

White Paper: Vertical-Mounted Float-Type Magnetic Reed Switch Level Switches

Introduction

Liquid level sensing is critical in various industrial applications, ensuring operational efficiency and safety. Vertical-mounted float-type magnetic reed switch level switches offer a reliable solution for monitoring and controlling liquid levels. This paper explores the operating principles, design considerations, applications, and advantages of these switches, with a particular focus on the 10-782 model and the ERECTA SWITCH system.

Operating Principle

Vertical-mounted float-type magnetic reed switch level switches operate based on the interaction between a magnetic float and a reed switch. The reed switch, enclosed within a non-magnetic stem, remains stationary, while the float, containing a permanent magnet, moves with the liquid level. As the float rises or falls, the magnetic field influences the reed switch, causing it to open or close the electrical circuit. This mechanism provides a simple, contactless method for level detection, ensuring durability and longevity.

Design and Construction

10-782 Model

The 10-782 is a compact, rugged vertical float switch designed for single-point level detection. Key features include:

- Hermetically Sealed Reed Switch: Ensures protection against environmental factors and enhances reliability.
- Square-Stem Profile: Minimizes contact area, reducing the risk of sticking, especially in viscous or contaminated liquids.
- Material Options: Available in Polypropylene (PP), Acetal (AC), and PVDF Kynar (KR) to accommodate various chemical compatibilities.
 - PP: Suitable for water, soaps, and light acids.
 - AC: Ideal for hydrocarbons like gasoline and diesel.
 - PVDF Kynar: Resistant to corrosive chemicals and chlorine-based solutions.
- Reversible Float: The float is designed to be flipped during assembly, allowing the switch to either open on rising liquid level or close on rising liquid level. This flexibility enables engineers to match the switch action to the control logic of the application.

ERECTA SWITCH System

The ERECTA SWITCH system builds upon the 10-782 model, offering a modular approach to level sensing:

- Single-Point Vertical Level Switches: For basic monitoring tasks.
- Side-Mounted Level Switches: Suitable for horizontal tanks or compact enclosures.
- Extended Stem Switches: Ranging from 1" to 70" for multi-level sensing in large tanks.
- Multi-Level Float Switches: Accommodating 2 to 4 levels for complex logic or redundancy.
- Level & Temperature Combination Switches: Simplify instrumentation and control panel loads.

Each configuration utilizes the 10-782 as the core switching element, ensuring consistency and reliability across applications.

Applications

Vertical-mounted float-type magnetic reed switch level switches are employed across various industries:

- Food and Beverage: Soft drink dispensers, coffee machines, and dishwashers.
- Chemical Processing: Chemical baths and photo developers.
- Automotive and Industrial: Equipment lubricators and fuel tanks.
- Agriculture: Poultry feeders and agricultural tanks.

Their compact size, chemical compatibility, and modular design make them suitable for OEM applications requiring cost-effective and reliable level sensing solutions.

Advantages Over Traditional Solutions

Compared to traditional custom-fabricated solutions offered by companies like Gems Sensors and Madison Company, the ERECTA SWITCH system provides:

- Modularity: Allows for easy customization and scalability without the need for entirely new designs.
- Ease of Maintenance: Individual components can be serviced or replaced without discarding the entire assembly.
- Chemical Compatibility: Offers a range of materials to suit various applications, reducing the need for specialized designs.
- Cost-Effectiveness: Standardized components reduce manufacturing and inventory costs.

Conclusion

Vertical-mounted float-type magnetic reed switch level switches, exemplified by the 10-782 model and the ERECTA SWITCH system, offer a reliable, versatile, and cost-effective solution for liquid level sensing in various industrial applications. Their modular design, material versatility, reversible float functionality, and ease of maintenance make them a preferred choice for OEM engineers seeking efficient and adaptable level sensing solutions.