Application Note: Modifying Reed Switches

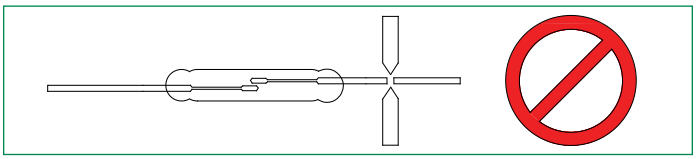
Introduction

When cutting and forming reed switch leads, it is important to use the correct support and cutting tools to avoid causing damage to the glass-to-metal hermetic seals. A damaged seal may have minor chips or major cracks. Such defects can be detected visually using a low power microscope. However, it is also possible to have invisible damage to the seal, which can only be detected with one of various hermetic tests. A hermetic failure may meet all other test criteria, but contact resistance and contact life will be impacted over time. It is recommended that there be at least 1.0 mm between the glass and any cut or form. It is important that the switch lead be clamped with adequate force to prevent shock from being transmitted from the cut or form to the switch seal. This is shown in Figures 3, 4, 8, and 9. If clamping is not done, special precautions are needed to minimize the shock and stress transmitted to the switch seal. purus.

Cut/Crop

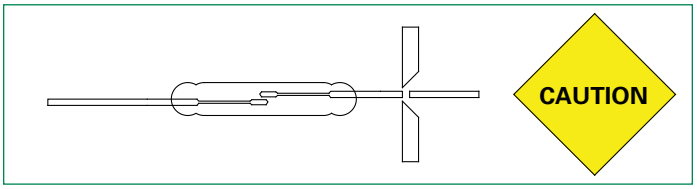
When cutting, the use of V-shaped cutting blades (as shown in Figure 1) is not recommended because of the short-duration high-amplitude shock potentially transmitted along the lead to the switch seal.

Figure 1.
V-shaped Cutting Blades



Cutting blades as shown in Figure 2 may be used, but care should be taken to keep the cutting blades sharp and in good condition.

Figure 2.
Using Cutting Blades with Caution



Cutting or shearing with a clamp between the cut and the switch is preferred (as shown in Figure 3 and Figure 4).

Figure 3.
Cutting/Shearing with a Clamp

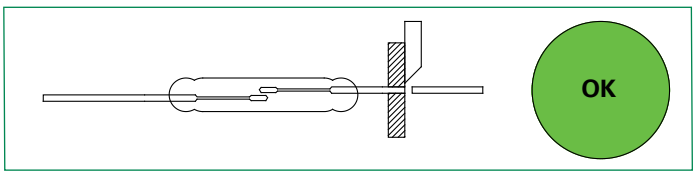
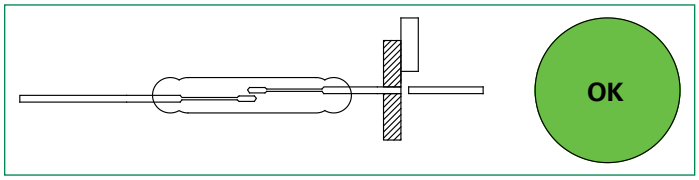
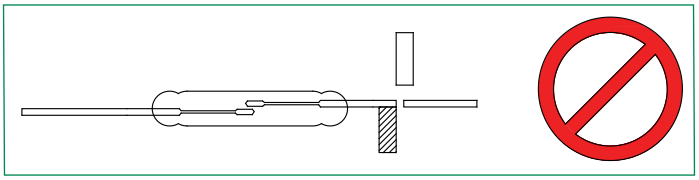


Figure 4.
Cutting/Shearing with a Clamp



Shearing without a clamp (as shown in Figure 5) is not recommended because of the side or rotational stresses placed on the switch and its seal.

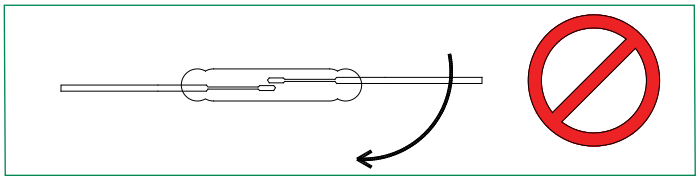
Figure 5.
Shearing without a Clamp



Form/Bend

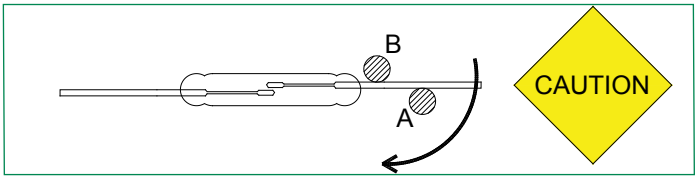
When forming or bending, permitting the lead to bend next to the glass seal (as shown in Figure 6) should be avoided because it will result in seal chips and cracks. The consequence is possible hermetic seal failure.

Figure 6.
Forming/Bending



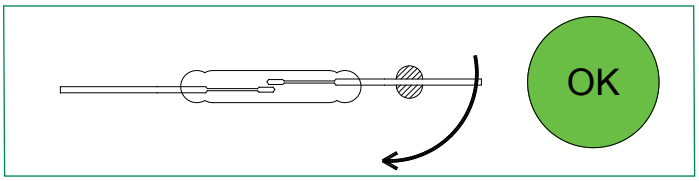
Bending around a square or round post (shown as "A" in Figure 7) is acceptable depending on the position of "A" and the object stopping the switch from rotating (shown in Figure 7 as "B"). If "A" is close to the glass and "B" is against the glass or the far reed, then large side stresses in the seal may result in glass chips or cracks.

Figure 7.
Forming/Bending



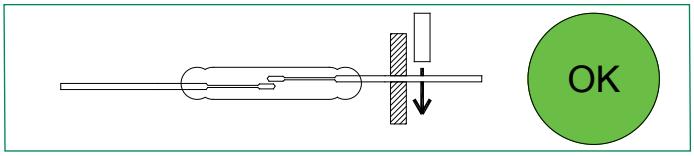
Clamping with fine-tipped pliers and manually bending (as shown in Figure 8) is acceptable.

Figure 8.
Forming/Bending



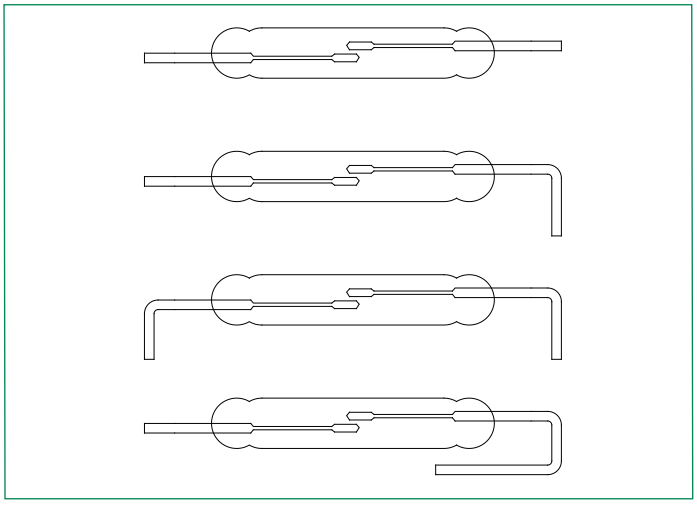
A fixture to clamp and bend in a similar manner (as shown in Figure 9), is also acceptable.

Figure 9.
Fixture to Clamp and Bend



To eliminate the hazards of switch cutting and forming, Littelfuse can supply switches already modified to your specifications. The switch modifications shown in Figure 10 can be supplied to your dimensions without tooling cost.

Figure 10.
Switch Modifications



In addition, switches are available modified for surface mount attachment to printed circuit boards, including optional tape and-reel (T&R) packaging. Cut switches may also be supplied in T&R packaging for surface-mount automated board placement. Automated through-hole mounting of reed switches is not recommended.

Littelfuse, Inc.
8755 West Higgins Road, Suite 500
Chicago, IL 60631 USA
Phone: (773) 628-1000
Littelfuse.com