TOTAL CLEARING TIME-CURRENT CHARACTERISTIC CURVES

**SMU FUSE UNITS—S&C STANDARD SPEED**

**BASE**—These fuse units are tested in accordance with the procedure described in ANSI Standard C37.41-1981, and they are rated to comply with ANSI Standard C37.45-1981. As required by these standards, the minimum melting current is not less than 200% of fuse-unit ampere rating, and the minimum melting and total clearing curves are based on tests starting with the fuse unit at an ambient temperature of 25°C and no initial load.

**CONSTRUCTION**—Fusible elements, for fuse units rated 10E through 400E amperes are silver, 7E amperes are nickel-chrome, under controlled tension; fusible elements for fuse units rated 10E through 400E amperes are silver, helically coiled. All are of solidless construction.

**APPLICATION**—Like all high-voltage fuses, these fuse units are intended to accommodate overloads, not to interrupt them. Accordingly, they feature fusible elements which are designed with a minimum melting current of 200% of the fuse-unit ampere rating (for fuse units rated 100 amperes or less) or 240% of the fuse-unit ampere rating (for fuse units rated 100 amperes). As a result, the fuses are not intended to interrupt the short current of a transformer, motor, or other frequently loaded equipment. These fuses should never be exposed to loading in excess of the peak-load rating for either the protecting or protected fuse usually will satisfy. Do not assume that other fuses that do not employ S&C's silver, helically coiled fusible element construction can better resolve a coordination impasse than the use of another ampere rating in one of the S&C speed options. Such other fuses, including “time-lag” speeds, “super-slow” speeds, and “high-surge” speeds, requires the use of “safety-zone” or setback allowances and, in addition, they have larger construction tolerances (plus 25% in current; plus 40% in terms of time). The application of these two factors will give a time interval between the adjusted minimum melting curve and the total clearing curve greater than in the case of S&C speed options.

**TOLERANCES**—Curves are plotted to maximum test points. All variations are minus.

**COORDINATION**—These curves represent the total time required for a fuse unit to melt and interrupt a fault current, and should be followed in coordination problems where fuses are applied as “protecting” devices. Any preloading reduces melting time. With respect to the “protected” fuse, the effect of preloading must be determined and adjustments made to its minimum melting curve:

1. When close coordination is required.
2. When, regardless of the preciseness of coordination, the protected fuse is subjected to temporary overloads.

There are cases where the coordination requirements may be very exacting, for example, in coordinating a transformer primary fuse with a secondary breaker and a source-side breaker. The time interval between the operating characteristics of the two breakers may be very narrow. Under these circumstances there must be an extremely short time interval between the minimum melting and the total clearing characteristics of the fuse. The fuse units represented by these curves possess this short time interval characteristic—they require:

- No “safety-zone” or setback allowances.

The narrow time band normally will provide the desired coordination. If the selected S&C Standard Speed fuse unit does not meet the coordination requirements, the selection of another ampere rating for either the protecting or protected fuse usually will satisfy.

- As little as 10% of peak current in terms of time.
- As little as 10% of peak current in terms of time.