Basis—These refill units are tested in accordance with the procedures described in ANSI Standard C37.41-1981, and they are rated to comply with ANSI Standard C37.46-1981. As required by these standards, the minimum melting current is not less than 200% of refill-unit ampere rating, and the minimum melting and total clearing characteristics are based on tests starting with the refill unit at an ambient temperature of 25°C and no initial load. The test curves are based on tests starting with the refill unit at an ambient temperature of 25°C and no initial load. The test curves are based on tests starting with the refill unit at an ambient temperature of 25°C and no initial load.

Construction—Fusible elements are silver, helically coiled, and of standard construction.

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

Application—Like all high-voltage fuses, these refill 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 refill-unit ampere rating (for refill units rated 100 amperes or less) or 220% of the refill-unit ampere rating (for refill units rated over 100 amperes). As a result, these refill units have considerable peak-load capabilities; however, they should never be exposed to loading in excess of the peak-load capabilities listed in S&C Data Bulletin 240-100.

Since these refill units have silver element construction which is not subject to damage by aging or transient overcurrents, it is unnecessary to replace blown refill units in single-phase or three-phase installations when one or more refill units have blown.

Coordination—These curves represent the total time required for a refill 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 the minimum melting curve.

1. When close coordination is required.
   1. When, regardless of the preciseness of coordination, the protecting device should interrupt the load current and/or secondary 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 refill units represented by these curves possess a short time interval feature, since—having a nondamageable fusible element of precise construction—they require:

1. As little as 10%, tolerance in melting-current—compared to the 20% tolerance of many fuses (20% and 40% respectively in terms of time).
2. No “safety-zone” or setback allowances.

This narrow time band normally will provide the desired coordination. If the selected S&C Slow Speed refill unit does not meet the coordination requirements, check to see if the same ampere rating in the S&C Standard Speed will suffice.

Sometimes a selected ampere rating will fail to meet the coordination requirements in any available speed. In this case the selection of another ampere rating for either the protecting or protected fuse usually will satisfy all requirements.

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-due” speeds, and “high-start” speeds, require the use of “safety-zone” or setback allowances and, in addition, they have larger construction tolerances (plus 20% 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.

TOTAL CLEARING TIME-CURRENT CHARACTERISTIC CURVES

SM REFILL UNITS—S&C SLOW SPEED

Coordination—These curves represent the total time required for a refill 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 the minimum melting curve.

1. When close coordination is required.
   1. When, regardless of the preciseness of coordination, the protecting device should interrupt the load current and/or secondary overloads.

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SM REFILL UNITS AVAILABLE

Refill Unit | 6000 and 14,400 | Ampere Ratings
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SM-5 | 4.16 through 14.4 | 15E through 400E
SM-4 | 7.2 and 14.4 | 15E through 200E
SM-3 | .4 through .7 | 15E through 200E
SM-2 | .4 through .7 | 15E through 200E
SM-1 | .4 through .7 | 15E through 200E
SM-0 | .4 through .7 | 15E through 200E
SM-1 | .4 through .7 | 15E through 200E
SM-2 | .4 through .7 | 15E through 200E
SM-3 | .4 through .7 | 15E through 200E
SM-4 | .4 through .7 | 15E through 200E
SM-5 | .4 through .7 | 15E through 200E