

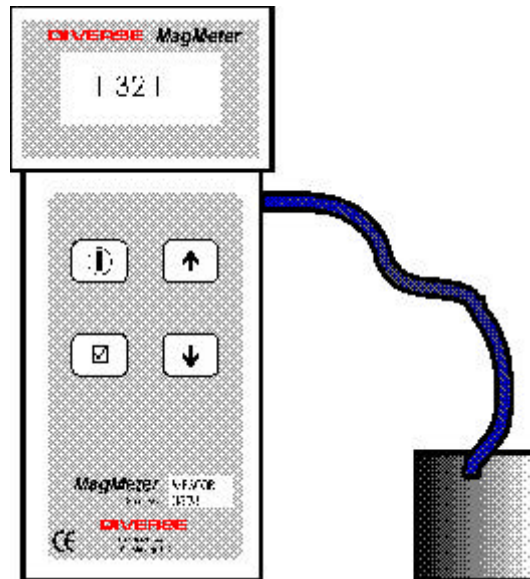
DIVERSE

MAGMETER MF300B

MAGNETIC FLUX METER

OPERATING INSTRUCTIONS

MAY 1998



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MANUFACTURED BY:-
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ENGLAND

PREFACE

Thank you for purchasing MagMeter. Before using the unit, please read these instructions carefully. If you are uncertain about any aspect of its operation, please contact Diverse at Cambridge, England CB2 5EG, or email us for clarification at sales@diverse-technologies.net

The serial interface version of this product is provided with software to run on a PC. See our pages on the world wide web for free updates.

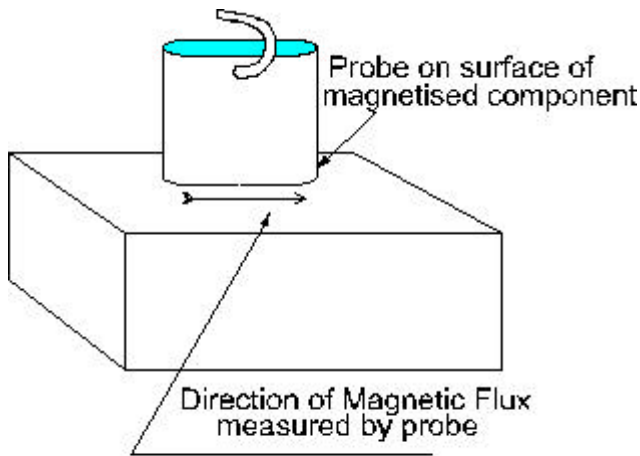


Fig.1 MF300B Probe

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INTRODUCTION

The MF300B Magnetic Flux Meter is used to measure the magnetic flux density within steel components. The meter can be used to measure either static (DC) or time varying (AC) magnetic flux in any direction along the surface of the component. The measured values are displayed in Tesla.

The MF300B is supplied with a Ferrite probe which is able to measure the magnetic flux density within steels. When the probe is placed on the surface of a steel component, the magnetic flux within the component is sampled to provide a measurement. (See fig. 1). The orientation of the probe on the surface indicates the direction at which the flux density was measured. The probe can be used on flat surfaces or curved surfaces with a minimum radius of curvature of 37.5mm.

It is important to measure the magnetic

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flux density within steel components prior to carrying out Magnetic Particle Inspection. Procedures and standards such as BS6072, written to perform this type of non-destructive test, often state that a particular flux density such as 0.72 Tesla is required. Magnetic probes, such as gauss meters, which measure the magnetic field in the air above the surface of the component do not indicate the value of magnetic flux within the material to be inspected. The MF300B measures the peak magnetic flux density regardless of the magnetisation technique. Therefore the component can be magnetised using AC or DC electric current, magnetisation coils and yokes or permanent magnets and the probe will measure the correct peak value.

An RS232 output for connection of the Magmeter to a computer is available as an optional extra to the MF300B. Software is included with this option which enables the magnetic flux measurements to be input to most

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spread sheets.

The MF300B Magnetic Flux Meter is supplied in a carrying case together with a Flux probe. Versions which use the RS232 output are supplied with a lead for connection to a computer.

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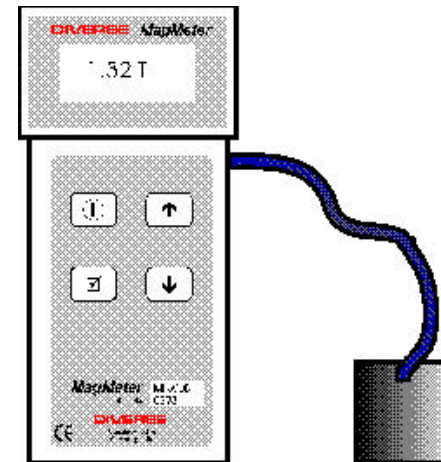


Fig 2. MF300B Magnetic Flux Meter

FIRST TIME

The MF300B Magnetic Flux Meter is shown in Figure 2. The Meters are calibrated a few days before delivery and a calibration certificate will also be supplied.

The unit requires 4 AA cells which should be installed in the battery compartment on the rear of the housing.

The Flux probe supplied with the meter is of a robust design suitable for the measurement of magnetic fields in workshops and laboratories. The probe will, however, be damaged, if it is subject to mechanical stresses or forces.

If you have chosen the serial interface version, you should install the software on your PC. To do this place the floppy disc in your drive. To install on DOS:

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Type: A: <return>
INSTALL.BAT <return>

To install on Windows:

Use Program Manager: run file

Select drive A:

Double click on INSTALL.BAT

The software will be copied to your hard disc C:\diverse.

OPERATION

The Magmeter has 4 keys:

- power
- ☑ tick
- ↑ up
- ↓ down

The MF300B does not make use of the ↑ and ↓ keys.

Step 1 Plug in the Flux Probe

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Step 2 Power On/Off

Hold the probe away from any magnetic surface and switch the unit on by pressing the power key. The display will start to flash for a period of 5 seconds. At the end this period, the display will stop flashing and should show a value close to zero.

Step 3 Preparation

The MF300B measures the difference in flux density which occurs from the time the key is pressed until the display stops flashing. Before pressing the key, it is important to hold the probe away from any magnetic surface.

Step 4 Take Measurement

Press the key. Then move the probe until it is in good contact with the surface where a measurement is required. The brass surface of the probe should lie on the surface and the

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long dimension of the probe should point in the direction where the measurement is required. See fig. 1.

Once the display stops flashing, it will indicate the highest value of flux density measured by the probe.

A new reading can be made by again holding the probe away from any magnetic surface and pressing the key. The display will again flash and the probe should be brought to rest on the surface where the new measurement is required. When the display stops flashing, the meter displays the peak value of the flux density within the surface.

Step 5 Switch off

Press the key to switch the unit off when no further measurements are required.

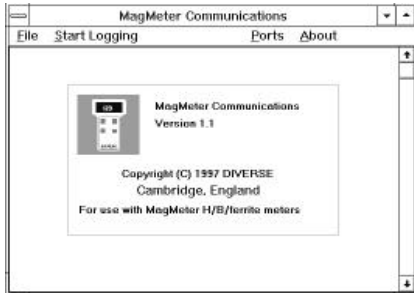
Step 6 Serial Output

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RS232 output. Readings from the MF300B can be output to a computer via the RS232 link.

Plug in the MagMeter using the cable provided.

Values can be output from any of the display options by pressing the tick key for less than two seconds. To interface with a PC, two programs are supplied, one for DOS operation and the other for Windows, see the software section.



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SOFTWARE

The serial version of the MF300B is supplied with software to run on a PC compatible running either DOS or Windows, see First Time for information about installation. Both versions have a similar user interface, use the same configuration file and produce the same format of output file.

Windows Version

The program name is TERM.EXE for operation under windows 3.1/95.

Run the program by either installing its icon into a group in program manager/start run, or running it directly with file manager/explorer.

First time you should identify the communications port you wish to use. This is stored in the configuration file, and will be automatically selected next time it's run.

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MagMeter PC interface U1.1
(C) 1997 Diverse, Cambridge, England

Services

L : Look for Magmeter connection
R : Get MagMeter Data
S : Set communications port
Q : Exit Program

Please select option _

Select *Start Logging*. This will display the file type identification together with a date and time stamp. Readings can then be taken by pressing the tick key. As the readings are taken, they are displayed on the screen, together with the mode, range and units selected, if any of these are changed.

Once you have completed the data collection, select *Stop Logging*, and you will be prompted for a filename in which to save the data.

Free updates to the logging software are placed on our web site:

<http://www.diverse-technologies.net>

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SPECIFICATION MF300B

Units: T, Tesla

Range: 0 - 1.99T.

Resolution: 10mT.

Zero: Zeroed at the start of every measurement.

Probe: Active area 21 x 7mm

Power: 4x AA (R150) Alkaline Cells

Accuracy +/- 5% of full scale, in the range 0.3 to 1.3 Tesla when used on mild steel.

Operating Temperature: 0C to +40C

Surface: The probe can monitor the magnetic flux within flat surfaces, or curved surfaces with a radius as small as 37.5mm.

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CALIBRATION & REPAIR

The MF300B and probe is supplied with a calibration certificate. It is recommended that the unit is returned to the supplier annually for recalibration. If the MF300B requires repair, the unit should be returned to the supplier, there are no user serviceable parts. If you have difficulty in getting the unit repaired or calibrated, please contact: Diverse Technologies & Systems Ltd. Kingfisher House, High Green Great Shelford, Cambridge CB2 5EG England, Tel: +44 (0) 1223 84 44 44

Low Battery

If the MF300B displays the legend "LB" the batteries are low. If you have purchased the rechargeable unit then connect the charger and wait at least 30 minutes before using. Wait 8 hours for full recharge. If you have the dry cell unit replace with 4xAA alkaline cells.

Never use the battery charger with conventional dry cell batteries.

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LIABILITY

Diverse Technologies accepts no responsibility for the consequential losses arising from the ability or inability to use the equipment supplied.

The limit of warranty is the repair or replacement of any faulty components, directly attributable to manufacturing defects, arising during the period of 12 months following purchase. This does not include damage resulting from incorrect operation of the unit.

Designed and manufactured by:-

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