

Figure 1. MK14 Sensor physical layout

Features

- The Reed Sensor never comes in contact with the actual movement of the piston
- The reed switch used in the Reed Sensor is hermetically sealed and is therefore not sensitive to dirty environments
- Magnet and Reed Sensor are isolated and have no physical contact by typically having the magnet mounted to the piston movement and the Reed Sensor mounted and positioned to pick on the end limit position/s
- The magnet is not affected by its environment
- Millions of reliable operations
- Cylindrical hole and screw fastening mounting
- Contacts dynamically tested
- Large sensing distances possible

Applications

- Anywhere pistons are used and the detection of their end point(s) is/are necessary
- Ideal for applications sensing any kind of end movement even in dirty environments

Introduction

Finally there is a reliable way to precisely detect the end limit positions of pistons and cylinders, particularly when that detection is critical to the operation and/or can result in a disaster if the detection fails. Mechanical limit switches have been used successfully in the past, but can fail prematurely or may have limited life cycles. Dirty environments can exacerbate the problem. Now designers have turned to the Reed Sensor which uses hermetically sealed reed switches, which are ideal for critical requirements where reliability is essential.

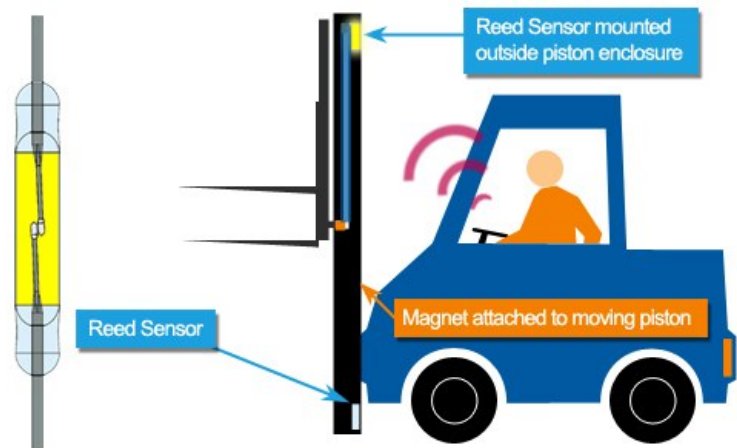


Figure 2. Shows sensor mounted to outside of piston enclosure. When the piston reaches its top end limit position, the magnet actuates the sensor and sounds an alarm.

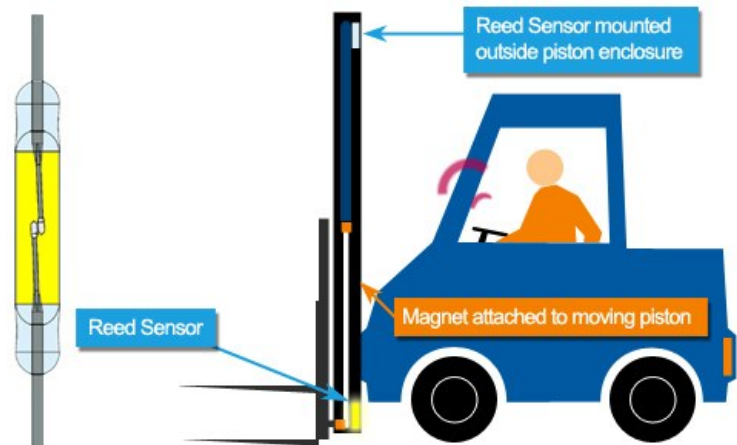


Figure 3. Shows sensor mounted to outside of piston enclosure. When the piston reaches its bottom end limit position, the magnet actuates the sensor and sounds an alarm.

End Position Control for Pistons and Hydraulic Cylinders

Pistons requiring end point position detection are typically is millions of mechanical systems. These systems can range from truck lifts, plows, garbage trucks, fork lifts, special mechanical systems, etc. Most of these environments can be on the dirty side influencing any open or partially sealed switching device. This can in turn cause faulty switching, down time, and potentially costly repairs if the fault occurs when in use. Here the mechanical contacts may stick or remain open. To avoid these failures, designers have designed out the unreliable mechanical switches and gone over to the Reed Sensors, which has dramatically improving the reliability of their systems.

Detect End Limit Position In Piston And Hydraulic Systems Using Reed Sensors

Specifications





Operate specs	Min	Max	Units
Must close distance	5	25	mm
Must open distance	5	25	mm
Hysteresis	Typical 50%		




Load Characteristics	Min	Max	Units
Switching voltage		200	V
Switching current		0.5	Amps
Carry current		1.5	Amps
Contact rating		10	Watts
Static Contact resistance		150	mΩ
Dynamic contact resistance		200	mΩ
Breakdown voltage	320		V
Operate time		0.5	msec
Release time		0.1	msec
Operate Temp	-20	85	°C
Storage Temp	-20	85	°C

MEDER's **Reed Sensors** package hermetically sealed reed switches as their switching element. These reed switches are impervious to dirty, rough environments giving the user the millions of accurate reliable operations they expect. Permanent magnets of various sizes are used for closing and opening the contacts. The magnet and reed sensor do not come into physical contact allowing for convenient, independent mounting.

The reed sensors are mounted on the piston enclosures in a convenient position, but accurately located to carry out their end position sensing. MEDER's reed sensors are available in several packages with various connector or lead options allowing the users to meet exact design details. The magnets can also be packaged in an assortment of ways and are generally mounted to the moving piston. Because of the multitude of design requirements, MEDER, in a matter of fact manner, has the capability of developing specialized packaging for both the reed sensor and the magnet to meet the user's specific needs.

Consider some of the below options in cylindrical and rectangular versions for end limit sensor or other similar applications.

Cylindrical Panel Mount Series				
Series	Dimensions			Illustration
		mm	inches	
MK03	Dia	5.25	0.207	
	L	25.5	1.004	
MK14	Dia	4	0.157	
	L	25.5	1.004	
MK18	Dia	5	0.197	
	L	17	0.669	
MK20/1	Dia	2.72	0.107	
	L	10	0.394	

Rectangular Screw Flange Mount Series				
Series	Dimensions			Illustration
		mm	inches	
MK04	W	13.9	0.547	
	H	5.9	0.232	
	L	23.0	0.906	
MK05	W	19.6	0.772	
	H	6.1	0.240	
	L	23.2	0.913	
MK12	W	14.9	0.587	
	H	6.9	0.272	
	L	32.0	1.260	

**Consult the factory for more options not listed above.