

## FLAT MAGNETIC COIL



61170

### GENERAL DESCRIPTION

The Magnaflux® Flat Magnetic Coil is designed to provide a non-contact means of magnetizing ferrous materials to allow for detection of surface defects (using AC or DC currents) and some subsurface flaws (using DC current only). It consists of a coil and special core of laminated, transformer iron through which magnetizing fields can be created. The Flat Magnetic Coil induces magnetic fields into ferrous materials which may be sensitive to direct contact applications.

### FEATURES AND BENEFITS

- Magnetizes without passing current through the parts
- Accommodates a variety of sizes and shapes without adjustments
- Can inspect parts that are painted or coated
- Magnetizes and demagnetizes with either AC or DC currents
- No part surfaces hidden by contact points
- Can be used with any magnetic particle power pack or unit

### INSTRUCTIONS

1. Place inspection part on top of the coil and apply current. Orientation may be crucial and stabilization of the part may be required depending on the size, weight and geometry of the part.
2. Using the Magnaglo® 14A Fluorescent Magnetic Powder, bathe the part as the current is applied to the coil. The 14A particles produce brilliant yellow-green indications that are easily detected. (Magnavis® 7C Black Concentrate or Magnavis® 8A Red visible magnetic particles may be used if preferred to fluorescent materials. Black light therefore not required).
3. Inspect the part closely for cracks and other defects using a Magnaflux® ZB-100F Black Light.
4. Reorient the part and repeat the process until the entire part has been inspected. Depending on the size and geometry, more than one part may be tested at a time. The continuous wet method is recommended for locating fine defects.

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# Flat Magnetizing Coil

## Technical Specifications\*

Dimensions: 20" L x 7" W x 3" H  
 Unit Weight: 60 lbs.  
 Maximum Current: 2,000 amps AC or DC  
 \*other sizes available upon request

## Expected Performance Data

At 750 amps HWDC: 250 G min\*  
 At 1350 amps AC: 250 G min\*  
 \* measured at surface of unit

## Features and Benefits

The Magnaflux® Flat Magnetizing Coil is a non-contact method of magnetic particle inspection. Without the need for individual part clamping, it can be used to quickly process many small parts, such as fasteners, simultaneously.

- Magnetizes without passing current through the parts
- Accommodates a variety of sizes and shapes without adjustments
- Can inspect parts that are painted or coated
- Magnetizes and demagnetizes with either AC or DC currents
- No part surfaces hidden by contact points
- Can be used with any magnetic particle power pack or unit
- Holding fixtures available to keep parts in proper orientation

## Theory of Operation

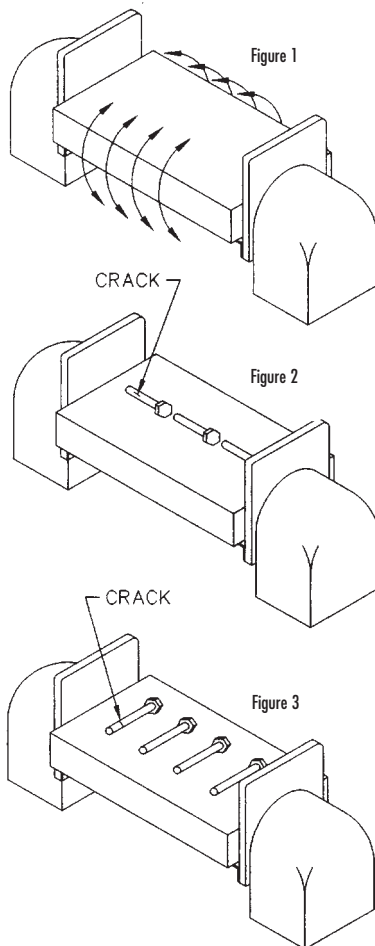
The Flat Magnetizing Coil provides a convenient method of generating a field in ferromagnetic parts. Current is passed through the unit by connecting a power supply to either end of the unit. The magnetic field is generated as shown (see Figure 1).

## Operating Instructions

To find longitudinal cracks in the parts, orient the parts with their axes parallel to the length of the Flat Magnetizing Coil (see Figure 2). Depending on the L/D ratio of the parts, holding fixtures (not included) may be required to keep the parts in this orientation.

To find transverse cracks in the parts, orient the parts with their axes perpendicular to the length of the Flat Magnetizing Coil (see Figure 3).

Results are best when the wet continuous method of inspection is utilized with the Flat Magnetizing Coil. Holding fixtures may be needed to raise the part slightly from the coil and allow magnetic particle bath to get to the entire part.



Your authorized MAGNAFLUX® representative is:

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# Magnetic Particle Accessories

## Magnetic Particle Equipment Cables, Adapters and Accessories

Adapters and add-on accessories expand the capabilities of standard magnetic particle equipment. Every application has unique requirements, and these specially designed adapters make magnetization easier.




### CABLES

4/0 cables are essential for P-series, M-series, and CSV-series power packs. Cables can be used to flow magnetizing current through a large part or structure, or wrapped around pipes and long weldments for longitudinal magnetization. Magnaflux 4/0 cables are available in standard welding grade or heavy-duty grade with extra insulation and tinned conductors. Cables are factory terminated in a variety of lengths and a choice of standard lug connections or heavy-duty quick connect fittings. Custom-length cables are also available – please contact Magnaflux Customer Service for quotation.

Cable	Description	Length	Part number
Standard 4/0 	4/0 cable assembly with two 626342 lug connectors on each end	15 ft / 4.6 m	626350-180
		20 ft / 6.1 m	626350-240
		Custom length	626350-xxx Contact customer service
Standard 4/0 	4/0 cable assembly with 628828 QC-F and 628829 QC-M quick connectors on each end	15 ft / 4.6 m	628833-180
		20 ft / 6.1 m	628833-240
		Custom length	628833-xxx Contact customer service
Heavy-Duty 4/0 	Lug to Lug	Custom length	626500-xxx Contact customer service

Connector	Description	Part number
4/0 Lug 	Standard 4/0 cable termination	626342
QC-M 	Male Quick connect 4/0 cable termination (used with QC-F)	628829
QC-F 	Female Quick connect 4/0 cable termination (used with QC-M)	628828

Adapter	Description	Part number
Lug-QC Adapter Kit 	Set of two adapters, 12 in / 30 cm long. Standard 4/0 lug to QC-M and Standard 4/0 lug to QC-F, one each. Used in combination with prods, connectors and cable wraps to provide modularity in magnetizing techniques.	628832






## PRODS & CONNECTORS

When using P-series, M-series, and CSV-series power packs, effective magnetization depends on secure contact with the part or structure being examined. Connections can be made in a variety of ways depending on the specific needs of the application.

Connector	Description	Part number
<p>Standard Contact Clamp</p> 	<p>Spring-loaded clamp with braided copper contact and lug connection. Used for smaller structures and parts up to 2.5 in / 6.4 cm diameter.</p>	<p>Clamp: 1865A Replacement copper braid: 14710</p>
<p>Heavy-Duty Contact Clamp</p> 	<p>Large C-Clamp with leaded copper braid contact pad and double lug connections. Used for large structures and parts up to 7 in / 18 cm diameter.</p>	<p>169802</p>
<p>Standard Prod Set</p> 	<p>Set of two hand-held electrodes with mag shot trigger and 4/0 lug connections. Solid copper tips 0.375 in / 9.5 mm diameter, 3.75 in / 95 mm long.</p>	<p>P-Series: 157662 M-Series: 622088</p>
<p>Dual Prod Set</p> 	<p>Single hand-held set with two electrodes, mag shot trigger and 4/0 lug connections. Adjustable electrode spacing with 3.875-8.125 in / 9.8-20.6 cm range. Solid copper tips 0.375 in / 9.5 mm diameter, 3.75 in / 95 mm long.</p>	<p>P-Series: 157781 M-Series: 622499</p>




## WET BENCH ADAPTERS

Expand the capabilities of standard wet bench equipment for examination of multiple small parts or large structures. These adapters maximize the number of parts that can be inspected using a single piece of equipment.

Adapter	Description	Part number
<p>Central Conductor Kit</p> 	<p>Solid copper rods 18 in / 45.7 cm long for circular magnetization (head shot) of rings and hollow parts. Set of three diameters: 0.50 in / 12.7 mm, 0.75 in / 19.0 mm, 1.00 in / 25.4 mm</p>	<p>622639</p>
<p>Small Parts Adapters</p> 	<p>Copper contact blocks mounting directly to the head and tail stock providing small contacts (1.00 x 1.25 in / 25.4 x 31.8 mm) for direct magnetization of small components. Adjustable V-block for pins and bolts.</p>	<p>Headstock: 28470 Tailstock: 28471</p>
<p>Flat Coil</p> 	<p>Sealed lateral coil, mounts between head and tail stock to provide indirect magnetization. Wide flat surface for inspection of multiple small components. Parts can be arranged in line for circular magnetization or across the coil for longitudinal magnetization. 20 in / 51 cm long, 6.75 in / 17 cm wide, 44 Lb / 20 kg. Includes two handles for loading and unloading.</p>	<p>611700</p>
<p>Steady Rests</p> 	<p>Single hand-held set with two isolated rollers that mount directly to the equipment to stabilize and support long, heavy parts such as crankshafts during the inspection process. Adjustable height to accommodate different shaft diameters. Capacity up to 1500 Lb / 630 kg.</p>	<p>Headstock: 605750 Tailstock: 621658 Rail-Mount: 1857</p>
<p>Contact Block</p> 	<p>Adapter clamped between head and tail stock provides lug terminals to connect 4/0 cables for remote magnetization.</p>	<p>Headstock: 1830</p>

## REMOTE CONTROLS

Remote control cables for P-Series and M-Series power packs allow the inspector to trigger mag shots and adjust amperage settings at the examination site.

Remote	Description	Part number
<p>P-Series Remote</p> 	<p>Remote switch for triggering a mag shot, 15 ft / 4.6 m long.</p>	<p>626797</p>
<p>Remote Palm Button</p> 	<p>Remote mag shot button for use with the Mag Kit and P-Series power packs. Mounts directly to the side of the Mag Kit bench.</p>	<p>169621</p>
<p>M-Series Pendant</p> 	<p>Remote control box provides full control of M-Series power pack at the examination site. Includes waveform selection, amperage adjustment, and mag/demag triggers. 15 ft / 4.6 m long.</p>	<p>626120</p>

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