

Manual for 4708.00 Coil Holder (with commutator and collector)

23.05.12

AE 4708.00



Description:

This coil holder is used for constructing the anchor for a motor/generator setup. Using this setup the operation of a DC generator, single phase AC generator and DC motor can be illustrated.

Required Accessories:

To construct a single phase motor/generator setup the following is needed:

- 4625.20 Coil, 400 windings, 1 ea.
- 4630.10 Iron core, laminated, 1 ea.
- 4708.20 Brush springs, 1 ea.
- 4708.10 Magnet holders, 2 ea.
- 3305.10 Bar magnets, 1 set

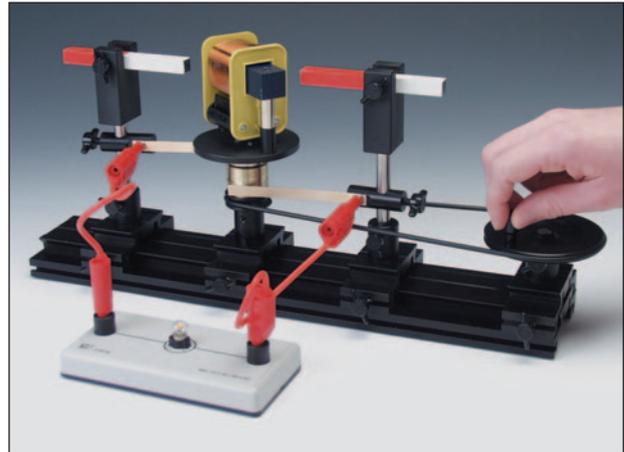
For support the following is recommended:

- 2946.34 Profile track, 1 ea.
- 2946.10 Sliding Saddle for profile bench, 4 ea.
- 4708.30 Wheel with handle, 1 ea.
- 2037.00 Drive belt set, 1 ea.

If the setup is to be used as a model motor, a power supply will be needed:

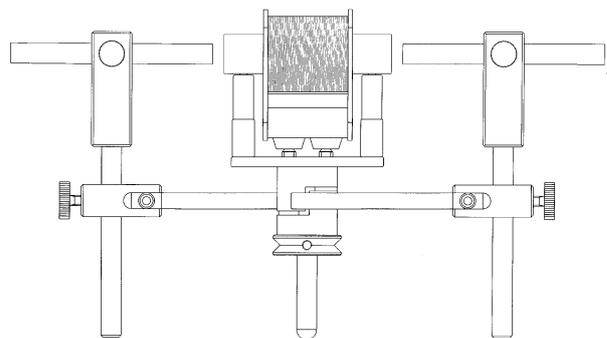
- 3630.00 Power supply

Mounting and assembly instructions:



The directions which follow are based on the setup shown in the above illustration where a profile bench is used to support the equipment.

Direct Current Generator

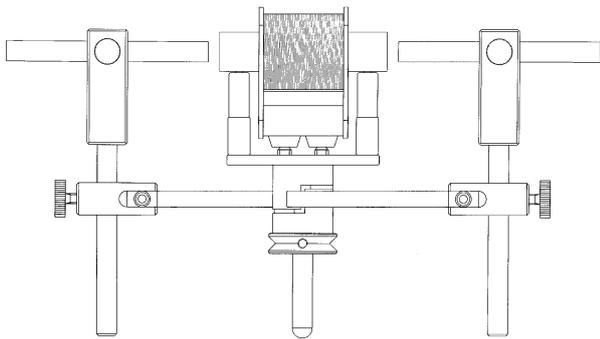


The coil holder is mounted with the coil and iron core. The three sliding saddles are placed on the profile bench about 9-10 cm apart. The coil holder is mounted in the middle while the magnet supports, each with a contact spring mounted, are placed in

the other two sliding saddles. The coil holder should NOT be secured tightly in the sliding saddle. It should be able to turn freely. The contact springs should be positioned so that they are in contact with the brass commutator and on opposite sides as shown in the illustration.

If the coil holder is now rotated, the setup will act like a DC generator. The coil holder can be rotated using a hand wheel mounted in a fourth sliding saddle with a drive belt as shown in the photo.

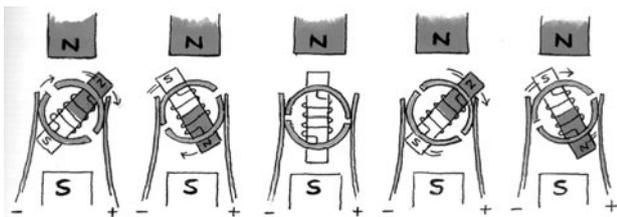
Direct Current Motor



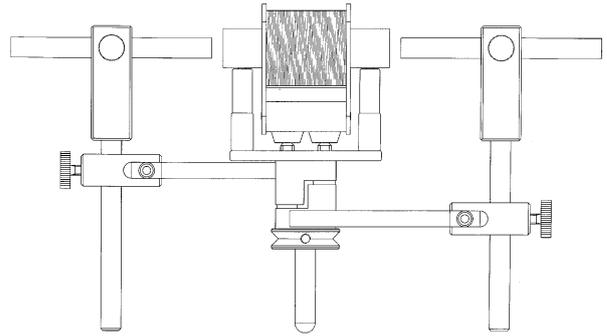
The coil holder is mounted with the coil and the iron core. The three sliding saddles are mounted at one end of the profile bench separated by about 9-10 cm. The coil holder is mounted in the middle with the magnet holders - each with a contact spring attached - on either side in the other two sliding saddles. The coil holder should NOT be secured tightly in the sliding saddle, but should be able to turn freely. The contact springs should be positioned so that they are on either side of and in contact with the brass commutator.

The contact springs should now be connected to a DC power supply (with the voltage turned down). Slowly increase the supply voltage. The coil holder may need a little push to start moving. Note here that the polarity of the contact springs determined the direction of rotation.

The operation of the DC motor and DC generator is apparent from the following illustration:



Single phase AC generator



The coil holder is mounted with the coil and iron core. The three sliding saddles are mounted at one end of the profile bench with about 9-10 cm separation between them. The coil holder is mounted in the middle while the magnet holders - each with a contact spring attached - on either side in the other two sliding saddles. The coil holder should NOT be secured tightly in the sliding saddle, but should be able to turn freely. The contact springs should be positioned above and below the center of the brass commutator as shown in the figure.

If the coil holder is now rotated the setup will operate like an AC generator. The coil holder can be rotated using a small hand wheel mounted in a fourth sliding saddle with a drive belt as shown in the photo shown earlier.

A FEW TIPS:

The rotating axle of the coil holder is rounded at the end to reduce friction with the profile bench. If you want to further reduce this friction use a drop of oil.

There will be some play in the bearing. To reduce this, you can insert a small rectangle cut from the "greasy" backing sheet from a sheet of labels.

