



CGM CIGIEMME S.p.A.



Controlli Non Distruttivi - Non Destructive Testing

GAUSSMETER



DESCRIPTION

The modern version of the Gauss magnetometer is known as Gaussmeter. A Gaussmeter can measure the direction and intensity of small magnetic fields. For larger magnetic fields, a Tesla meter is used, which is similar but measures in Tesla units, which are higher. One Tesla unit is equivalent to 10,000 Gauss.

Available in various scales: 5-0-5; 10-0-10; 20-0-20 and 50-0-50.

OPERATING PRINCIPLES

Magnetic fields affect electric currents, as electricity and magnetism are related. When current pass through a conductor positioned at right angle to a magnetic field, the field's strenght pushes the electrons to one side of the conductor. The unbalanced concentration of electrons creates a measurable voltage that is directly proportional to the strength of the magnetic field and the current, but inversely proportional to the charge density and thickness of the conductor.

This effect is known as **Hall effect**, which is the basis of the Gaussmeter.



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USER INSTRUCTIONS

The relative intensity of an external magnetic field is measured by placing the instrument close to the surface of the part under inspection and then reading the value indicated on the scale by the deflection of the pointer. Therefore, in the presence of a magnetic field, the instrument only indicates the intensity of that portion of flux lines passing through the sensitive element of the pointer, but not the flux density generated by the magnetic field itself.

Remember also that:

- to measure correctly, the edge of the instrument at the end of the gauge, on the pivot side (this position is indicated on the instrument by an arrow), must be as close as possible to the object under inspection;
- in case of very small parts, the flux lines generated by the residual magnetic field may be too few to be detected by this instrument;
- when measuring the intensity of the magnetic field in air, since the permeability of air is equal to 1, the magnetizing force and the magnetic field have the same numerical value, therefore the flux density is the same;
- when measuring the intensity of the residual magnetic field present on an object, the instrument only detects the field at the distance between the sensitive element and the surface of the part itself; therefore, in reality, the flux density of the field present in the part will be greater than that indicated by the instrument. How much greater depends on the permeability and shape of the part, as well as the effect of the distance between the part and the sensitive element;
- the instrument must be kept away from fields strong enough to damage the gauge, which could cause violent deflection beyond the scale bottom.

AVAILABLE MODELS

PART NUMBER	DESCRIPTION	REF.
04089690	Scale range +/- 5 gauss	96.11
04089691	Scale range +/- 10 gauss	96.9
04089692	Scale range +/- 20 gauss	96.10
04089693	Scale range +/- 50 gauss	96.10.2



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