

Holding Solenoids Technical Notes

1. Definition according to VDE 0580¹⁾

1.1 Holding solenoids

A **holding solenoid** is a solenoid without armature which, on energisation, will attract any magnetic material. The expression holding solenoid is not used in VDE 0580, however, it corresponds to the expression **latching solenoid**.

1.2 Latching solenoids

A **latching solenoid** is a device for the holding of loads with ferromagnetic characteristics, e. g. for transport purposes.

1.3 Mechanical data

The **break force** of a latching solenoid is the force that is exerted by the solenoid on a test device (VDE 0580 § 44 d).

The **holding force** is measured as the force exerted on a plane steel plate made of unalloyed steel that is low in carbon, e. g. steel 34, steel 37. The air gap must be defined²⁾. The thickness of the steel plate must at least amount to 1/4 of the diameter of the central pole or – regarding solenoids of square design – to 1/2 of the width of the central pole.

As far as latching solenoids of circular and square design are concerned their steel plates must at least cover the latching surfaces.

We talk about **holding forces** when the steel plate rests on the pole, against VDE 0580 § 44 d where an air gap relates to the diameter on the latching surface.

2. Mounting instructions

For fixing purposes the solenoids are provided with mounting holes as shown in the drawings. The length of the screws must be chosen so as not to damage the coil.

¹⁾ Based on 0580/9.79. The abstracts are reproduced with the approval of VDE-Verlag-GmbH, Berlin, Germany.

²⁾ The air gap is the distance between the pole surface and the surface of the steel plate.