

200-Turn Field Coil

EM-6711A

Introduction

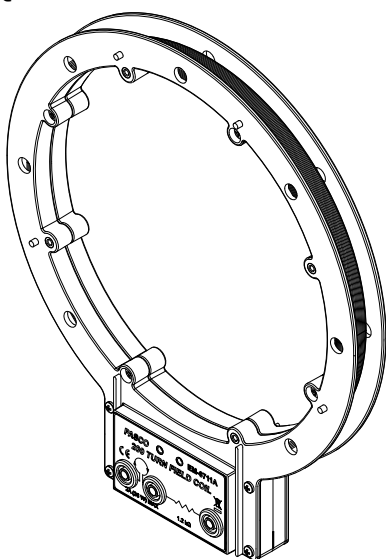
The 200-Turn Field Coil is a wire coil on a ring-shaped bobbin with a diameter of about 20 cm. The base of the assembly has three banana jacks for connecting 4 mm banana plugs. To connect a device directly to the coil, use the two white shrouded banana jacks. *Do not allow the current to exceed 2 A.*

A 1200 Ω resistor is located inside the base and connected in series with the coil. Use the black shrouded banana jack to include this resistor in a circuit.

A $\frac{1}{4}$ -20 threaded mounting hole in the base allows the coil to be fastened to other equipment.

Holes in the side walls of the bobbin allow students to see how the coil is wound. The holes are tangent with the inside of the winding, allowing students to measure the inner diameter.

Equipment



Included equipment:

- 200-Turn Field Coil (EM-6711A)

Required equipment:

- Any of the following options for driving the coil:
 - 850 Universal Interface (UI-5000)
 - 550 Universal Interface (UI-5001)
 - Low Voltage AC/DC Power Supply (SF-9584B)
 - Function Generator (PI-8127)

Recommended equipment:

- 500-Turn Field Coil (EM-6723A)
- Detector Coil (400 Turn) (EM-6712)
- Detector Coil (2000 Turn) (EM-6713)
- Helmholtz Coil Base (EM-6715)

Suggested experiments

In combination with other equipment, the 200-Turn Field Coil can be used in a variety of demonstrations and experiments, including the following:

- Drive the Field Coil with a triangle wave at about 500 Hz. Use an oscilloscope to measure the emf induced in a detector coil. Move the detector coil to find the strength and direction of the magnetic field coil at various locations. Measure how the induced emf depends on the angle between the Field Coil and the detector coil. Vary the driving frequency to measure how the induced emf depends on the rate at which the magnetic field changes over time. (For more details on this experiment, see Christopher C. Jones, Faraday's Law apparatus for the freshman laboratory, American Journal of Physics 1987; 55 (12): 1148-1150.)
- Perform the above experiment with an 850 Universal Interface (UI-5000) and a voltage sensor, such as the Wireless Voltage Sensor (PS-3211). Connect the field coil directly to the interface output. (Do **not** use the 1200 Ω resistor for this experiment, as the driving current must be high and the interface can measure its own output current.) Use the voltage sensor to measure the induced emf in the detector coil.
- Drive the coil with direct current. Use a magnetic field sensor, such as the Wireless Magnetic Field Sensor (PS-3221), to find the strength and direction of the field at various locations.
- Mount two field coils on the Helmholtz Coil Base (EM-6715) to create a Helmholtz coil.

Specifications and accessories

Visit the product page at [pasco.com/product/em-6711a](https://www.pasco.com/product/em-6711a) to view the specifications and explore accessories. You can also download experiment files and support documents from the product page.

Technical support

Need more help? Our knowledgeable and friendly Technical Support staff is ready to answer your questions or walk you through any issues.

- | | |
|---------|---|
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Limited warranty

For a description of the product warranty, see the Warranty and Returns page at www.pasco.com/legal.

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Product end-of-life disposal



This electronic product is subject to disposal and recycling regulations that vary by country and region. It is your responsibility to recycle your electronic equipment per your local environmental laws and regulations to ensure that it will be recycled in a manner that protects human health and the environment. To find out where you can drop off your waste equipment for recycling, please contact your local waste recycle or disposal service, or the place where you purchased the product. The European Union WEEE (Waste Electronic and Electrical Equipment) symbol on the product or its packaging indicates that this product must not be disposed of in a standard waste container.

CE statement

This device has been tested and found to comply with the essential requirements and other relevant provisions of the applicable EU Directives.