

Submitted for recognition as an American National Standard

HIGH CURRENT TIME LAG ELECTRIC FUSES

Foreword—This Document has not changed other than to put it into the new SAE Technical Standards Board Format.

1. Scope—The fuses shown in Figure 1 are for use in motor vehicles, boats, and trailers to protect electrical wiring. This SAE Standard is for the construction shown and is not intended to restrict the design and use of other configurations and materials capable of meeting the vehicle requirements.

2. References

2.1 Applicable Publications—The following publications form a part of this specification to the extent specified herein. The latest issue of SAE publications shall apply.

2.1.1 SAE PUBLICATIONS—Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE J1034—Engine Coolant Concentrate—Ethylene-Glycol Type

SAE J1128 JUN87—Low Tension Primary Cable

2.1.2 ASTM PUBLICATION—Available from ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

ASTM B 117—Method of Salt Spray (Fog) Testing

3. Definitions

3.1 Fuse—A device designed to interrupt the electrical circuit when subjected to overcurrents. This action is to be nonreversible, and the fuse is intended to be replaced after the circuit malfunction has been corrected.

4. Part 1—Design Parameters

4.1 Materials—The fuses shall have nonconductive bodies capable of withstanding vehicle environmental conditions as set forth in this document. Terminals shall have a suitable finish which will assure corrosion protection and satisfactory mechanical and electrical properties.

4.2 Construction—The fuse shall consist of a terminal and element combination securely attached to a nonconductive fuse body. Fuse terminals shall be exposed through the top portion of the fuse body to allow for inspection of the electrical continuity of the fuse while it is engaged in a fuseblock or fuseholder. Fuse elements shall be visible through the body. Typical overall dimensions are shown in Figure 1.

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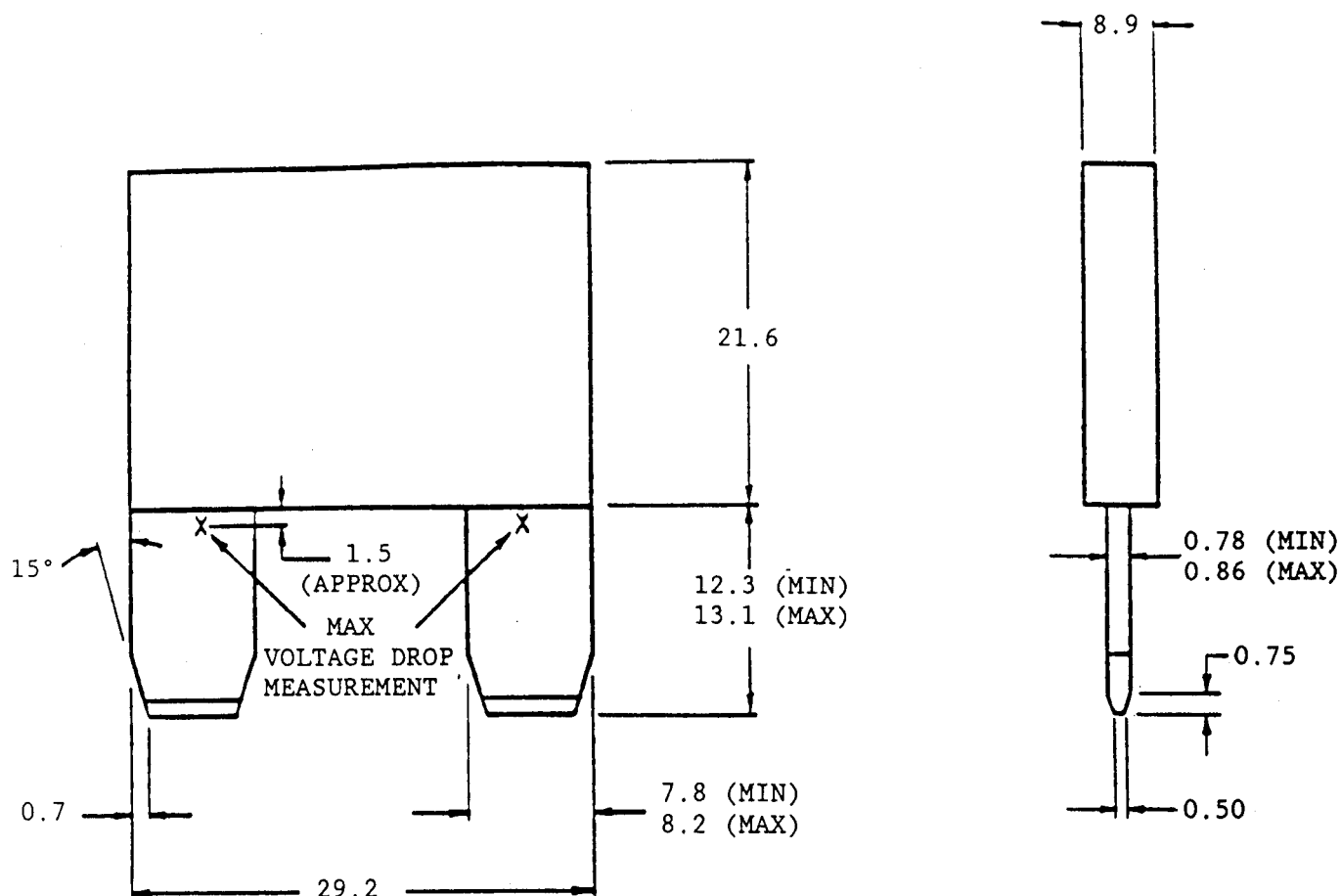
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NOTE: ALL DIMENSIONS ARE IN MILLIMETERS
 TOLERANCES UNLESS OTHERWISE NOTED ARE:
 ONE DECIMAL PLACE $\pm 0.3\text{mm}$
 TWO DECIMAL PLACE $\pm 0.15\text{mm}$

FIGURE 1—OVERALL FUSE DIMENSIONS

- 4.3 Marking—(Initially and After Environmental Exposure)**—Fuses shall be marked on the fuse body with the amperage, voltage rating, and manufacturer's name or trademark. In addition, the fuses shall be color coded as shown in Table 1. Markings shall be legible at the conclusion of all tests set forth in this document.

TABLE 1—PREFERRED AMPERE RATINGS AND COLOR CODES

Ampere Rating	Color
20	Yellow
30	Green
40	Amber
50	Red
60	Blue
70	Tan
80	Natural
100	Violet
120	Pink

5. Part 2—Performance Requirements

5.1 Ampere Rating—This document covers ampere ratings up to and including 120 amps. Preferred ampere ratings are shown in Table 1. These ratings were determined at 24 °C ambient temperature using a test procedure as detailed in 6.1 of this document.

5.1.1 WIRE—The wire construction determines the maximum ampere capacity for a particular circuit. Table 2 shows various cable constructions and their matched fuse ampere rating. Other wire construction such as PVCs and matched fuse combinations may be developed.

TABLE 2—MATCHED CABLE GAUGE

Fuse Ampere Rating	Cable Gauge (mm ²)
20	1.0 multistrand
30	2.0 multistrand
40	3.0 multistrand
50	5.0 multistrand
60	5.0 multistrand
70	8.0 multistrand
80	8.0 multistrand
100	13.0 multistrand
120	16.0 multistrand

NOTE—Wire type is cross-link polyethylene (GLX) as described in SAE specification J1128 (June, 1987).

5.1.2 TEMPERATURE—Figure 2 represents the typical ampere capacity change with respect to ambient temperature. The use of fuses in ambient temperature beyond the limits shown is not recommended.

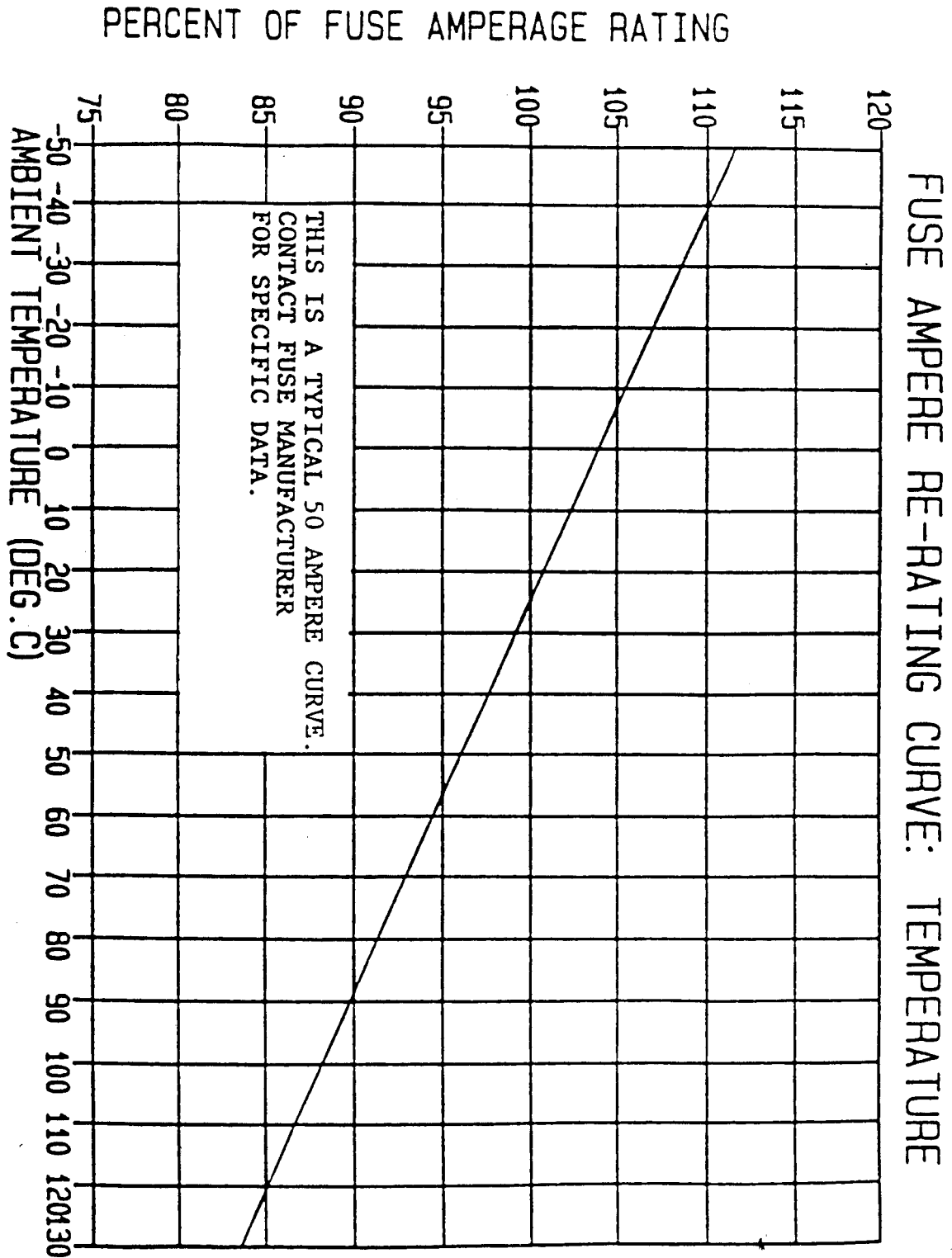


FIGURE 2—AMBIENT TEMPERATURE EFFECT ON AMPACITY (TYPICAL)

- 5.1.3 **LOADING**—It is recommended that the fuses not be loaded above 70 to 80% of their rated ampere capacity based on ambient temperature and the use of their matched cable size. In addition, it is further recommended that actual performance be verified through testing experimentally in the vehicle.

NOTE— The specific ampere capacity of a fuse is a function of the particular electrical system being utilized. To aid in determining the actual capacity change, several factors should be considered by the application engineer. These factors include ambient temperature, wire size, insulating material, and connecting clips.

- 5.2 **Voltage Rating**—Fuses shall be capable of interrupting at any voltage up to and including 32 V.

- 5.3 **Maximum Voltage Drop**—The maximum voltage drop (in millivolts) at rated current across the fuse shall be as shown in Table 3.

TABLE 3—MAXIMUM VOLTAGE DROP OF FUSE AT RATED CURRENT

Fuse Rating (Amps)	Max. Voltage Drop (mV)
20	120
30	120
40	120
50	120
60	130
70	130
80	130
100	130
120	130

- 5.4 **Performance**—Tests shall be conducted within a temperature range of $24^{\circ}\text{C} \pm 5^{\circ}\text{C}$, which is considered room ambient within this specification.

- 5.4.1 **AMPERE RATING TESTS**—Fuses shall carry 100% of rated current continuously for a minimum of 100 h. Opening times for 135%, 200%, 350%, and 600% of rated current are listed in Table 4.