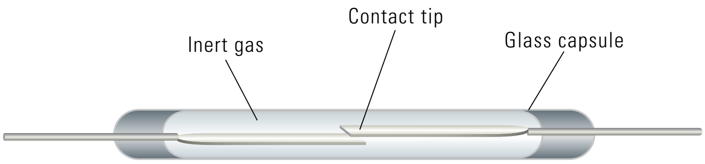
A reed switch consists of two ferromagnetic contact tips (reeds) in a capsule filled with inert gas.



Reed switches are used for touchless switching. To trigger the contact, a permanent magnet approaches in such a way that one contact tip receives flux from the north pole and the other from the south pole, until they are sufficiently magnetised to attract and make contact. When the magnet is removed or turned so that the two contact tips have flux from the same pole, the switch opens again.

The figures illustrate the functional interaction between reed switches and magnets. The switching behaviour of a magnet-reed contact arrangement exhibits hysteresis, means, the closing position is different from the opening position. The continuous lines show the closing position when a magnet approaches. The dashed lines show the reed contact opening position.

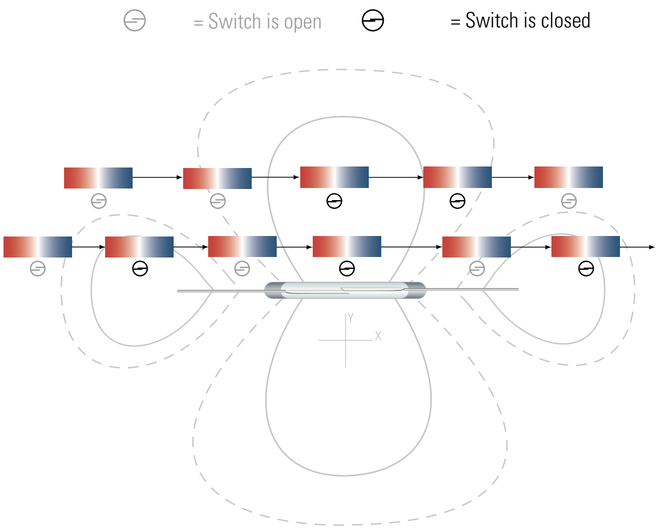


Fig. 1:
In the arrangement at the top of Fig. 1, the distance from magnet to reed switch is the greatest. This results in a single throw switch.
If the magnet moves closer to the reed contact (lower arrangement), or if a stronger magnet is used, the result is a triple throw switch. In this arrangement, very tight switching point tolerances are achieved, if the magnet moves about in the region between the outer and inner lobes. This example illustrates the switching behaviour with a rectangular or disc magnet. The same behaviour can be achieved with a ring magnet slid over the reed contact.

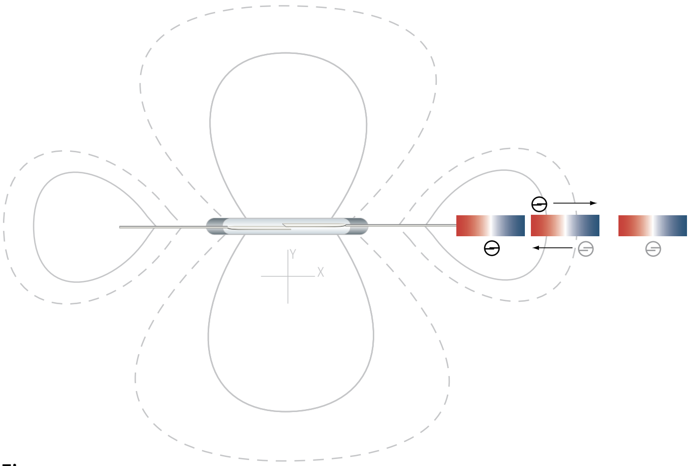


Fig. 2:
Moving the magnet parallel, the outer lobe can also be approached as a magnetisation region.

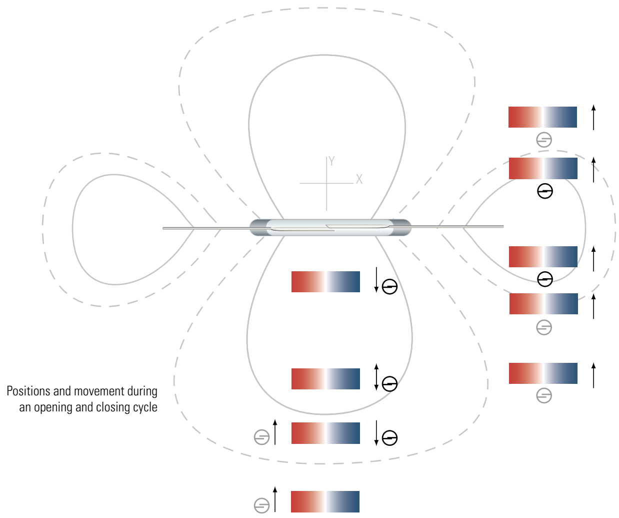


Fig. 3:
The magnet may approach in a path perpendicular to the reed contact, either centrally or in the region of the outer lobes.

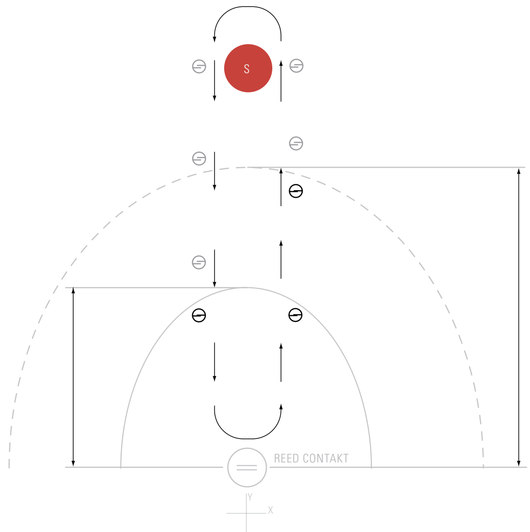


Fig. 4:
The magnet may approach perpendicular to the reed contact in the reed contact plane (Z = 0), or alternatively displaced along the Z-axis.

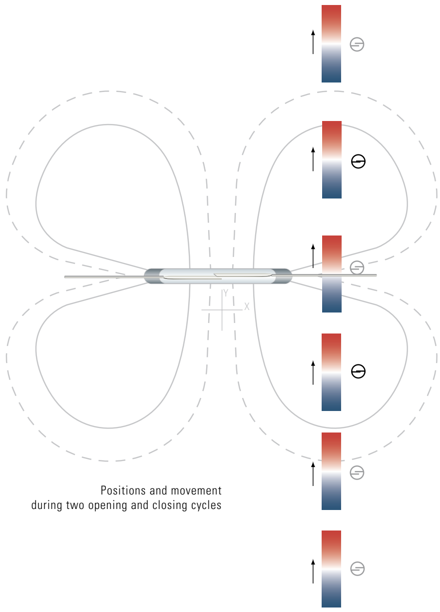


Fig. 6:
The arrangement in Fig. 6 results in double throw switching, depending on the x position. That is, when the magnet moves centrally over the reed contact (x = 0), it does not close.

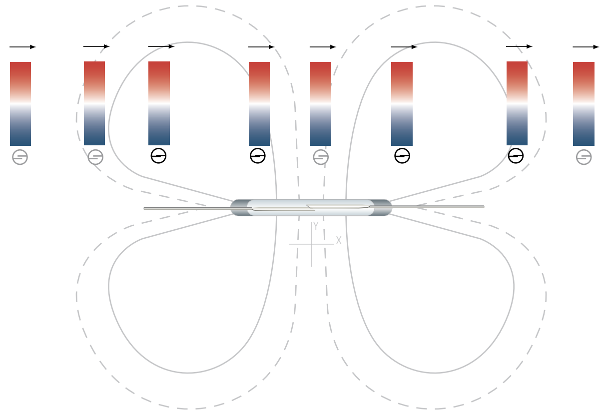


Fig. 5:
In Figs. 5 and 6, the magnet is oriented perpendicular to the reed contact.

The arrangement in Fig. 5 results in double throw switching, depending on the y position. That is, when the magnet moves centrally over the reed contact (y = 0), it does not close.

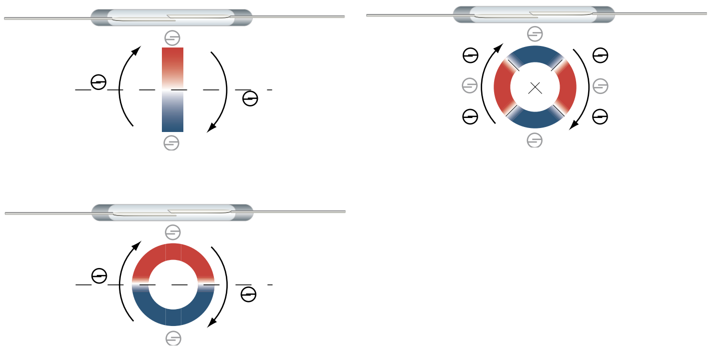


Fig. 7:
Other switching arrangements can be implemented. Here, rotating magnets are used.

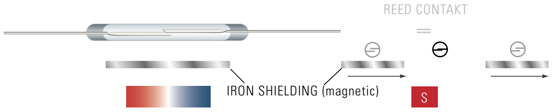


Fig. 8:
As an alternative to moving the magnet, iron shielding can be used.