TECH NOTE

TN-101 – Is Arcing Present?

When relay or switch contacts open or close on an inductive load, a transient arc occurs at the contact gap. Whether or not arcing is actually occurring and damaging contacts is not always obvious. This Tech Note describes a simple, reliable method to determine whether arcing is present.

Connect a neon indicator lamp in parallel with the switch contacts. If the lamp glows when the contacts are open, arcing is occurring. The lamp responds to peak transient voltage. A neon lamp will ionize at approximately 70–90 V, so if the arc transient exceeds that threshold, the lamp will visibly glow.

Neon lamps used for this test are available as panel-mount indicator assemblies, complete with series resistor and leads. Use a type rated for 120 VAC or higher. The lamp draws negligible current and will not affect circuit operation.

If the neon lamp glows when the contacts open, arc suppression is needed. Refer to Tech Note 120 — Protecting Relay and Switch Contacts — for arc suppression circuit recommendations covering both DC and AC loads.

If the lamp does not glow, arcing at the contact gap is either absent or below the neon ionization threshold. However, for inductive loads at higher voltages or currents, arc suppression is still recommended as a precautionary measure to maximize contact life.

Key Point

A neon lamp wired in parallel with the switch contacts is the simplest and most reliable field indicator of arc activity. If it glows when contacts open — arc suppression is required.

See Tech Note 120 for suppression circuit selection guidance.