

# TechTopics No. 36

## Early “b” contacts

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From time to time, we receive requests for modification of circuit breakers to incorporate “early ‘b’ contacts.” These are also sometimes called “fast ‘b’ contacts.” With modern vacuum circuit breaker designs, it is no longer necessary to provide an early “b” contact. This TechTopics edition explains why this is no longer necessary.

Most requests for early “b” contacts involve automatic transfer schemes, and are caused by the desire to minimize the “dead bus” time. Refer to TechTopics No. 69 for a discussion of fast bus transfer times for type GMSG circuit breakers.

On the Siemens vacuum circuit breakers, all “b” contacts are early “b” contacts. We define an early “b” contact as one that makes as close as possible to circuit breaker main contact part during the opening operation. On our vacuum circuit breakers, the “b” contacts make at approximately the same time as main contact part. Tests indicate that “b” switch make occurs at about 2 milliseconds (ms) before main contact part (subject to variation, which is expected to be less than  $\pm 4$  ms).

For historical perspective, the user need for early “b” contacts originated back in the days of air-magnetic circuit breakers. For some designs, “b” switch make occurred as much as 30 to 40 ms after main contact part. For “fast transfer” applications, users quite properly did not want to wait an “eternity” (30 to 40 ms is an eternity) for the “b” contact to make, as this contact is used to initiate the automatic transfer sequence.

Today, with all “b” contacts fulfilling the requirement for early “b” contacts, there is no longer a need for a distinction between standard “b” contacts and early “b” contacts.

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