

Ferromagnetic Object Detector

# MB101



# Ferromagnetic Object Detector **MB101**

The MB101 is a uniaxial differential fluxgate ferromagnetic object detector. It detects materials made of magnetic metals, such as iron and nickel, and materials in which direct current flows.

The product consists of a detector, control unit, and cable. The detector and cable are resistant to hydraulic pressure, and the control unit is waterproof.

By inserting the detector into a borehole, you can search for the position of your target object using the control unit. Furthermore, you can carry the detector to search for your target object.

The detector uses size C batteries and has a recorder connector for recording detection signals.

## Purpose of Use

- 1. To detect buried unexploded mines, bombs, and ammunition**
- 2. To detect buried magnetic objects, such as sunken ships and anchors**
- 3. To search for crime-related weapons in rivers and swamps**
- 4. To find buried iron pipes and metals**
- 5. To detect buried cables through which electricity is transmitted**

## Features of Detection Using Magnetism

1. Target objects can be detected even when they are near or buried in or under mud, sand, water, ice, snow, wood, plastics, fibers, or non-magnetic metals (e.g. aluminum and copper).
2. By observing the changes in magnetic signals caused by changes in the positional relationship between the target object and the detector, you can obtain the distance and burial depth.
3. The magnitude of the magnetic signal from the target object to the detector is inversely proportional to the third to fourth power of the distance between them. Therefore, the detector can easily detect the target object even when there are magnetic obstacles with a stronger magnetic moment than that of the detection target as long as there is a certain distance between the detector and target object.

## Principle of magnetic Detection

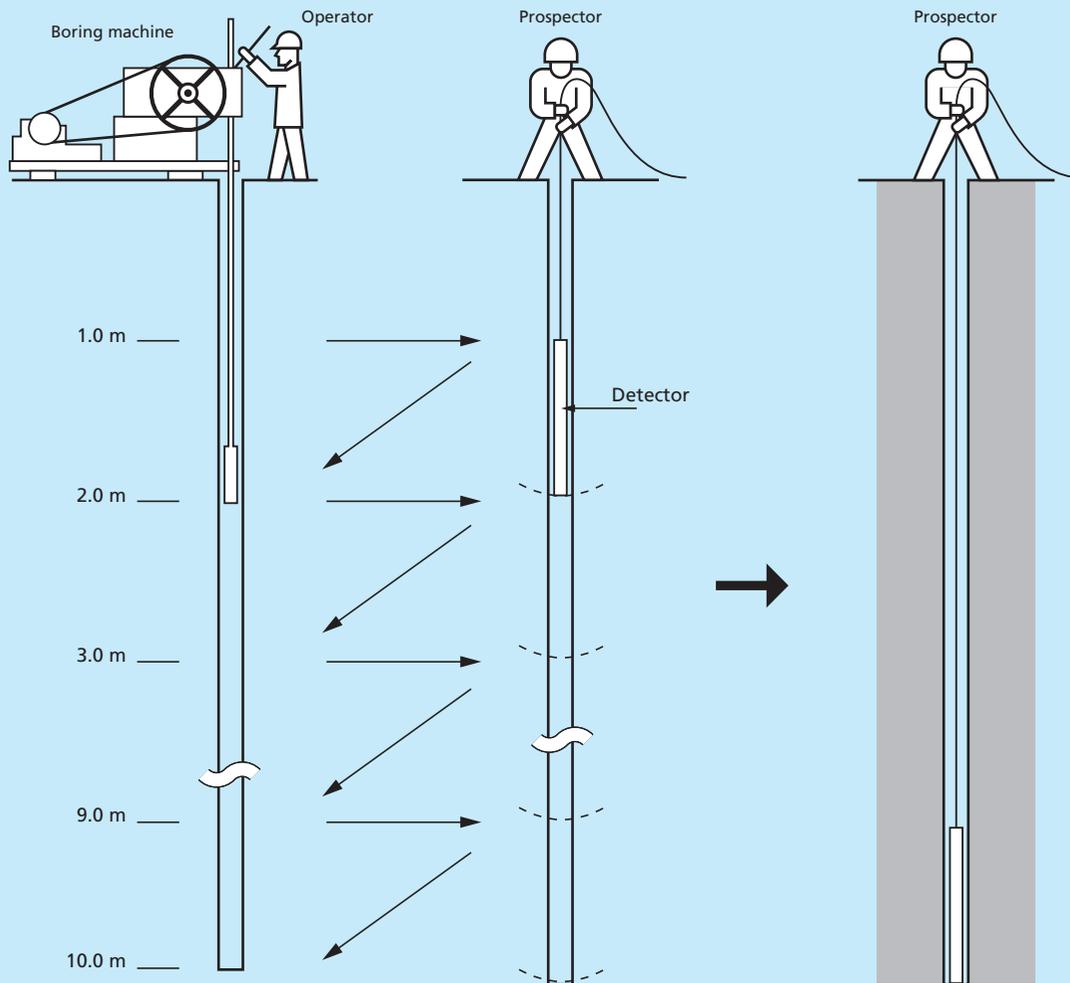
Ferromagnetic materials are magnets that combine the magnetism induced by the local magnetic field and the permanent magnetism of the materials themselves. The detector detects target objects by detecting the magnitude of the magnetic field created by the magnet.

## Example of Use

Boring a hole  
in increments of 1 m

Searching straight down  
in increments of 1 m

Continuous search  
from the ground level (GL)  
to the bottom of a borehole



## Specifications

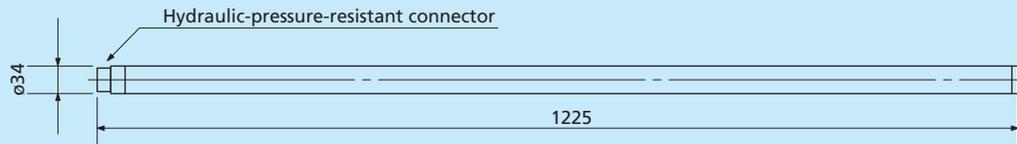
Main Performance	
Detection Method	Fluxgate method
Sensitivity	$\pm 0.5, \pm 1.0, \pm 2.0, \pm 5.0, \pm 10 \mu\text{T}$
Accuracy	Indicator: $\pm 10\%$ of full scale at each sensitivity Recorder output: $\pm 2\%$ of full scale at each sensitivity
Oscillation Noise	$0.02 \mu\text{T}$
Resolution	$0.001 \mu\text{T}$
Background Magnetic Field	$\pm 50 \mu\text{T}$
Output	Recorder output: $\pm 1 \text{ V}$ at full scale for each sensitivity
Power Supply Used	
Power Supply	Eight size C batteries
Continuous Operating Time	20 hours min. (when size C batteries are used, at $20^\circ\text{C}$ )
Ambient Conditions	
Operating Temperature	$-10^\circ\text{C}$ to $+40^\circ\text{C}$
Storage Temperature	$-20^\circ\text{C}$ to $+50^\circ\text{C}$
Water Resistance	Detector and cable: Up to 30 m underwater Control unit: Waterproof structure

## Components

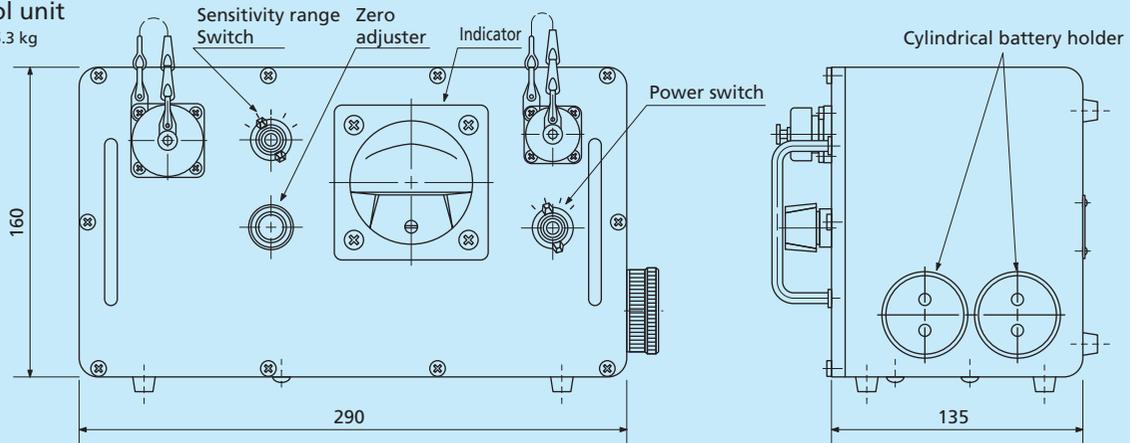
Product Name	Remarks
Detector	With a storage case
Control Unit	With a storage case
Cable	50 m
Recorder Cable	2 m

## External Dimensions

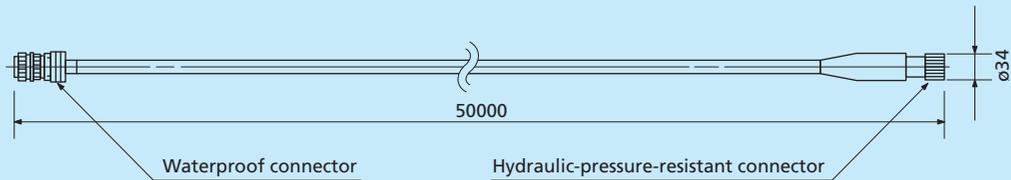
**Detector**  
Weight: 2.5 kg



**Control unit**  
Weight: 5.3 kg



**Cable**  
Weight: 13.6 kg



(Unit: mm)

Note: Please understand that the appearance and specifications are subject to change without notice.

# Shimadzu Corporation

**AIRCRAFT EQUIPMENT DIVISION**

Nishinokyo-Kuwabaracho, Nakagyo-ku, Kyoto 604-8511 Japan

**TOKYO OFFICE SALES & MARKETING DEPARTMENT MAGNETIC SYSTEMS SECTION**

3, Kanda-Nishikicho 1-chome, Chiyoda-ku, Tokyo 101-8448, Japan

Phone : 81 (3) 3219-5776

URL : <http://www.shimadzu.co.jp>