

Melting phenomena and arc ignition of breaking relay contacts.

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Abstract

Breaking voltage and current characteristics of conventional magnetic relays with different hinge springs (spring constants; 2N/mm ~ 0.2N/mm) and different contacting surfaces (radius; 0.25mm ~ 2.0mm) were measured for a 1.5 ~ 50V energizing power supply voltage and 0.1 ~ 25A. The contact current decreasing and voltage increasing processes were clearly measured at the melting voltage U_m . We experimentally confirmed that the shutdown time of contact currents after the melting voltage did not depend on mechanical conditions but depend on contact currents. We also observed the arc ignition and black circular traces on the contact surfaces. It depends on the contact surface radius. We would estimate the relation between the melting phenomena and the arc ignitions.