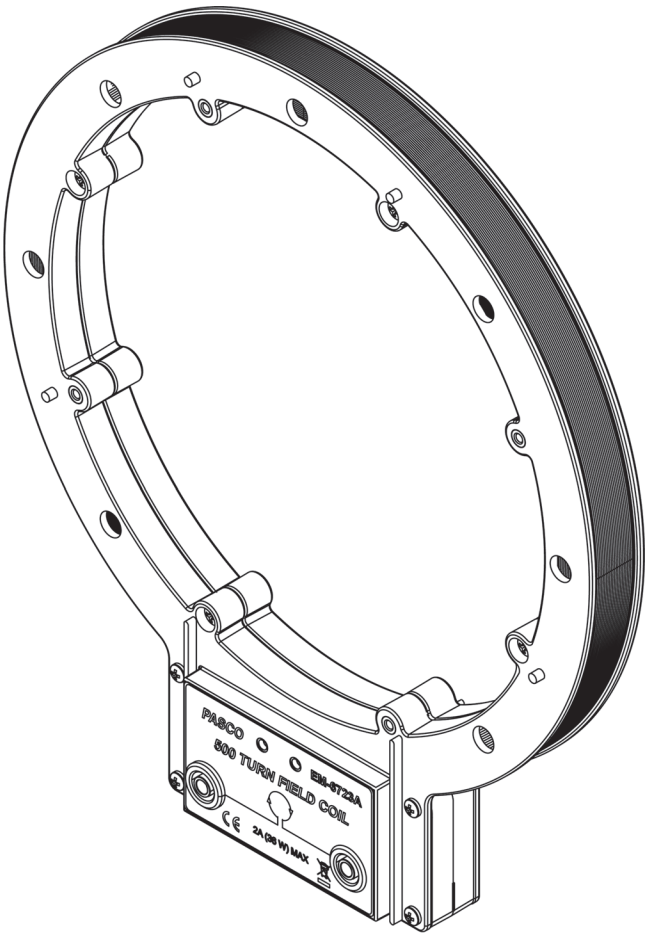
500-Turn Field Coil

EM-6723A



Included Equipment	Part Number
500-Turn Field Coil	EM-6723A

Related Equipment	Part Number
200-Turn Field Coil	EM-6711A
Detector Coil (400 turn)	EM-6712
Detector Coil (2000 turn)	EM-6713
Helmholtz Base	EM-6715

Recommended Item to Drive Coil (one needed)	
850 Universal Interface	UI-5000
Low Voltage AC/DC Power Supply	SF-9584A
Digital Function Generator/Amplifier	PI-8127

Introduction

PASCO model EM-6723A is a 500-turn wire coil on a ring-shaped bobbin with a diameter of about 21 cm. The base of the assembly has two shrouded banana jacks for connecting 4 mm banana plugs. Use the shrouded banana jacks to connect a device directly to the coil. Do not allow the current to exceed 2 amperes (A).

A 1/4-20 threaded mounting hole in the base allows the coil to be fastened to other equipment, such as the EM-6715 Helmholtz Base.

Holes in the sidewalls of the bobbin allow students to see how the coil is wound. The holes are tangent with the inside of the winding so that students can measure the inner diameter.

Experiments

In combination with other equipment, the 500-Turn Field Coil can be used in a variety of demonstrations and experiments, including the following.

- Mount two Field Coils on the Helmholtz Base (EM-6715) to create a Helmholtz Coil.
- Drive the field coil with a triangle wave at about 500 hertz (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 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 time rate of change of the magnetic field.

For details of this experiment see Christopher C. Jones, Faraday's Law apparatus for the freshman laboratory, American Journal of Physics 1987; 55 (12): 1148–1150.

- Do the above experiment with a 850 Universal Interface and a voltage sensor. Connect the field coil directly to the interface output. Use the voltage sensor to measure the induced emf in the detector coil.

- Drive the coil with direct current. Use a magnetic field sensor to find the strength and direction of the field at various locations.

Specifications

Turns	500
Wire	copper, 22 AWG (0.64 mm dia.)
Inner radius	10.06 cm
Outer radius	11.37 cm
Coil width	1.6 cm
Body material	Polycarbonate plastic

Technical Support

For assistance with any PASCO product, contact PASCO at:

Address: PASCO scientific
10101 Foothills Blvd.
Roseville, CA 95747-7100

Phone: +1 916-462-8384 (worldwide)
877-373-0300 (U.S.)

Web: www.pasco.com

Email: support@pasco.com

Limited Warranty For a description of the product warranty, see the PASCO catalog.

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Product End of Life Disposal Instructions:
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/disposal service, or the place where you purchased the product.

The European Union WEEE (Waste Electronic and Electrical Equipment) symbol (to the right) and on the product or its packaging indicates that this product must not be disposed of in a standard waste container.