

MGA HCS-50-28B

Helmholtz coil



- **Helmholtz coil with 2 separate windings**
- **Metal-free construction**
- **Height-adjustable support plate**

Description

A Helmholtz coil consists of two identically wound coils that are electrically connected in series. The special feature is the great homogeneity of the magnetic field in the middle between the two coils.

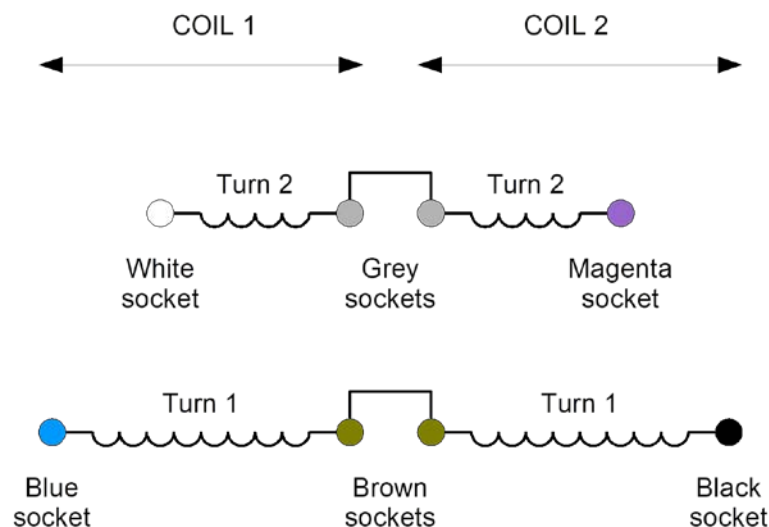
For a given geometry, the magnitude of the magnetic field is directly proportional to the number of turns and the applied current.

When designing the coils, it is on the one hand trying to specify the highest possible number of turns in order to keep the necessary power (and thus the amplifier power) small. On the other hand, a high number of turns at higher frequencies (the MIL-STD-461E, for example, requires tests up to 100 kHz) results in large coil impedances, which in turn results in impractically high amplifier output voltages.

Since for all immunity standards the required field strength decreases with increasing frequency (in the already mentioned MIL-STD-461E the required test level at 100 kHz drops to less than one thousandth of the initial value at 60 Hz), the ideal solution is the construction of a Helmholtz coil with two discrete windings. The basic structure is shown in the following sketch.

If the output of a power amplifier is connected to the sockets "blue" and "black", a Helmholtz coil with a high coil factor is available. Ideal for generating high field strengths at low frequencies where coil inductance still does not matter.

If the output of a power amplifier is connected to the sockets "white" and "magenta", a Helmholtz coil with low inductance is available. Ideal for generating medium field strengths at high frequencies.



Helmholtz coil arrays of greater complexity can generate noise fields in different spatial axes. For triaxial Helmholtz coils, 3 coil pairs are arranged in the X, Y and Z directions. Using a suitable control unit, the test object can be exposed and monitored fully automatically to the interference field in all three spatial axes over a wide frequency range.

General structure of the HCS coils

The Helmholtz coils of the HCS series are made entirely of wood-based materials. Except for wire and sockets, no metallic parts are included.

The coils are completely covered with a durable laminate - the wire is not visible and thus protected from damage.

The scope of supply of the coils includes a cable set (3m length), which is designed for maximum current carrying capacity.