

Time-Current
Curves



Limitamp Control CR7160

Motor Overload and Phase-Overcurrent Protection

Types DS2824-34, CR124K and CR224C Thermal Overload Relays and DS3655 **lodTrak** Solid-state Relay Coordinated Type EJ-2 Current-limiting Power Fuses

COORDINATION OF LIMITAMP CONTROL

Overcurrent 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) **lodTrak** three-phase overload relays (solid-state) 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 in 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 either the DS2824-34 inductive-type relay or the CR124K or CR224C thermal-type relays, or the DS3655 **lodTrak** overload relay. These relays, operating from current transformers in the control equipment, carry current proportional to the motor-circuit current. When motor overloads occur, the relay operates to open the power contactor. The time required for operation varies inversely with the magnitude of the overload.

As can be seen from curve GES-7200 enclosed, DS2824-34 relays are supplied in three operating types: fast, medium, and slow. The CR124K and CR224C relays have operating characteristics as seen on curves GES-7201A and GES-7202. The DS3655 **lodTrak** relay has three settings; "RUN" for ultimate trip,

"STALL" for lock-rotor trip, and "TRIM" on ultimate trip. See curve GES-7007. The particular relay or type furnished on a given installation will depend on the anticipated motor-starting time. **lodTrak** is not field adjustable.

Ultimate tripping current for DS2824-34, CR124K, and CR224C relays is 90 to 100% of relay current rating in a 40 C ambient. Tripping is approached at some time beyond the 1000 seconds illustrated on the curve. Relay current settings can be readily adjusted over a range of 90 to 110 percent of the coil rating for the DS2824-34 relay and 85 to 115 percent of nominal heater rating for the CR124K and CR224C relays.

For relay data, see GEH-2487 for CR124K, GEH-1199 for DS2824-34, and GEH-3243 for CR224C. See GEH-4449 for **lodTrak** relay data.

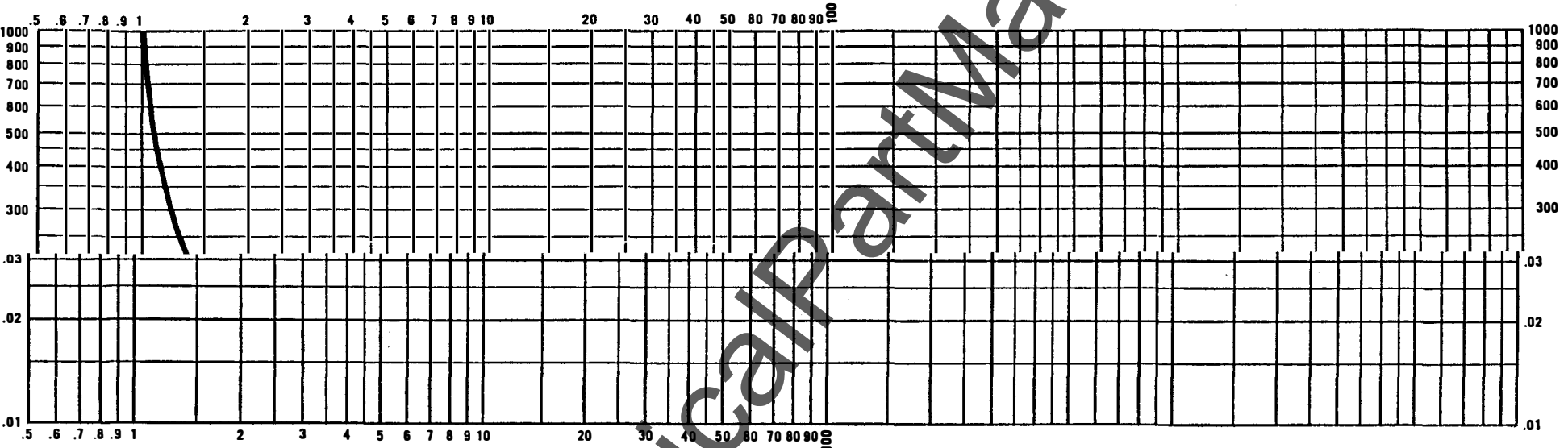
Power Fuses

Power fuses are EJ-2 current-limiting type. Coordination between fuses and thermal-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 time and the maximum total-clearing time for fuses commonly used in Limitamp.

For more complete data on EJ-2 fuses, see GET 2664.

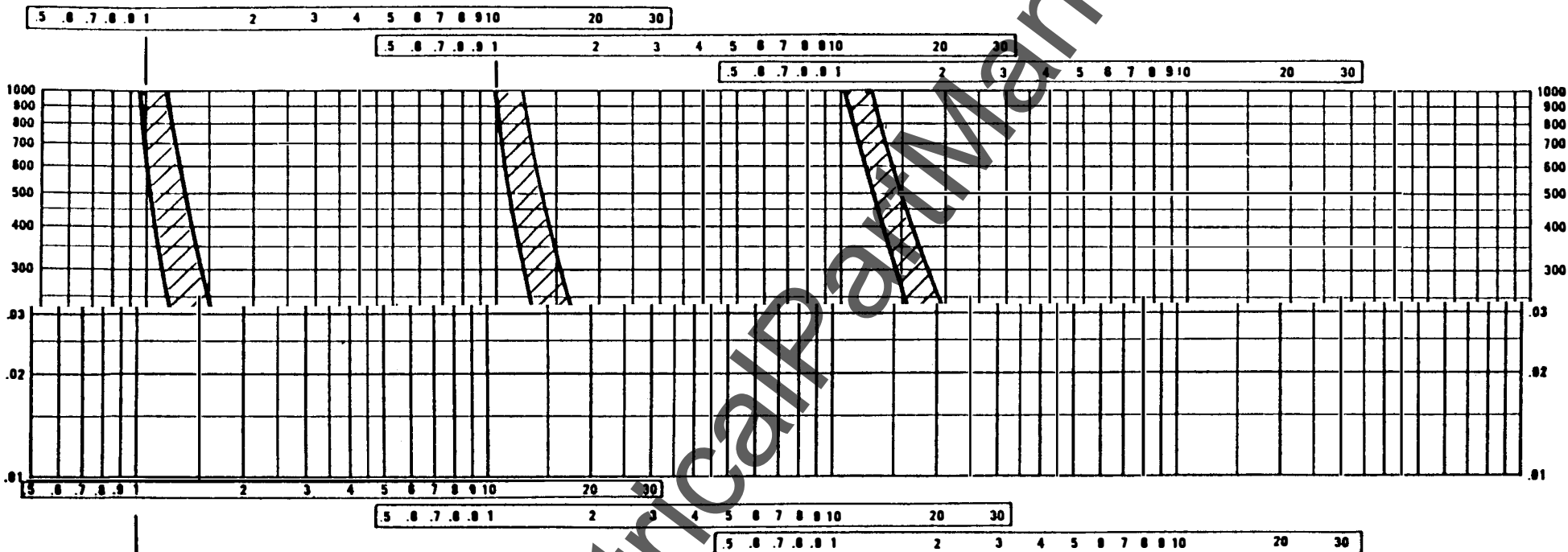
MULTIPLES OF TRIP CURRENT SETTING



MULTIPLES OF TRIP CURRENT SETTING

<p>GENERAL ELECTRIC</p>	<p>THREE-PHASE OVERLOAD RELAY</p> <p>lodTrak™ I</p> <p>Type DS3655A 117D3 and DS3655A 118A</p> <p>Time-current Curves</p>	<p>GES-7007B</p>
<p>Current Rating 2 to 5 amperes</p> <p>Time Range 5 to 30 seconds at 6 times rms current setting</p> <p>Frequency Rating 60 Hertz</p>		<p>Adjustments With Test Set</p> <p>Time: Continuous from 5 to 30 seconds @ 6X</p> <p>Current Setting: Continuous from 2 to 5 amperes</p> <p>Overload: ±15% of current setting</p> <p>Note: All adjustments preset at factory</p>

MULTIPLES OF CURRENT SETTING



MULTIPLES OF CURRENT SETTING

GENERAL ELECTRIC

HEATING THERMAL OVERLOAD RELAY

GES-7200

Supersedes GET-24000

TYPE DS2824-34

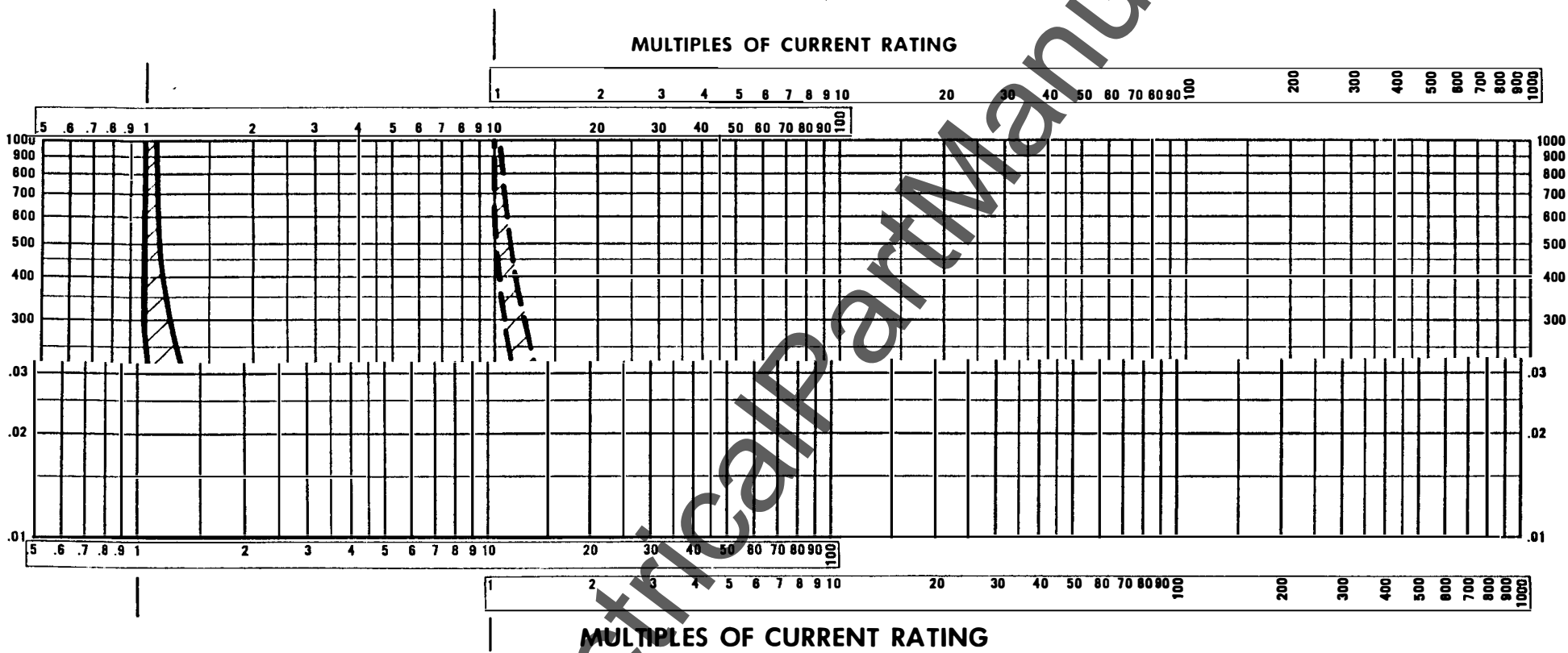
Time-current Curves

Current Ratings
0.71 to 150 Amperes

Frequency Rating
60 Hertz

(Curves show relay in 40 C ambient
Ambient deviations cause only ¼ % / Deg. C
change in current setting; higher ambients de-
crease setting and lower ambients increase setting.)

Adjustments
Current Setting: 90 to 110% of
Actual Trip Current



GENERAL ELECTRIC

Current Ratings
2.0 to 16.3 Amperes

Frequency Rating
25 to 60 Hertz

THERMAL OVERLOAD RELAYS
TYPE CR124
CR124-A2 and CR124K
Time-current Curves

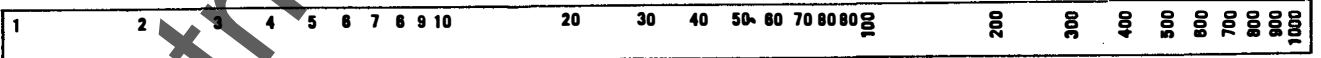
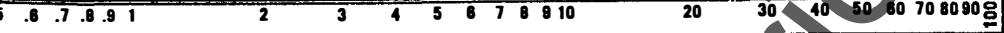
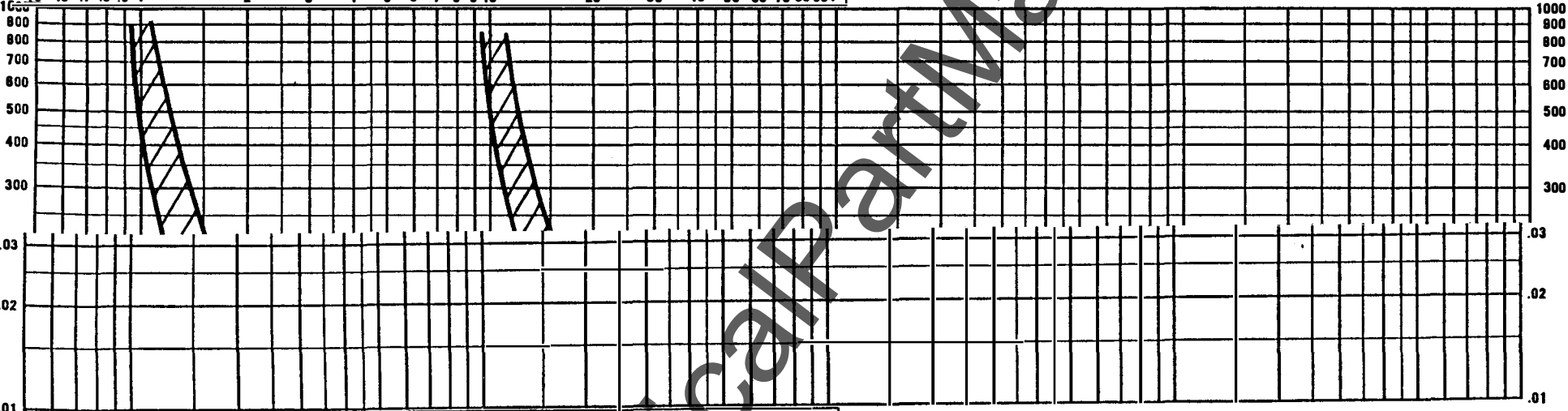
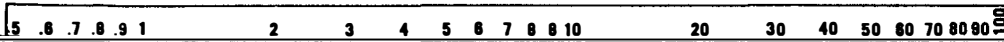
(Tripping performance is not affected by changes in ambient temperatures. Working range -20 C to 60 C for CR124-A2 and -30 C to 80 C for CR124K.)

GES-7201A
Replaces GES-7201

Adjustments

Current setting: 85 to 115% of heater current rating. Curves shown at 100%.

MULTIPLES OF CURRENT RATING



MULTIPLES OF CURRENT RATING

GENERAL ELECTRIC

Current Ratings
0.41 to 270 amperes

Frequency Rating
25 to 60 Hertz

THERMAL OVERLOAD RELAYS

TYPE CR224

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

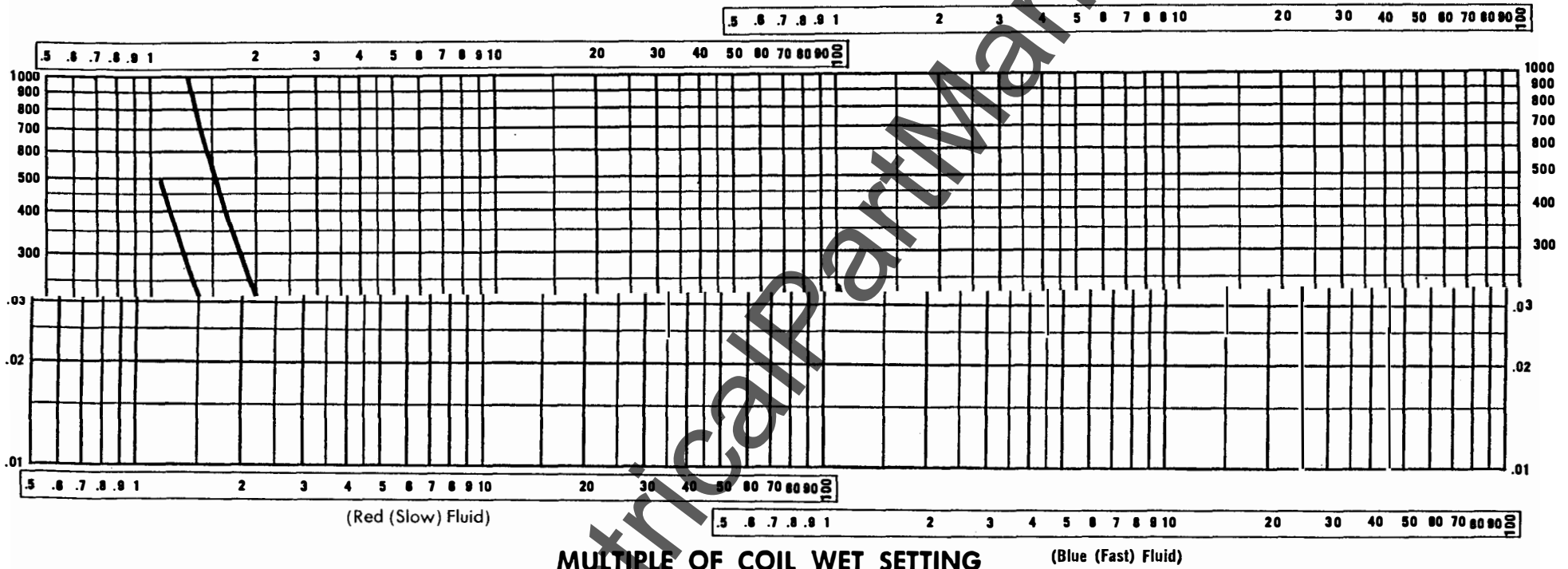
(Curves show relay in 40 C ambient)

GES-7202

Adjustments

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

MULTIPLE OF COIL WET SETTING



GENERAL ELECTRIC

MAGNETIC OVERLOAD RELAY

GES-7203A

Continuous Current Rating
2 to 650 Amperes

CR 124Y

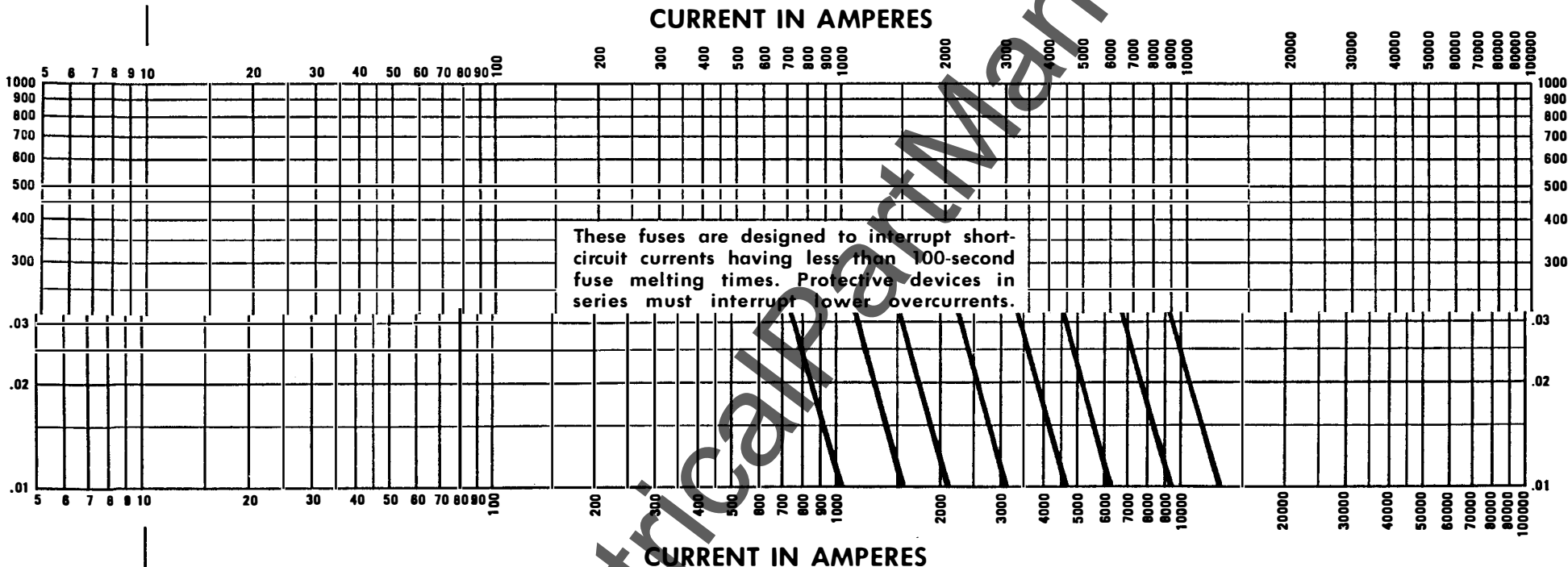
Adjustments

Power Voltage Rating
600 volts ac-dc maximum

Inverse Time-Current Curves

Wet ac current pickup: 50 to 150%
of continuous current rating
Dc current pickup: 93% of ac current pickup.
Dry pickup value is 105% of wet pickup value.
(Used as guide in adjusting wet pickup value)

Frequency Rating
Dc 60/50 Hertz



GENERAL ELECTRIC

CURRENT-LIMITING MOTOR STARTER POWER FUSE

GES-8132

EJ-2 2.54 & 5.08 KV MAX

Current Ratings
Limit as indicated

Frequency Rating
60 Hertz

Size D (2R to 12R) and DD (18R, 24R)

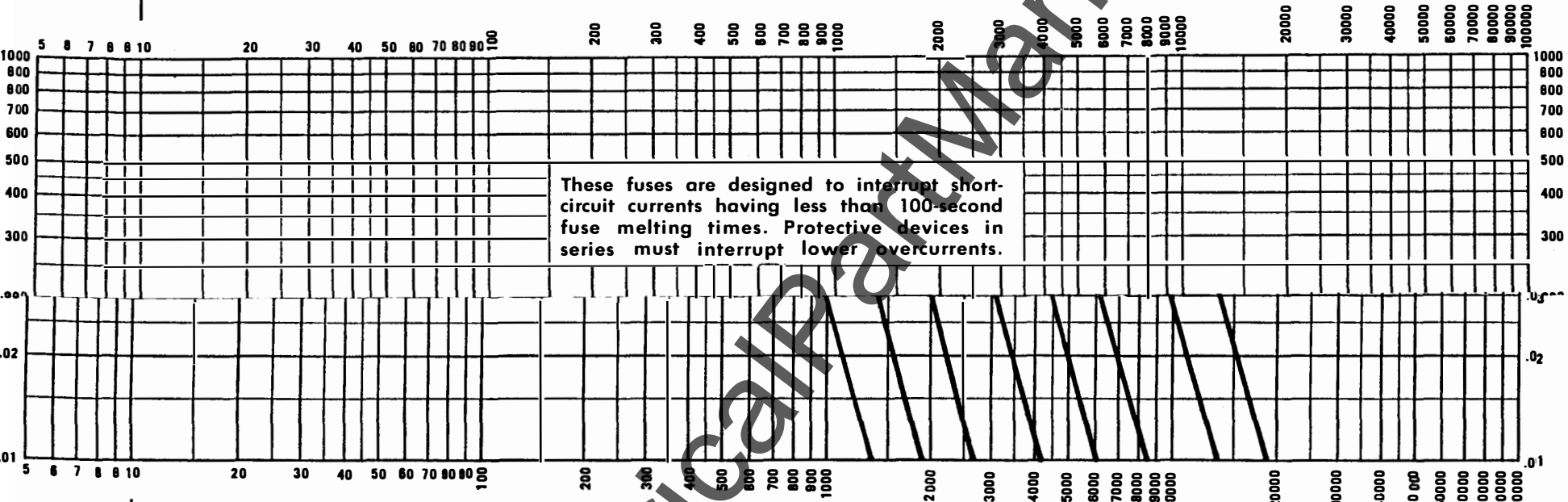
Minimum Melting Time-current Curves

Model Numbers

<u>2.54 kV</u>	<u>5.08 kV</u>
LCB5 --	LJD5 --
LCL3 --	LJN3 --
MCB5 --	MJD5 --
MCL3 --	MJN3 --

(At 25 C with no initial load)

CURRENT IN AMPERES



CURRENT IN AMPERES

GENERAL  ELECTRIC

**CURRENT-LIMITING MOTOR STARTER POWER FUSE
EJ-2 2.54 & 5.08 KV MAX.**

GES-8133

Current Ratings
Limit as indicated

Frequency Rating
60 Hertz

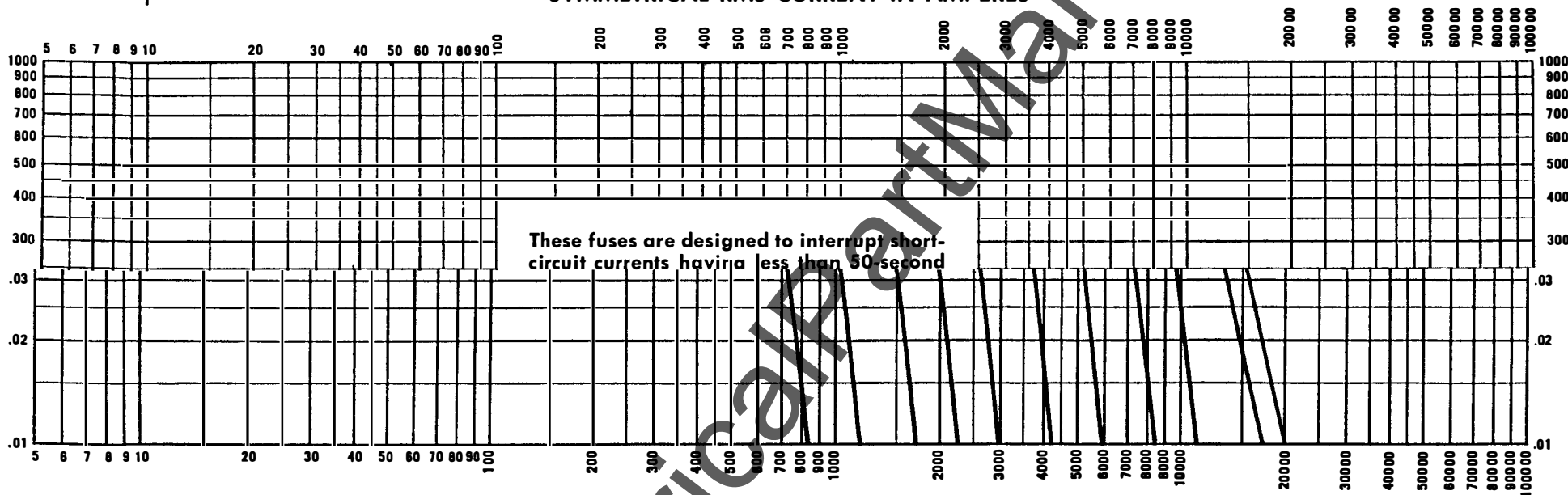
Size D (2R to 12R) and DD (18R, 24R)
Maximum Total-clearing Time-current Curves

(At 25 C with no initial load)

Model Numbers

<u>2.54 kv</u>	<u>5.08 kv</u>
LCB5 --	LJD5 --
LCL3 --	LJN3 --
MCB5 --	MJD5 --
MCL3 --	MJN3 --

SYMMETRICAL RMS CURRENT IN AMPERES



SYMMETRICAL RMS CURRENT IN AMPERES

GENERAL  ELECTRIC

CURRENT-LIMITING MOTOR-STARTING FUSE

GES-8124

5 KV

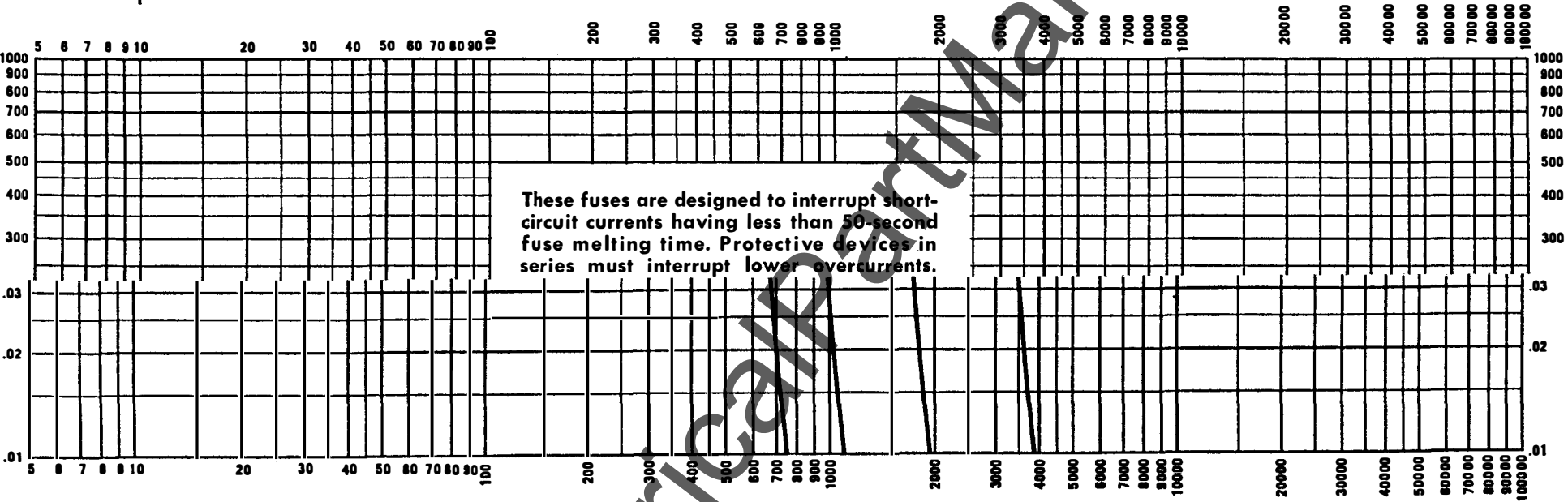
Current Rating
No continuous rating

Bolt-on Mounting With Indicator/striker

Minimum Melting Time-current Curves

(At 60 Hertz and 25C with no initial load)

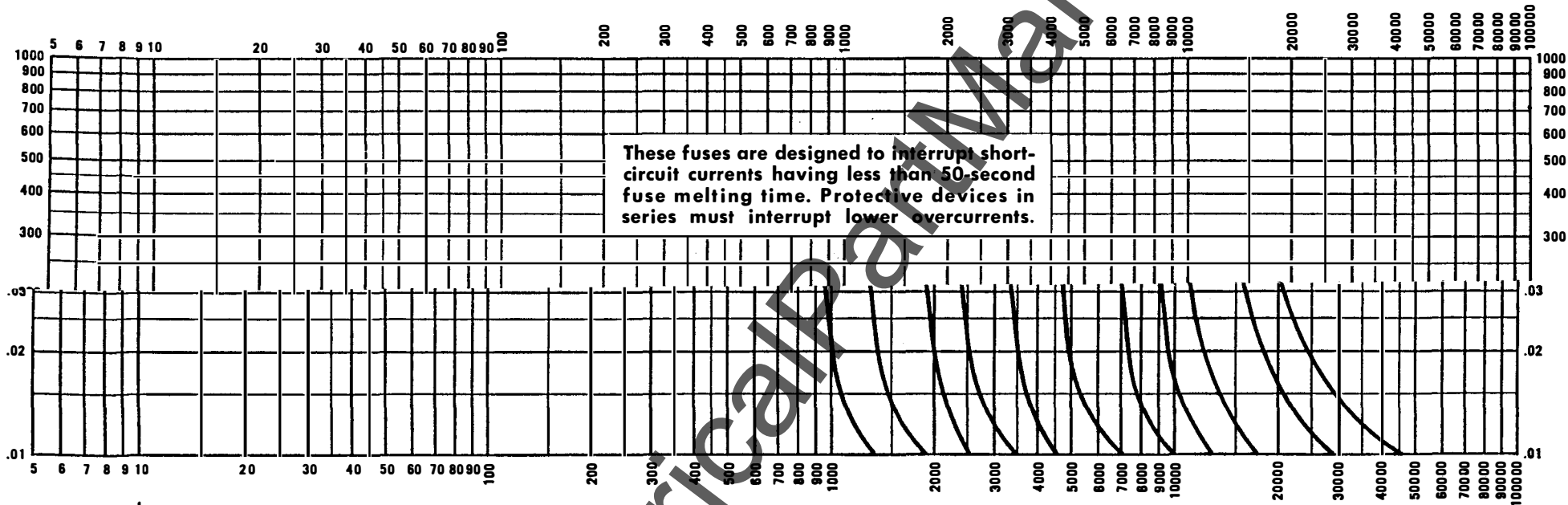
SYMMETRICAL RMS CURRENT IN AMPERES



SYMMETRICAL RMS CURRENT IN AMPERES

<p>GENERAL ELECTRIC</p>	<p>CURRENT-LIMITING MOTOR-STARTING FUSE 7.2 KV</p>	<p>GES-8125</p>
<p>Current Rating No continuous rating</p>	<p>Bolt-on Mounting With Indicator/striker Minimum Melting Time-current Curves (At 60 Hertz and 25C with no initial load)</p>	

SYMMETRICAL RMS CURRENT IN AMPERES



SYMMETRICAL RMS CURRENT IN AMPERES

GENERAL  ELECTRIC

CURRENT-LIMITING MOTOR-STARTING FUSE

GES-8126

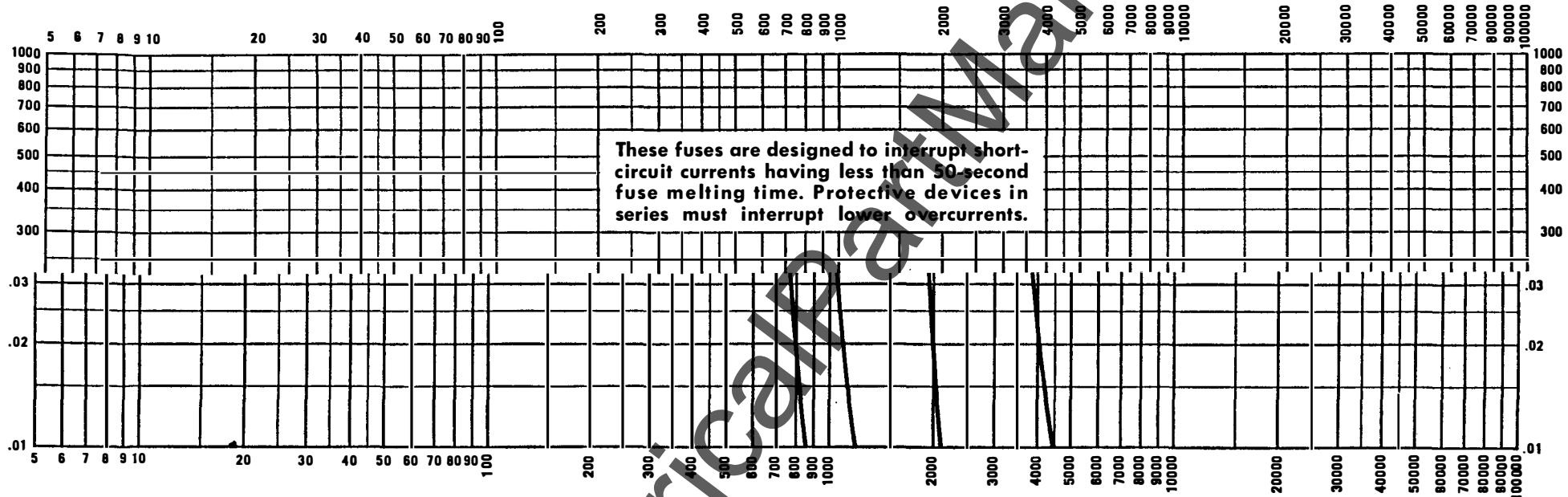
5KV

Current Rating
No continuous rating


Bolt-on Mounting With Indicator/striker
Maximum Total-clearing Time-current Curves

(At 60 Hertz and 55 C)

SYMMETRICAL RMS CURRENT IN AMPERES

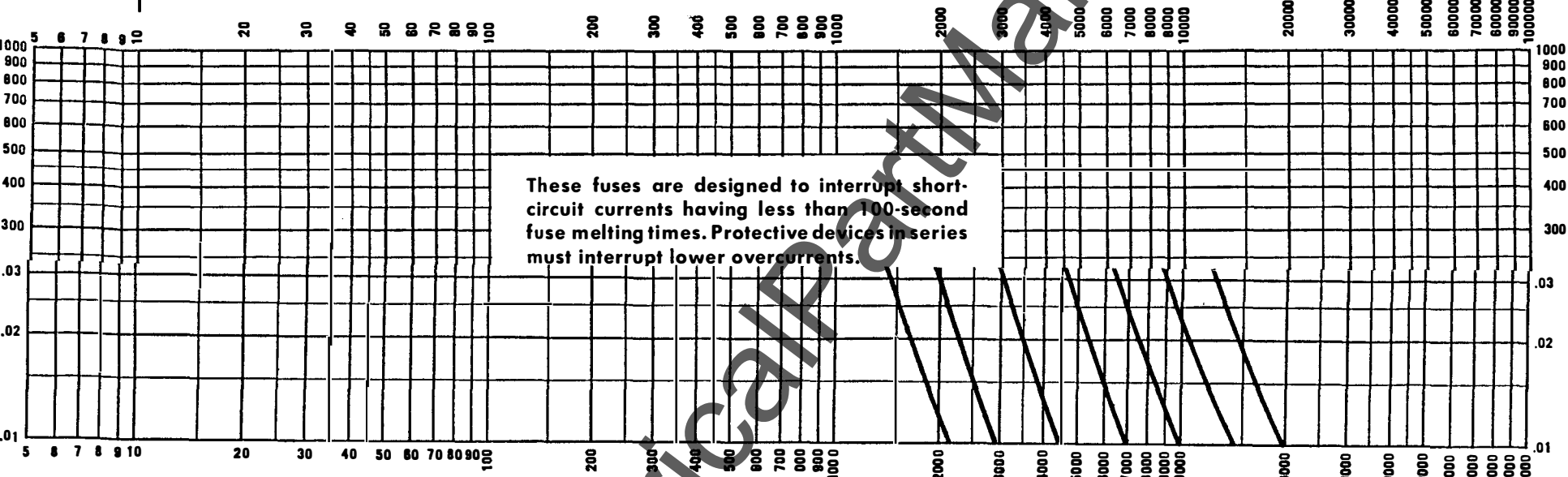


SYMMETRICAL RMS CURRENT IN AMPERES

<p>GENERAL  ELECTRIC</p>	<p>CURRENT-LIMITING MOTOR-STARTING FUSE 7.2KV</p>	<p>GES-8127</p>
<p>Current Rating No continuous rating</p> <p>Bolt-on Mounting With Indicator/striker Maximum Total-clearing Time-current Curves</p> <p>(At 60 Hertz and 55 C)</p>		



CURRENT IN AMPERES



CURRENT IN AMPERES

GENERAL ELECTRIC

CURRENT INTERRUPTER

GES-8128

5KV

218A4293P__RB

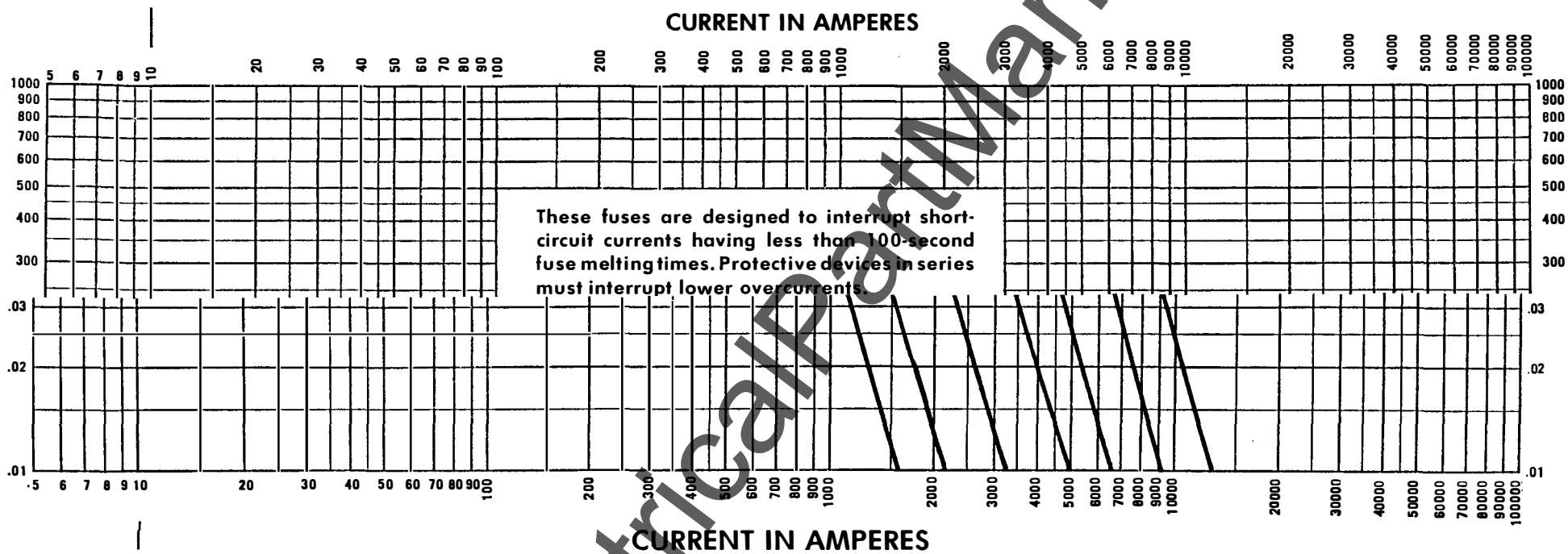
Current Ratings
Limit as indicated

Bolt on Mounting with Indicator/Striker

Frequency Rating
60 Hertz

Maximum Total-clearing Time-current Curves

(At 25 C with no initial load)



GENERAL ELECTRIC	CURRENT-LIMITING MOTOR STARTER POWER FUSE 2.54 & 5.08 KV MAX 218A4293P__RB	GES-8129
Current Ratings Limit as indicated Frequency Rating 60 Hertz	Bolt on Mounting with Indicator/Striker Minimum Melting Time-current Curves (At 25 C with no initial load)	