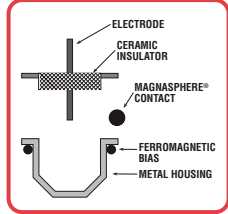




**FEATURES**

The Magnasphere® switch represents the first significant improvement in magnetic switch and sensor technology since the introduction of the reed switch in the 1950's. This new technology overcomes the inherent weaknesses of the reed switch (fragility, tamper susceptibility, size), while retaining the beneficial characteristics (non-contact actuation, sealed contacts), and provides additional application capabilities (ferrous proximity sensing, non-mercury tilt and tamper sensing).

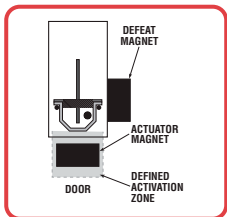
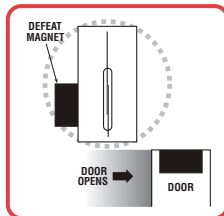
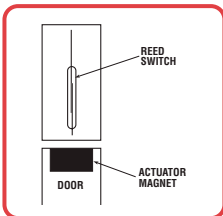
The simplicity of the Magnasphere switch rivals the straightforward design of the reed switch; however, the switch's design yields superior performance in a wide number of applications. Diagrams of Magnasphere's technology appear below:



The basis of the technology is a magnetic sphere, or ball contact that is illustrated above. The sphere is housed in a durable metal housing. Completing the switch is a seal that contains the contacting electrode, insulated from the magnetic perimeter by a ceramic to metal bond. The case or seal provide the second contact point required to complete the electrical circuit. The seal/electrode cap is welded to the housing in an inert atmosphere providing an hermetically sealed contact. Post-assembly magnetizing activates the magnetic properties of the contact.

**MAGNETIC NON-DEFEAT**

Despite its simple design and general acceptance, the reed switch has several disadvantages that impair its performance. In home, commercial and even military security systems, reed switches are employed as sensors that, if disturbed, indicate a security breach. Sensors are typically installed in doorframes. An actuating magnet housed inside a closed door forces the reeds into contact, completing the circuit. If this magnetic field is removed, the security system reacts. However, reed switches are simple to defeat. The reed switch responds indiscriminately to magnetic fields. If a second magnetic field is placed within range of the reed switch, an intruder can open the door without opening the circuit and triggering an alarm (see diagram).



Magnasphere's patented technology utilizes the principle of spherical magnetism to provide security contacts that are resistant to magnetic tamper and defeat. In addition, the hermetically sealed metal construction makes them virtually indestructible. Homeowners can now have the same level of magnetic tamper protection required by the government.

The Magnasphere Switch has a defined activation area. The switch is closed only when a magnet is present under the switch pulling the magnetic sphere to the bottom of the case, contacting the electrode.

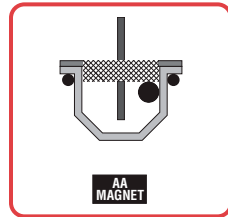
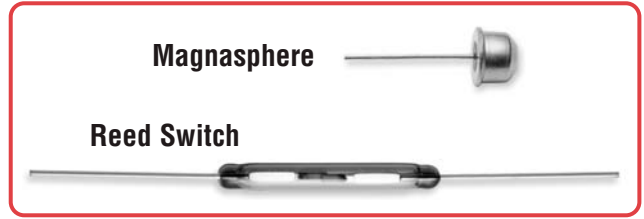
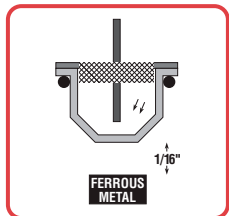
A stronger defeat magnet outside of the defined area will pull the ball out of the lower position to open the switch and sound the alarm.

A weaker defeat magnet will have no effect. Opening the door will trigger the alarm.

**FERROUS PROXIMITY SENSOR**

Because the spherical contact is a magnet, the Magnasphere switch can be actuated by the presence of ferrous metal (i.e. an external magnet is not required). This unique feature allows the Magnasphere to be utilized as the lowest cost Ferrous Proximity sensor available. This capability is not possible with stand-alone reed or Hall Effect switches.

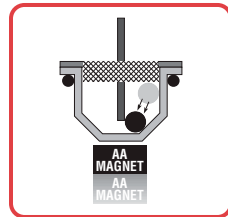
Utilizing the Magasphere's Ferrous Proximity capability with a ferrous metal ball, in a contained housing, a low cost, low jitter, non-mercury tilt switch can be configured.



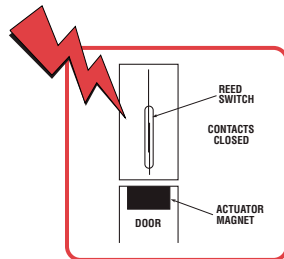
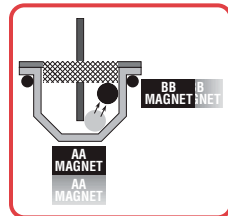
**FUNCTIONALITY**

In the open position, the magnetic sphere is attracted to the ferromagnetic bias ring, away from the electrode. Because of this attraction, the switch may be positioned in any orientation and will remain open.

When an actuating magnet approaches the switch from the end of the switch opposite the electrode, the magnetic ball is attracted to this field, and "snaps" to the bottom of the case, making contact with the electrode and case, closing the switch.

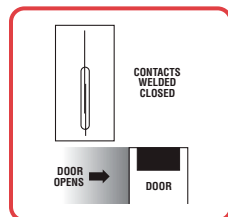


The Company's technology utilizes the principle of spherical magnetism. The spherical shape is not polarity sensitive and will be attracted to either pole of the actuating magnet. Unlike a reed switch that responds to a magnet within a global activation zone, the Magnasphere switch responds to a magnet only within a restricted zone. A stronger magnet outside the zone pulls the ball off the center electrode to open the switch.

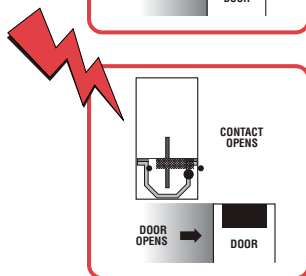


**HIGH VOLTAGE RESISTANCE**

- 500,000 VDC Test
- Reed switch contacts permanently weld – fail closed



- Door / Window opens, switch indicates all secure – system failure



- Normal Door / Window magnet movement pulls spherical contact off electrode
- No system failure - alarm triggered