

Magnetic Particle Testing Classroom Training Book second edition

Errata – second printing 03/17

The following text correction pertains to the first edition of the *Magnetic Particle Testing Classroom Training Book*. Subsequent printings of the document will incorporate the corrections into the published text.

The attached corrected page applies to the second printing 03/17. In order to verify the print run of your book, refer to the copyright page. Ebooks are updated as corrections are found.

| Page | Correction |
|-------------|--|
| 14 | Figure 3: Example of field distribution in and around a solid magnetic conductor when carrying direct (dashed line) or alternating (solid line) current. Figure 4: Example of field distribution in and around a hollow magnetic conductor carrying direct (dashed line) or alternating (solid line) current. (Figures have also been updated to reflect the dashed line.) |

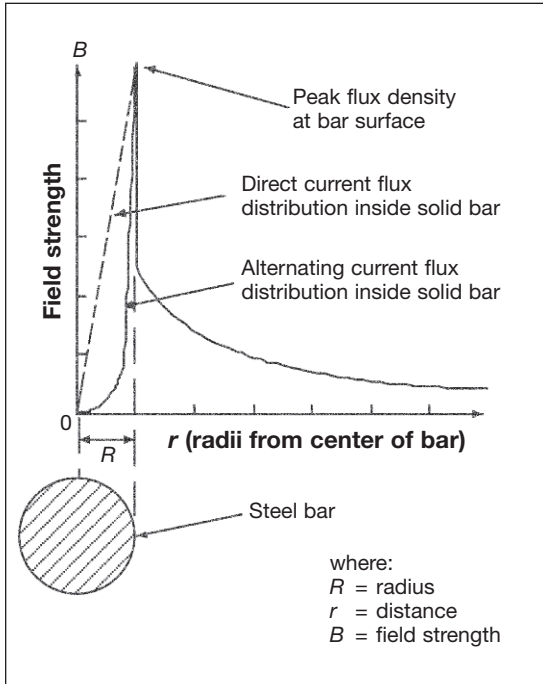


Figure 3: Example of field distribution in and around a solid magnetic conductor when carrying direct (dashed line) or alternating (solid line) current.

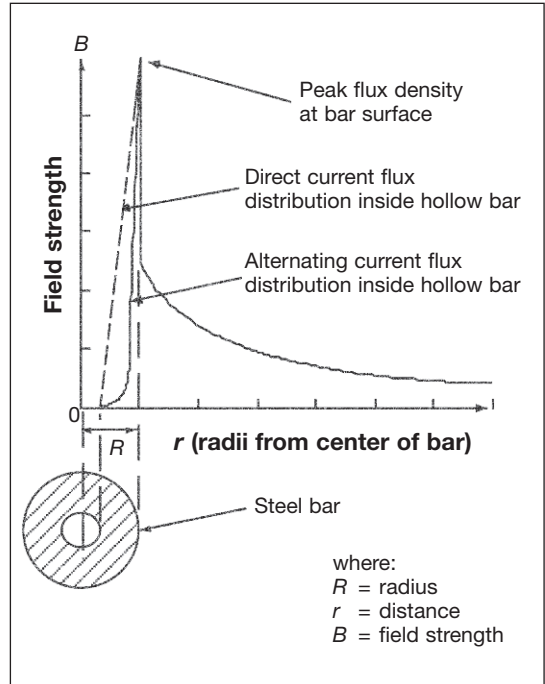


Figure 4: Example of field distribution in and around a hollow magnetic conductor carrying direct (dashed line) or alternating (solid line) current.

Deep holes and sharp gear teeth may be tested by using magnetic particles suspended in a self-curing *magnetic rubber*. Here, the test object's residual field must be high or the current must be applied during the total cure time of the rubber. When the rubber is carefully peeled away, the magnetic indication may be observed in the rubber. The use of fluorescent magnetic particles enhances this method.

Equipment for Inducing Circular Fields

Contact Plates

Contact plates are copper plates that come in contact with the test object or central conductor. They are primarily used in wet bath techniques. Contact plates are found in specialized magnetic particle equipment called *wet horizontal bench machines*, as shown in Figure 5.

Prods

Prods are a specialized form of small contact plates, as shown in Figure 6. They are often used to test welds. Prods are firmly pressed against the surface to be magnetized. As current flows through the surface of the test part, a circular magnetic field is set up around the prods. Often, wet horizontal bench machines are equipped with prods for irregularly shaped test objects. Portable magnetic particle machines with alternating current between 1000 A and 2000 A are the most common type of prod testing equipment.