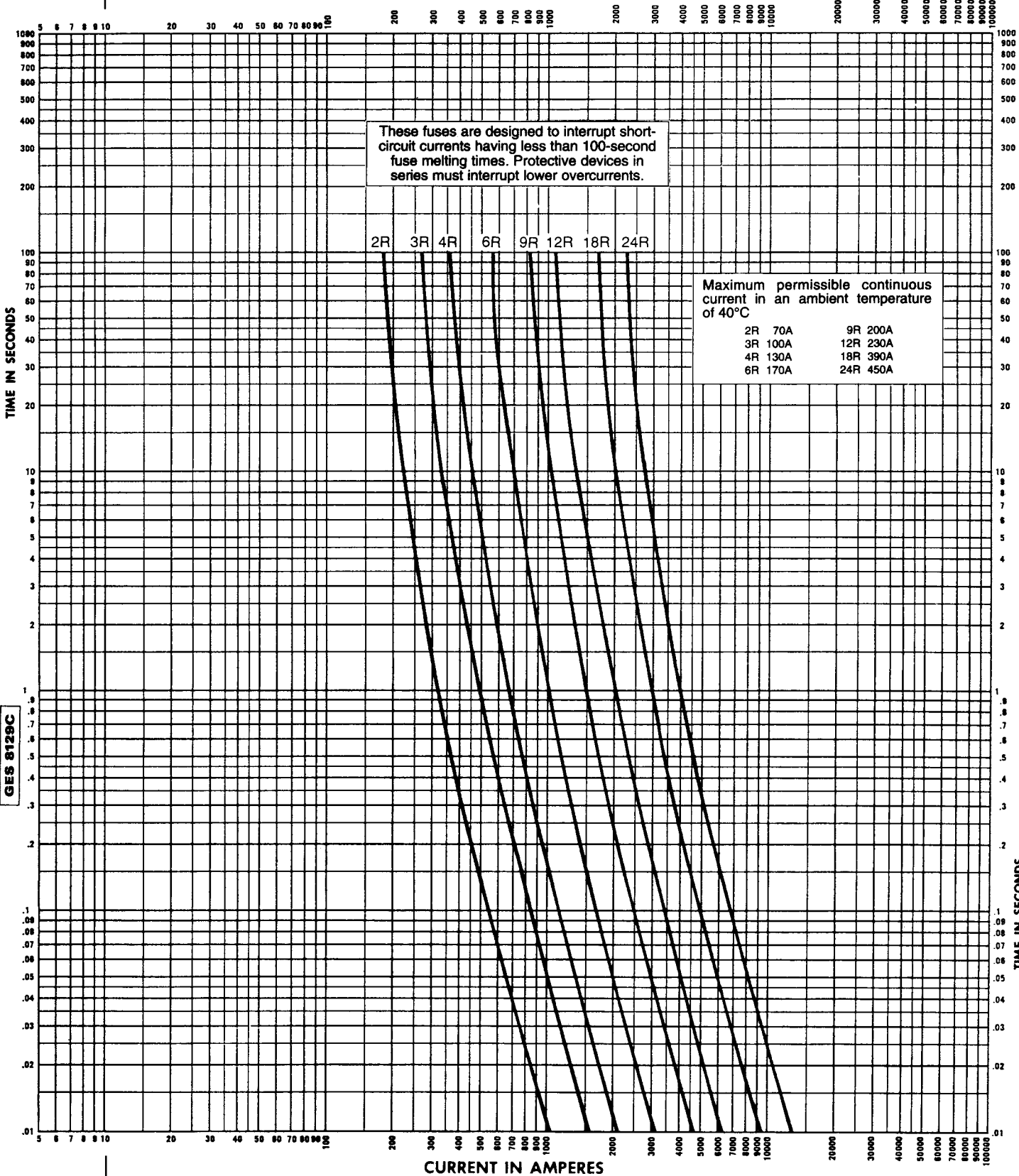
Current Rating
 960 Amperes Maximum at 55° C

Silver-Sand Power Fuse
 5 kV
218A4293P960B

Bolt-on Mounting with Indicator/Striker
 Minimum melt characteristic is with fuse at operating temperature at full-load current.

GES-8130C
 This revision reflects text change only

CURRENT IN AMPERES



GES 8129C

TIME IN SECONDS

CURRENT IN AMPERES

GE *GE Electrical Distribution & Control*

Current Rating
Limit as indicated

Frequency Rating
60 Hertz

Current-limiting
Motor-starting Fuse
2.54 & 5.08 kV Max

Bolt-on Mounting with Indicator/Striker
(218A4293P__RB) (55A212942P__RB)

Clip-on Mounting with Indicator/Striker
(218A4291P__R_)

Minimum Melting Time-current Curves

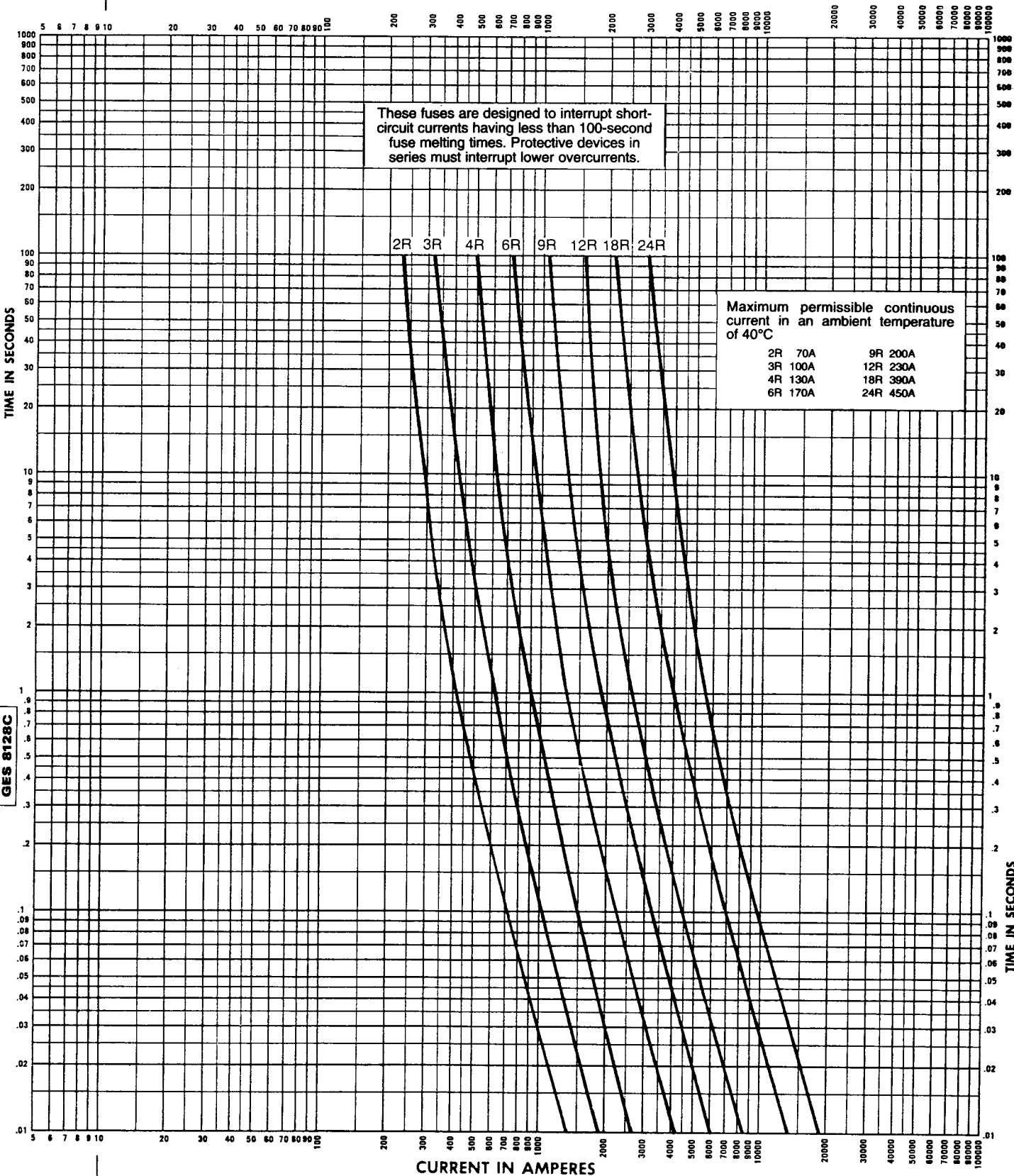
At 25°C with no initial load.

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GES 8129C

This Revision Reflects redrawing and text Change

CURRENT IN AMPERES



CURRENT IN AMPERES



GE Electrical
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Current-limiting
Motor-starting Fuse
2.54 & 5.08 kV Max

Bolt-on Mounting with Indicator/Striker
(218A4293P__RB) (55A212942P__RB)
Clip-on Mounting with Indicator/Striker
(218A4291P__R_)

Maximum Total-clearing Time-current Curves

At 25°C with no initial load.

GES-8128C

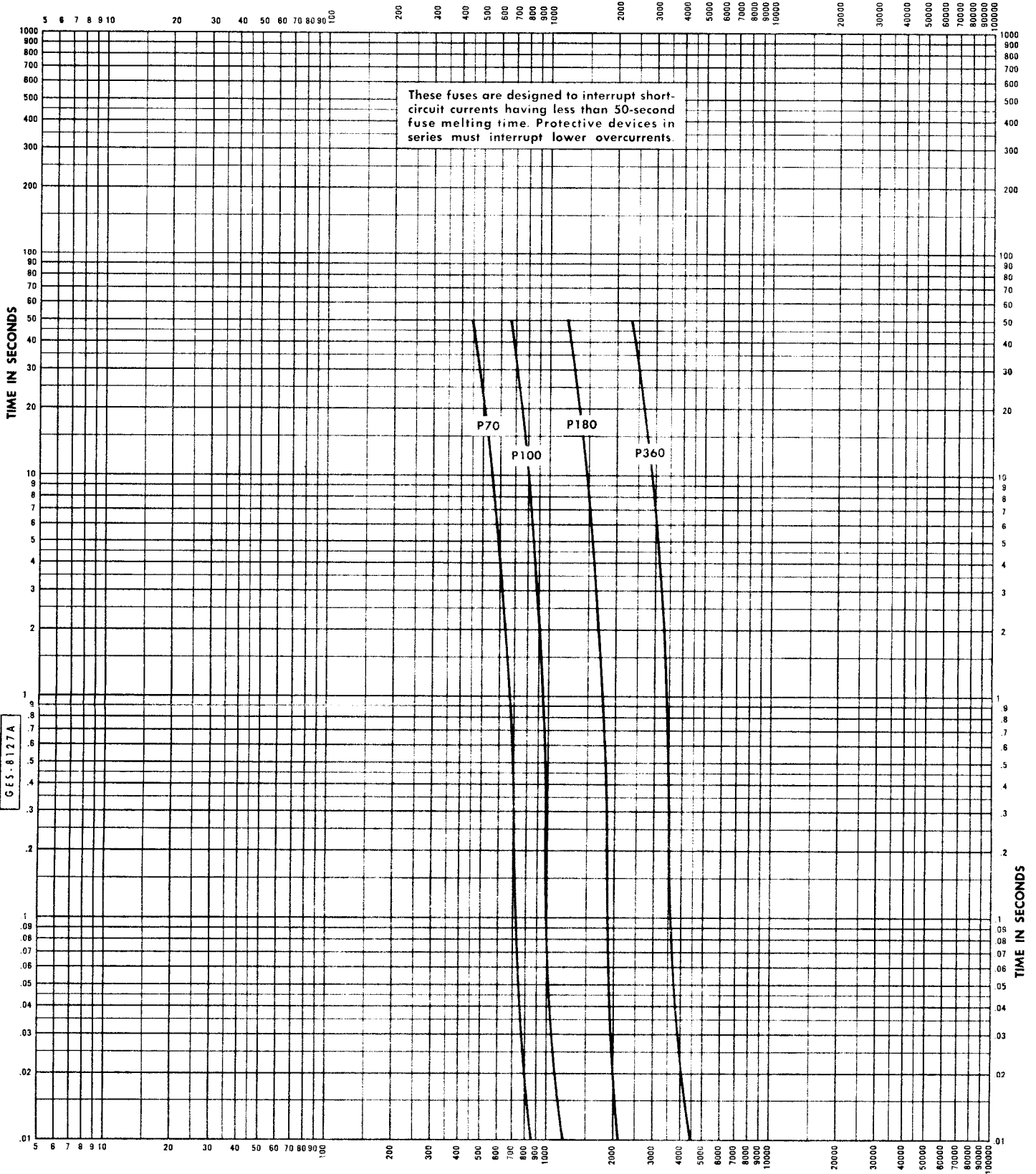
This Revision Reflects redrawing
and text Change

Current Rating
Limit as indicated

Frequency Rating
60 Hertz

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SYMMETRICAL RMS CURRENT IN AMPERES



GES-8127A

SYMMETRICAL RMS CURRENT IN AMPERES

GE Electrical Distribution & Control

Current Rating
No continuous rating

Current-limiting
Motor-starting Fuse
7.2 kV

218A4298P B
55A212943P B

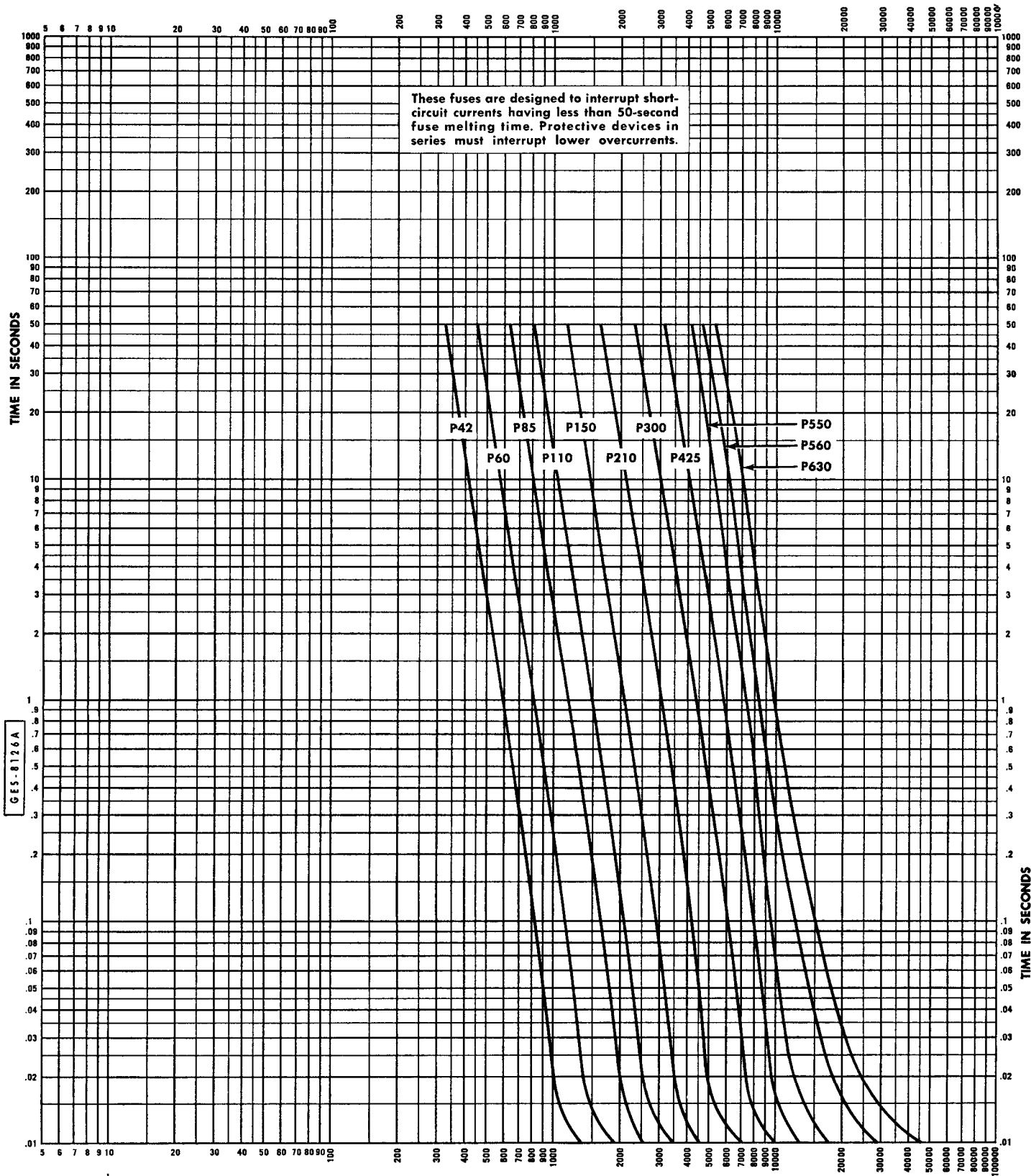
Bolt-on Mounting with Indicator/Striker
Maximum Total-clearing Time-current Curves

At 60 Hertz and 25 °C with no initial load.

GES-8127B

This revision reflects text change only.

SYMMETRICAL RMS CURRENT IN AMPERES



SYMMETRICAL RMS CURRENT IN AMPERES

GE
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Current Rating
 No continuous rating

Current-limiting
 Motor-starting Fuse
 5 kV

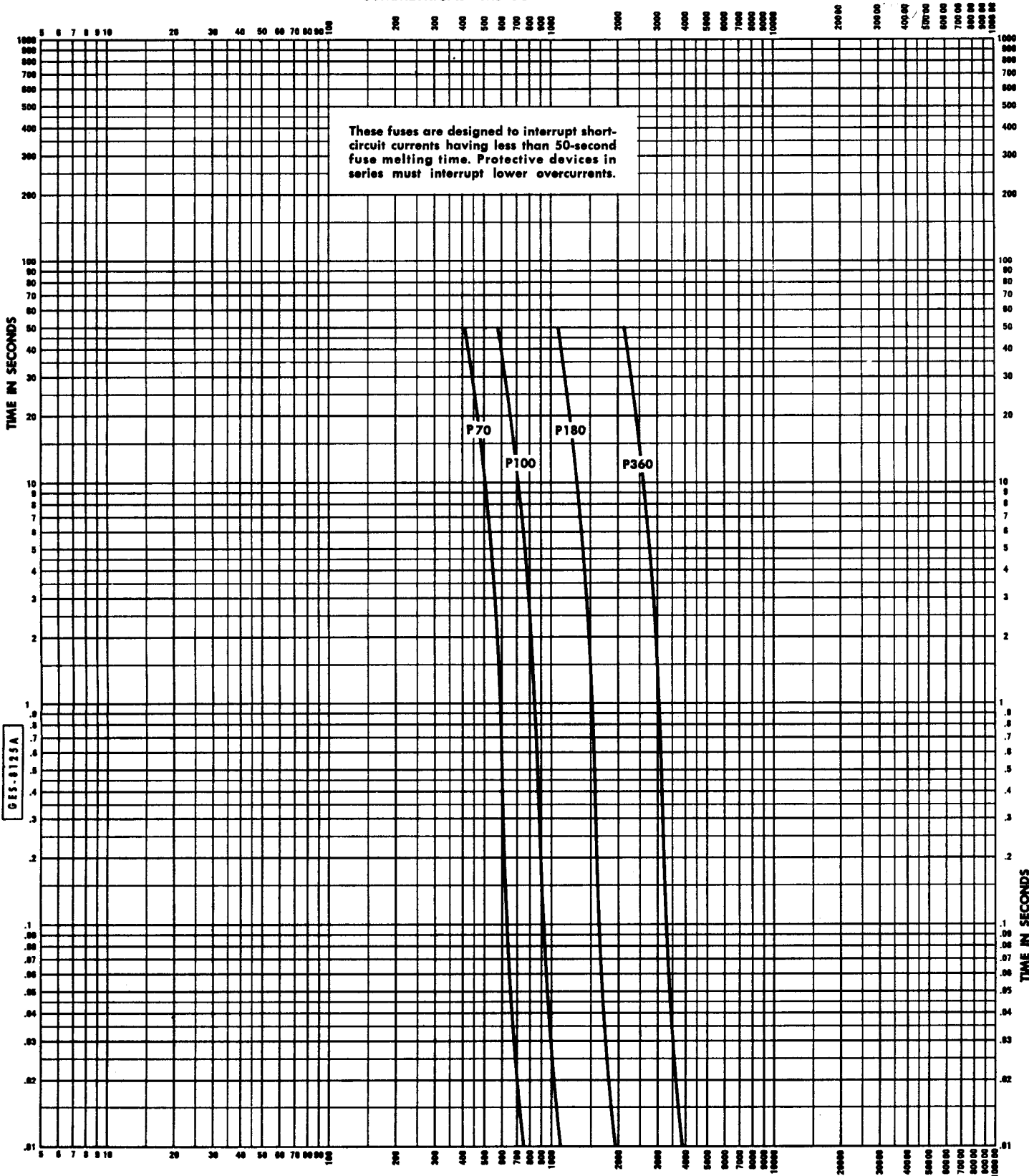
218A4293P_B
 55A212942P_B

Bolt-on Mounting with Indicator/Striker
 Maximum Total-clearing Time-current Curves

At 60 Hertz and 55° C.

GES-8126B
 This revision reflects text change only

SYMMETRICAL RMS CURRENT IN AMPERES



SYMMETRICAL RMS CURRENT IN AMPERES

GE
GE Electrical
Distribution & Control

Current Rating
 No continuous rating

Current-limiting
Motor-starting Fuse
7.2 kV

218A4298P__B
 55A212943P__B

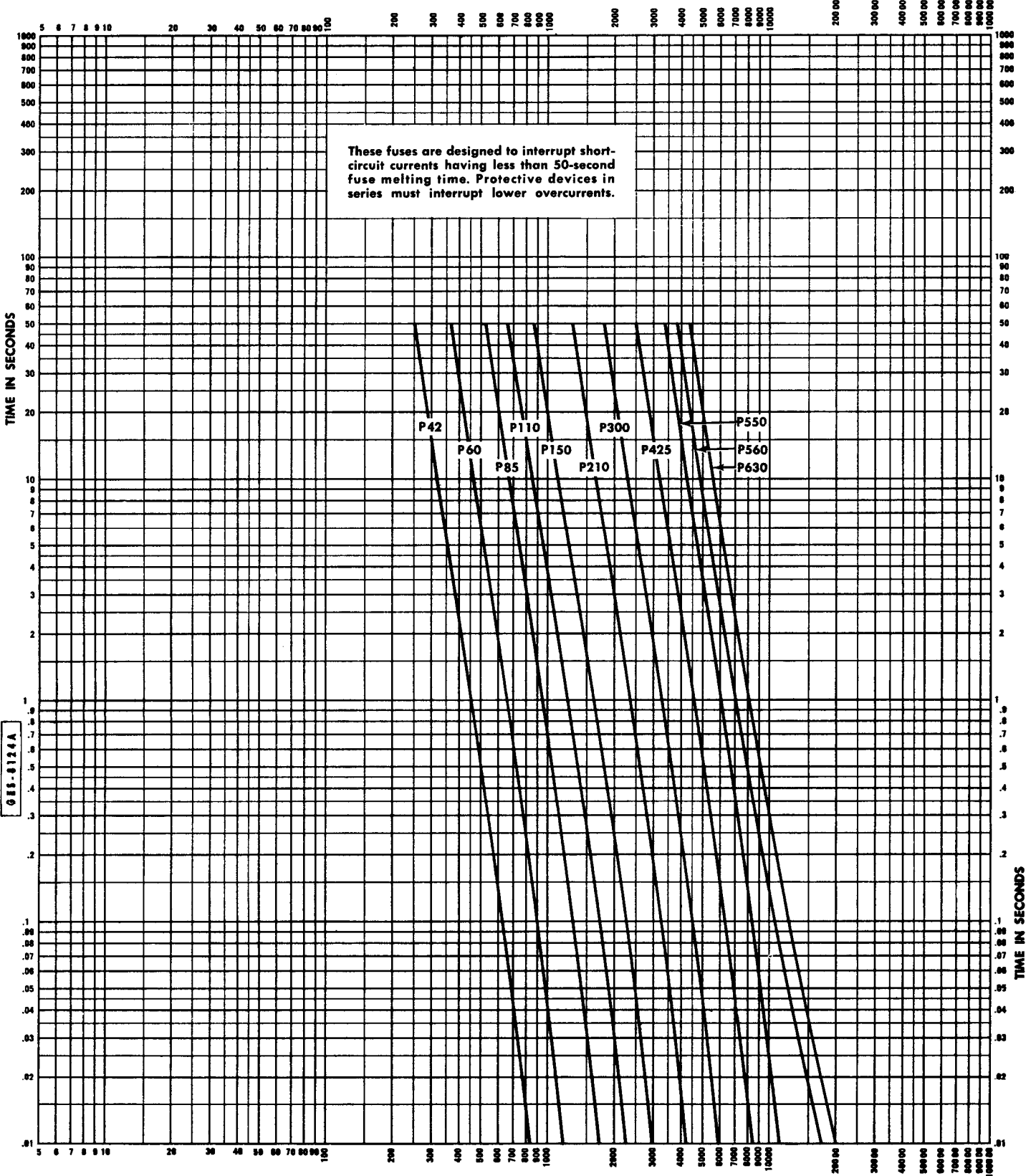
Bolt-on Mounting with Indicator/Striker
Minimum Melting Time-current Curves

At 60 Hertz and 55° C.

GES-8125B
 This revision reflects text change only

(3M, 10/93)

SYMMETRICAL RMS CURRENT IN AMPERES



SYMMETRICAL RMS CURRENT IN AMPERES



Current Rating
No continuous rating

Current-limiting
Motor-starting Fuse
5 kV

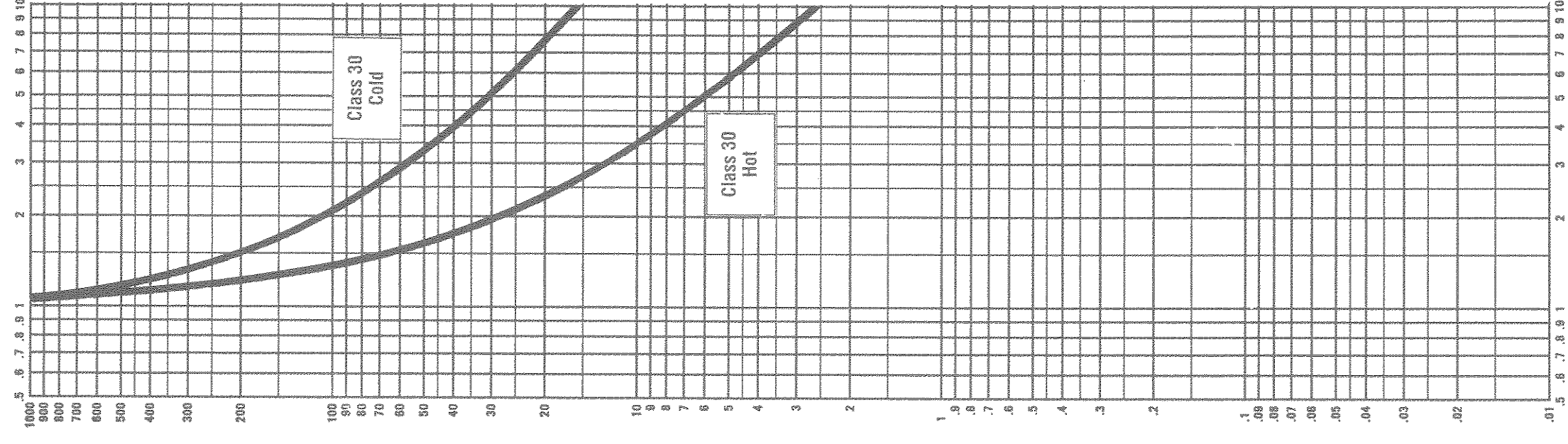
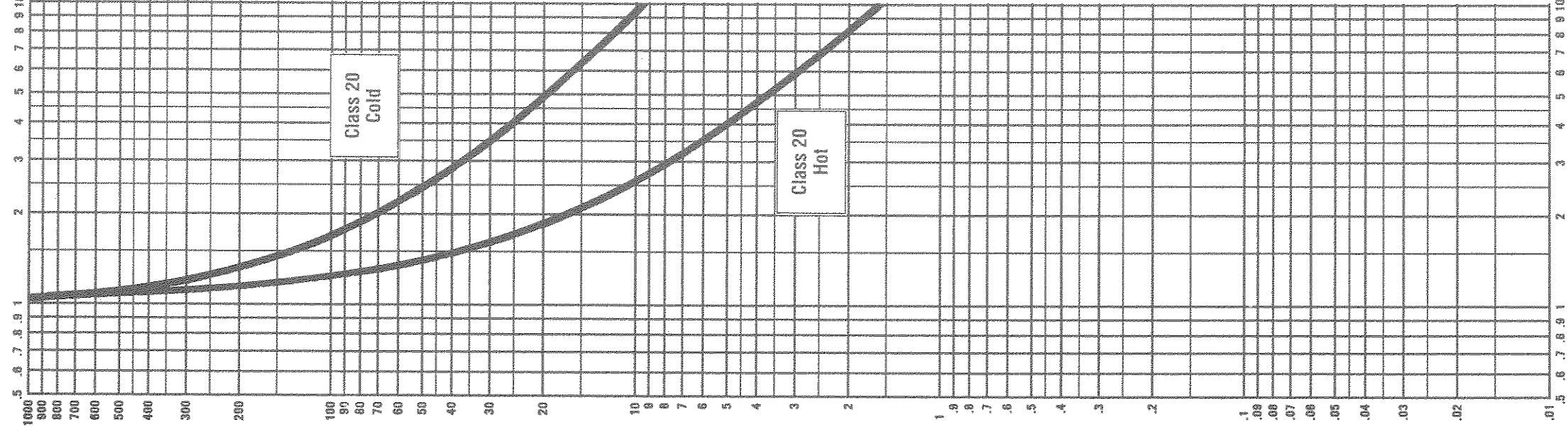
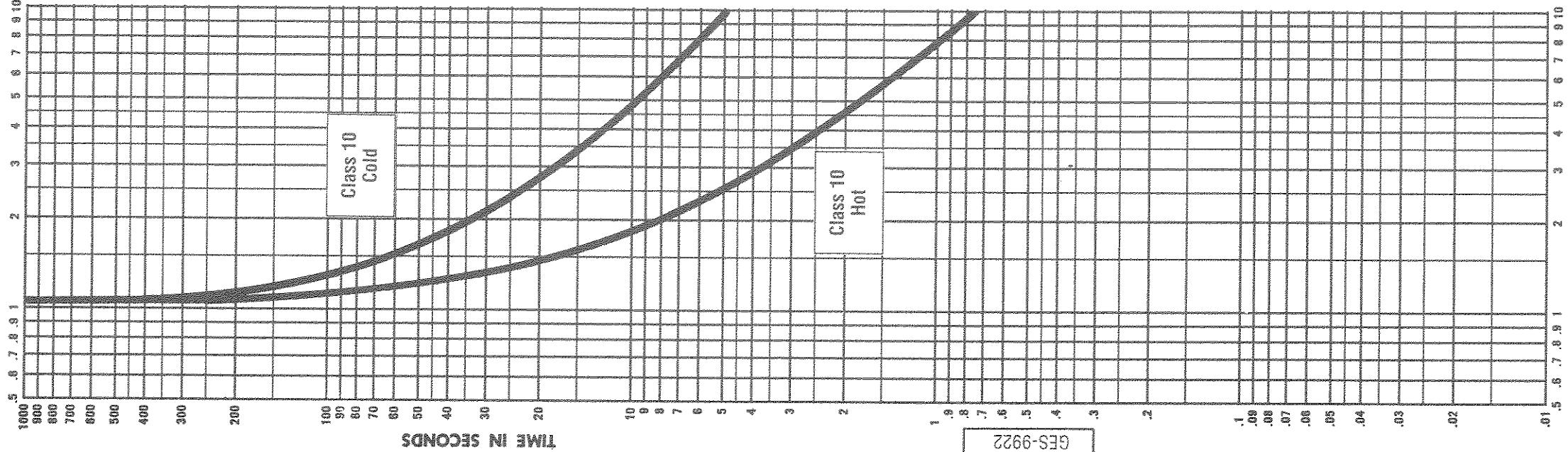
218A4293P__B
55A212942P__B

Bolt-on Mounting with Indicator/Striker
Minimum Melting Time-current Curves

At 60 Hertz and 25° C with no initial load.

GES-8124B

This revision reflects text change only



Multiples of Current Adjustment Dial Setting



**GE Electrical
Distribution & Control**

300 Line Solid State Overload Relays

**Type CR324X
NEMA Sizes 1-6
CR324CX, DX, EX, FX, GX, HX**

Current Ratings
0.40 to 540 Amperes
Frequency Ratings
50/60 Hertz

Adjustments
Tripping Current: 120% of Dial Setting

Time-Current Curves
Class 10, 20 and 30
Operating Range -20°C to 70°C

GES-9922

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12/95 (1M)