



Bob Dolph has served in various technical management and advisory positions in the security industry for 30+ years. To share tips and installation questions, E-mail Bob at bdolph.ssi@gmail.com. Check out his Tech Shack blog at [www.securitysales.com/blog](http://www.securitysales.com/blog).

**bdolph.ssi@gmail.com**

One of the most basic elements of an intrusion system is the alarm contact or switch used to secure doors, windows and other building openings. Although ubiquitous and not overly complex, alarm contacts nonetheless require the utmost attention to ensure proper alarm system operations.

t's been a considerable time since we have discussed the important and exciting subject of magnetic alarm contact sensors. These small, often inconspicuous components of alarm systems have been around since the beginning of the industry.

The alarm contact, if properly selected and installed, can provide reliable and often stealth detection of openings being breached, devices being moved and building perimeters being compromised. However, if not properly applied and installed, these devices can cause customer complaints of performance frustration, false alarms, and possible missed detection by the alarm system.

#### GETTING IN CONTACT WITH SWITCH TIPS

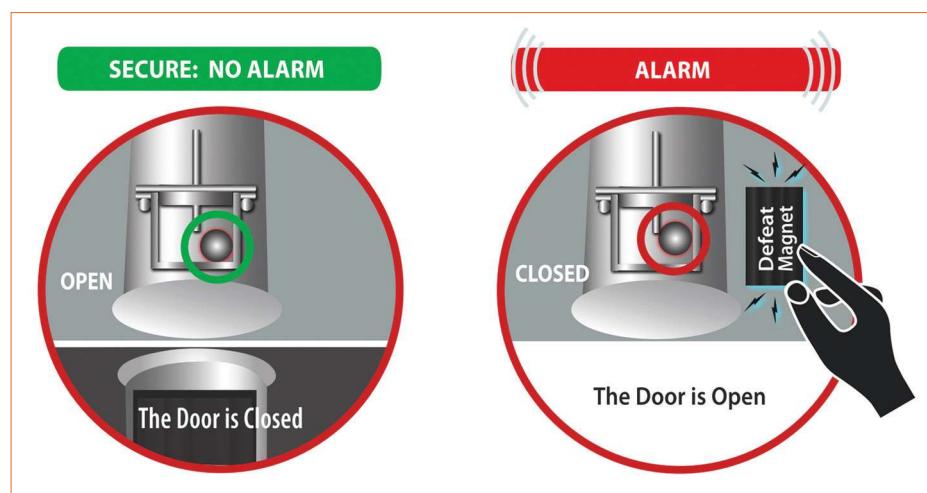
The majority of alarm contacts used in alarm systems have one common key component, the glass encapsulated electrical reed switch. These reed switches are often coated with deactivated rhodium to prevent the reeds from sticking together after long periods of inactivity in a door or window. They are reliable in that they have been performance tested to in excess of 400 million cycles. When assembled in the factory they are often still soldered by hand in respect for the delicate nature of the glass capsules.

While we have seen great care taken by manufacturers in the assembly of glass reed switch alarm contacts, the real

reliability test begins when these devices are installed by the technician in the field. If not given the proper respect, the hermetically sealed glass reed enclosures can rupture. In such a case the damaged alarm contact may still perform properly at the time of installation; however, the now-contaminated metal reed contacts will prematurely, and in many cases intermittently, fail down the road. Can you say service call?

In order to avoid these problems I have put together some industry-proven alarm contact installation tips and notes:

- For recessed alarm contacts, drill the holes slightly larger so sensors fit loosely in mounting holes. If holes are too snug, the hole may later compress the reed switch and damage it. This is especially true in new construction green wood. Use RTV-type silicone to suspend and hold the recessed sensor in the mounting hole.
- Use specially designed alarm contacts that prevent hole compression problems. One of my all-time favorites is the Interlogix 1275 Series "wing fit" (formerly Sentrol/GE). Another to try would be the new concept, nonglass Magnasphere devices.
- To prevent false alarms on loose-fitting doors, mount the alarm contact closer to the hinge side and/or use wide-gap magnets and switches.
- On steel doors, use wide-gap switches or specially insulated alarm contacts such as the Tane SD Series.
- Steel will influence magnetic reed switches to about half



The Magnasphere alarm contact is a spherical magnet and operates in a defined activation zone directed toward the door magnet. This design makes the device highly resistant to defeat and tamper via external magnets. *Diagram courtesy Magnasphere*

## TECH TALK TOOL TIP

When talking about the installation of recessed alarm contacts, I can't think of a better and handier tool than the prewire plugs from Kimball, Neb.-based George Risk Industries (GRI). These handy devices allow you to prewire an alarm system without the need to leave wires coiled in the wall.

You can simply predrill the recessed contact location. Pull the alarm loop cable out and loop the stripped end of the cable through the loop in the contact plug. Push the plug back in the mounting hole for future use. When the customer signs up all you need to do is pull out the plug, install the alarm contact and you are done.



The prewire plugs from GRI ([grisk.com](http://grisk.com)) are reusable, cost-effective in meeting prewiring needs. They come in white or black. Photo courtesy George Risk Industries

the gap in air. To be safe, make the gap distance approximately 25% of the "make" air distance. Use plastic spacers if possible (magnet side first). Test performance.

- Myth: Applications on steel do NOT drain the magnet. They do, however, reduce the magnetic field.
- Magnetic reed contacts exhibit a feature known as hysteresis. This simply means that the "make distance" of the pull-in action is about 80% of the "break distance" of drop-out action. These distances are not equal as many may think.

### BEING IN THE LOOP ON LOOPS

If you are familiar with the electrical relay terms normally closed and normally open you may find alarm contact terms confusing at first. Electrically speaking, a normally open device is the state of a de-energized electrical switch such as in a relay. This would account for a *normally open* (NO) magnetic reed switch being used in a *normally closed* (NC) alarm loop. Some in the trade may confuse this issue by referring to a NO alarm contact as a NC sensor, when technically it is a NO device in a NC alarm loop. The close proximity of the magnet activates the NO reed switch to keep it closed until the devices are separated and an alarm condition occurs.

I have written before about the important of applying end-of-line resistor (EOLR) supervision to your alarm contact circuits at the alarm contact. These supervisory components not only increase resistance to alarm system compromise, but provide extra electrical supervision and the ability for your systems to report circuit failure from accidental shorting or opening of the alarm contact circuit. One of the best ways to apply this technology is to order your alarm contacts with the appropriate EOLR built in the alarm contact enclosure.

**EOLR components boost resistance to system compromise and provide extra electrical supervision and the ability for systems to report circuit failure from accidental shorting or opening of the alarm contact circuit.**

**EOLR Installation Tip:** A while back I was asked by a Tech Talk reader, who was updating a system with a new alarm panel that had a different EOLR requirement, how he could update a nicely concealed alarm contact EOLR without having to pull out the contact. One suggestion was to try using a relay interface with the existing alarm contact using something like the ELK-924 sensitive relay module. Place the alarm loop in line with the relay coil and use the panel's aux power. The NC alarm loop will keep the relay activated, then use the NO relay contacts for the new NC alarm loop.

### NEW KID JOINS OTHERS ON BLOCK

While magnetic activated alarm reed switches have been around the alarm industry since Day One, a new device has been shaking things up.

The MagnaspHERE has grown in popularity due to its unique and patented design. The device utilizes a conductive ball, post and robust metal enclosure (*see diagram*). This configuration provides high resistance to defeat and tampering. It also provides high resistance to contact welding from lightning. In fact, it is presently listed to the new UL 634 Level 2 High Security Standard, and is used in high security government installations such as Secure Compartmented Information Facilities (SCIF). Keep an eye out this fall for a wireless version of the MagnaspHERE alarm contact.

Make sure to check with alarm contact manufacturers such as Tane,

George Risk Industries (GRI) and Interlogix for their specialty alarm contacts as they can save you time, money and frustration. A couple others that come to mind are the Quick Switch for storage facilities and the newly released, patented low-profile venting magnet contact configuration from Magalign Inc. ■