

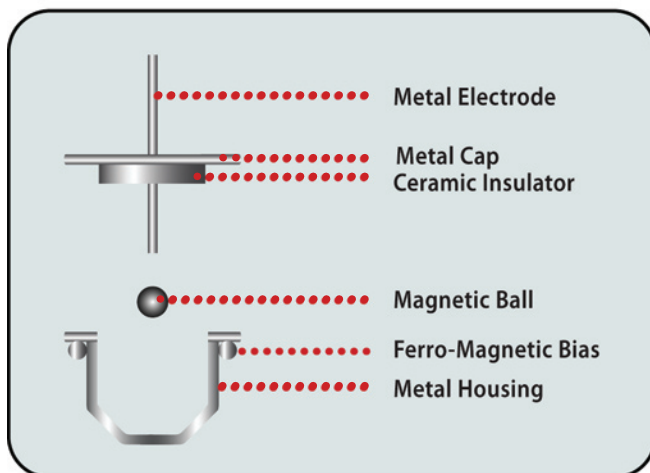
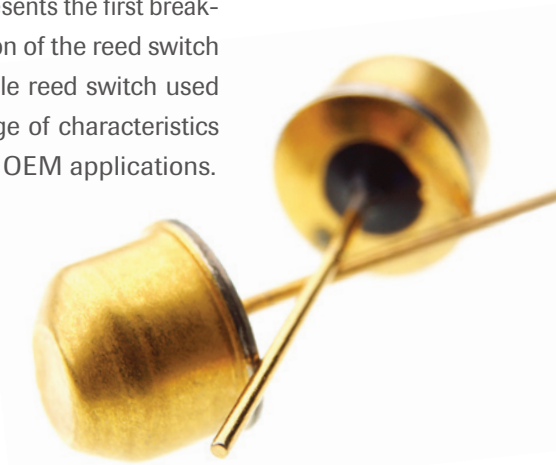
Technology Overview

MAGNASPHERE®



THE PATENTED, AWARD-WINNING MAGNASPHERE SWITCH represents the first breakthrough in two-wire magnetic switch technology since the introduction of the reed switch in the 1930's. Originally designed as a replacement for the vulnerable reed switch used in security systems, the MAGNASPHERE switch exhibits a wide range of characteristics that make it an ideal solution for many industrial and commercial OEM applications.

- Hermetically sealed contacts
- Non-contact operation
- Robust metal construction
- Magnetic anti-tamper
- High voltage EMI resistance
- Wide operating temperature range
- Intrinsically safe for use in volatile atmospheres
- Compact size
- Low cost ferrous proximity sensing
- Available in form A (n.o.) and form B (n.c.)

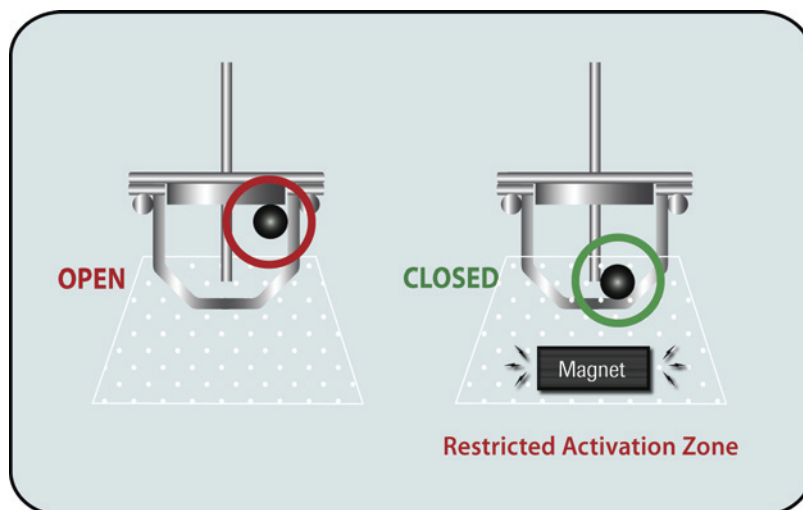


CONSTRUCTION

The basis of the technology is a magnetic sphere, or ball contact 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 a hermetically sealed contact. Post-assembly magnetizing activates the magnetic properties of the contact.

FUNCTIONALITY

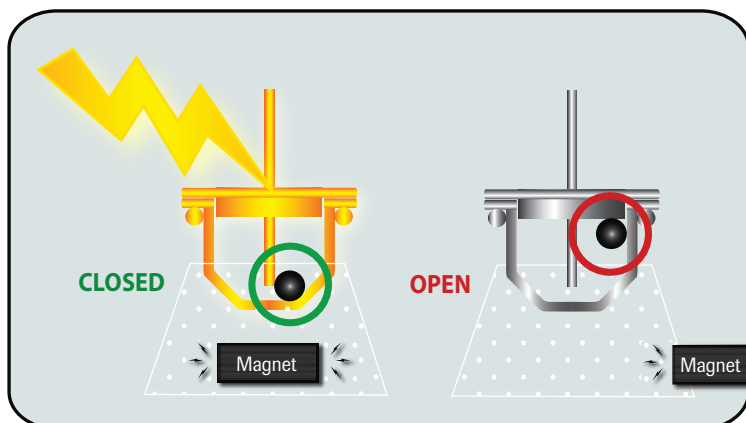
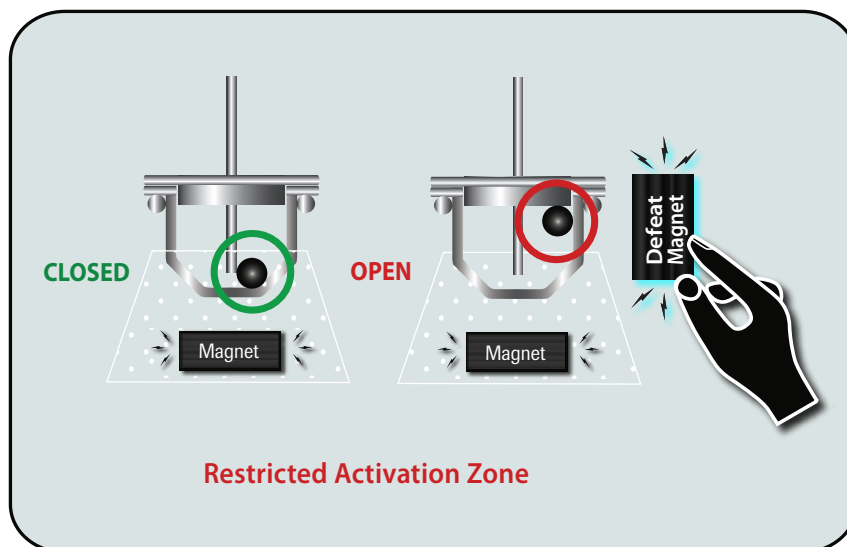
In the open position, the magnetic sphere is attracted to the ferromagnetic bias ring, away from the electrode. Because of this attraction, the switch may be positioned in any orientation and will remain open. When an actuating magnet approaches the switch from the end of the switch opposite the electrode,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





MAGNETIC TAMPER RESISTANCE

MAGNASPHERE'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 AND EMI RESISTANCE

The MAGNASPHERE spherical contact is a magnet and couples with a target magnet through magnetic attraction. If contacts should weld, the natural movement of the target will attract the ball contact. In addition, high closed contact integrity makes MAGNASPHERE technology highly resistant to electromagnetic interference – a problem found in other magnetic switch and sensor technology.

FEATURE COMPARISON	REED SWITCH	MAGNASPHERE®
Construction	Glass/Metal Oxide Bond	All Metal Switch
Durability	Fragile Even When Packaged	Virtually Indestructible
PCB & SMT Assembly	Difficult & Expensive	Simple & Cost Effective
Plastic Insert Molding	Fragility a Problem	Can Be Insert Molded
Ferrous Proximity Sensor	Requires Additional Magnet / Cost and Size Issues	Only Stand-Alone Technology with Capability / Lower Cost
Magnetic Activation Defeat	Globally - Easily Defeated	Defined Zone - Cannot Defeat
High Voltage Exposure	Permanent Contact Welding	Resistant to Contact Welding
Electromagnetic Interference	Easily Affected	Not Affected

MAGNASPHERE is also a superior replacement for Hall effect switches. (1) Does not require a third wire as a power source. (2) Does not drain battery supply during stand-by. (3) Operates on similar magnetic field strengths. (4) Does not require RFI/EMI protective filter. (5) Does not sense only one magnetic polarity. (6) Uses similar PCB "real estate" area. (7) Does not require shielded wire harness. (8) Robust to shock forces and impact.