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GAUSS METER Model – 138A

I、 Introduction on uses and features

1. 138A Gauss Meter is exclusively used to test the flux density of all kinds of magnetic components. Regardless what its material or the shape of magnet is, Model-138A can test its flux density.

   For example: Ferrite Magnets、Flexible Rubber Magnets 、Rare Earth Magnets、Alnico Magnets…can all be tested by Model-138A. Also, Magnets for loudspeaker、headphone、microphone magnet、motor and relay, as well as other magnetism components can all use Model-138A to test its flux denstity.138A is especially designed with “Peak Hold” & “Auto Accumulating and Auto-Averaging” two functions, especially suitable to test the flux density of the magnetic gap of loudspeaker 、headphone and microphone…etc.

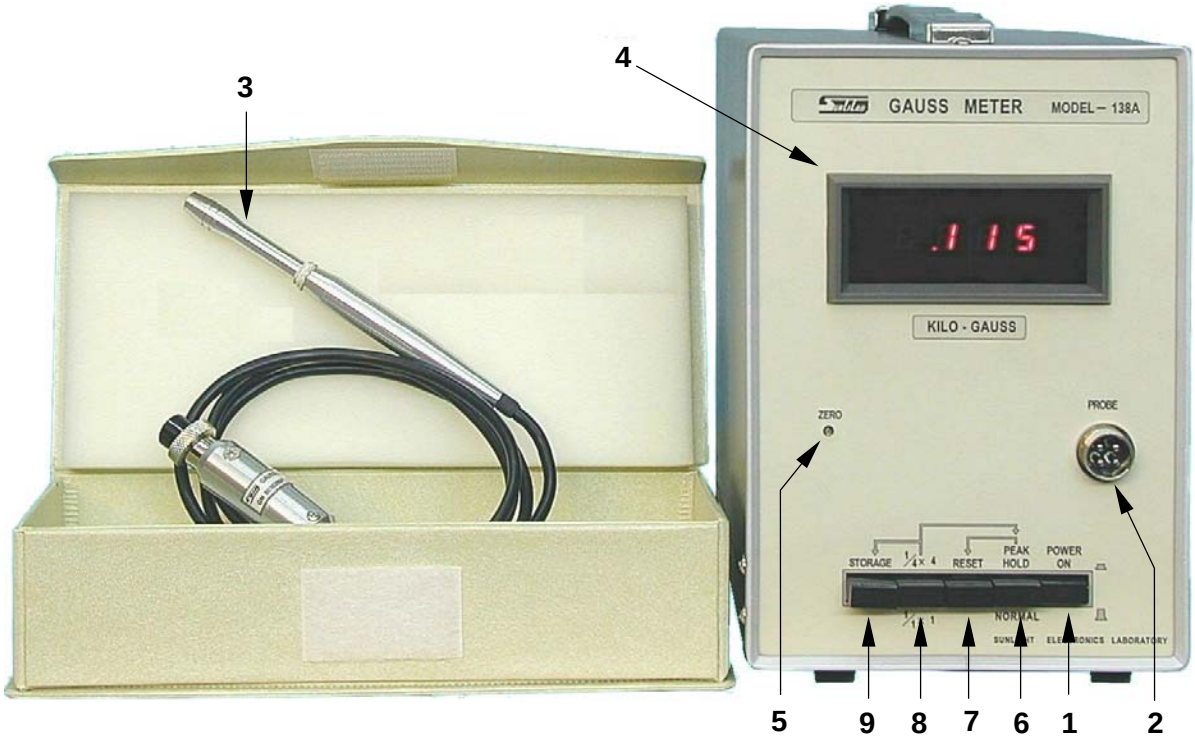
2. Peak Hold

   To use a Gauss meter without the “Peak Hold” function“ for testing the flux density, due to the unsteady vibration of the Gauss Meter’s needle or the unstable displayed value in course of testing , it is hard to obtain the real “Peak Value”. Model-138A has the “Peak Hold’ function which can test the “Peak Value” easily. If user used a Gauss meter without the “Peak Hold” function to test the flux density in magnetic field, then, he must observe the test value and adjust the testing position simultaneously in course of testing, so to obtain the biggest (ideal) value, in this case, user has to repeat numerous testing, consequently, sensor chip of the probe might got abrasive easily, moreover, it might got broken due to distraction of the user.

3. Auto Accumulating and Auto-Averaging

   To test the flux density of the magnetic gap, user must sum up the peak value at the 4 points magnet gap, and divide the total peak values by 4, to get the average peak value. If used a conventional Gauss Meter, user must record down the 4 tested peak values, and compute the average peak value manually, this is inconvenient and time-consuming. 138A is a unique design with “4 times auto accumulating & averaging” functions, rapid test & accurate result.

II、 Panel Introduction



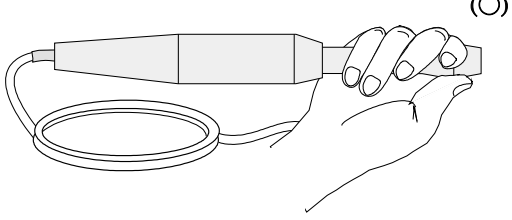
1. Power switch.

2. Probe Jack

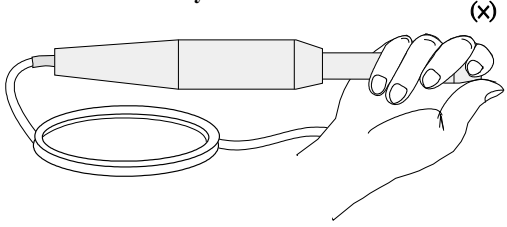
3. Probe: A pen-like bar. Before using, user must pull backward the upper half portion of the probe's protector , to emerge the sensor chip for testing, right after the testing, user must pull back the probe's protector to its original position, to prevent damage of the sensor chip.

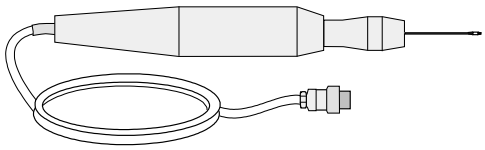
NOTE User must hold gently the upper both side of the probe's protector, then, gently pull backward the probe's protector , never press the tip end of the probe's protector to press backward the upper half portion of the probe's protector, since this will damage and break the sensor chip. Please refer to the following figures.

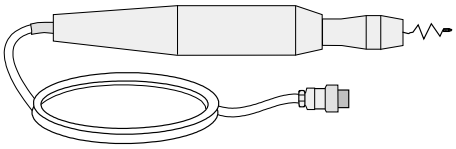
(○) **Correct usage, the sensor chip will not get damage casily.**



(×) **Wrong usage, the sensor chip will be broken easily.**







4. Gauss Display Window:

Has two display ranges, auto-ranging ; namely : the low range is from .001 K Gauss ～1.999 K Gauss; while the high range is from 2.00 K Gauss～20.00 K Gauss.

5. Zero Adjustment Trimmer:

Every set of Model-138A has undergone the Zero Adjustment before shipment, besides, it is of highly stable designed, it can maintain its stability for several weeks or months after it have undergone Zero adjustment, thus, no further Zero adjustment is needed, user is advised not to make Zero adjustment for his Model-138A frequently, only for the first time using or to change another probe or after the faulty probe have been repaired, then, user is required to make Zero adjustment for his Model-138A.

Zero adjustment method :

Firstly, connect the probe to " Probe Jack ", the probe should be kept away from any magnetic field, then, set the "Pushbutton 6" at "NORMAL" position (Which means that this pushbutton is at press out position, press in position belongs to "PEAK HOLD" position), use a minus screwdriver to adjust "Trimmer" till it displays "000".

After Zero adjustment, set the "Pushbutton 6" at "PEAK HOLD" position, if the displayed value is not "000", then, press "Pushbutton 7" (RESET pushbutton), to let the displayed value at "000". After pressed the RESET pushbutton, if the display window can't goes back to zero, or some digits displayed at the window, or the digits are increasing gradually, user don't have to worry. since these residue digits do not affect at all the preciseness of test results , since under "PEAK HOLD" testing, Model-138A only test the highest flux density, and will not accumulate these residue digits, thus, user please don't add or subtract these residue digits to the tested result, otherwise, inaccurate result will obtain.

6. Test selecting pushbutton:

User may select either the 〃 NORMAL 〃 or the 〃 PEAK HOLD 〃 to perform testing. If this pushbutton is at press out position, it is at :NORMAL" test mode, otherwise, if at press in position, then, it is at "PEAK MODE" test mode.

Normal test mode, The tested Gauss value will vary from the density of the flux. Gauss value also varies from changing of the testing point, thus, user must be extra careful and must control very stable the probe, so that the ideal Gauss value of that testing point can be obtained. But since the ”PEAK ” value disappear instantly, the digits might not yet completely display ,and this value might have already changed due to the hand shaking of the one holding the probe, user must be extra careful in controlling the intend testing point, besides, he must distract his attention to observe the display window, to ensure that the best Gauss value can be tested, if incautious, the sensor chip of the probe might got damaged, thus, user must be extra careful in using the “NORMAL” test mode.

Peak Hold Test Mode, user needs only to concentrate in controlling the intend testing point, and to control very stable the sensor chip from passing through the intend testing point, which means that the highest value can be picked up and being held easily, thus, when using the “Peak Hold” function, the tested Gauss value is of a high repetition and is rather an ideal one, Also. as it can pick up the peak value which disappear instantly, thus, the tested Gauss value is higher than the one tested under the “NORMAL” test mode.

7. “Reset” pushbutton:

After using the “PEAK HOLD” test mode to get peak value, if the user wishes to clear off such Gauss value, and to let the window displays “000”, just press the “RESET” pushbutton, and the display value will become zero.

NOTE There is a “2P Jack” at the rear panel of Model-138A, this jack is used to connect with the “Foot Pedal” provided by Sunlight, its function is exactly the same as the “RESET” , by stepping the foot pedal once, it is the same as pressing the ”RESET’ pushbutton.

8. 1/1 x 1 (One time testing) or 1/4 x 4 (Four times averaging testing) selecting pushbutton:

If the pushbutton is at press out mode, it belongs to “ One time testing ”, if at press in mode, it belongs to “Four times averaging testing”, user may choose his required one, but whether at “One time testing” or “Four times averaging testing”, Peak Hold “Pushbutton 6” must be in press in position, so that user can perform effective testing. When choosing the “four times averaging testing” function, its tested Gauss value will only be 1/4 of the Gauss value tested under “1/1 x 1 one time testing” mode, also, it must be used alternately with “Storage Pushbutton 9”, in order to perform the “Auto-Accumulating and Auto-Averaging” function. Please refer to the

following testing steps:

(a) Press in both the 〝 PEAK HOLD 〞 and the 〝 1/4 x 4 Four times averaging testing" pushbuttons.

(b) Press once the "RESET" pushbutton, to let the window display "000".

(c) To perform first time (point) testing, press once the "Storage' pushbutton after testing. The displayed Gauss value is the 1/4 Gauss value of the first time (point) testing.

(d) To perform the second time (point) testing, press once the "Storage" pushbutton after testing, the displayed value is the 1/4 Gauss value of the first time (point) testing + 1/4 Gauss value of the second time (point) testing.

(e) To perform the third time (point) testing, press once the "Storage" pushbutton after testing, the displayed value is the 1/4 Gauss value of the first time (point) testing + 1/4 Gauss value of the second time (point) testing + 1/4 Gauss value of the third time (point) testing.

(f) To perform the fourth time (point) testing, press the "Storage" pushbutton after testing. The displayed value is the average Gauss value of the four times (point) testing. User don't have to use the calculator, and can easily and quickly get the average value of the four times (point) testing. To start a new testing, user has to press once "RESET" pushbutton.

III、 Usage and cautions

Model-138A has the following three kinds of test modes: (1) NORMAL ; (2) PEAK HOLD (which is 1/1 x one time testing) ; (3)1/4 x 4 four times testing. Detail description as follows:

1. NORMAL :

Let pushbutton be at press out position, the displayed value is the Gauss value of the tested point. The Gauss value will vary from the changing of the testing point or the density of flux.

2. PEAK HOLD (1/1 x 1，one time testing) :

Press in pushbutton 6, and press once "RESET" pushbutton, to let the displayed be at "000", then, user can perform testing. The tested value only stops at the highest

flux density value and held it, unless a higher flux density value is tested, such tested highest flux density value will remain unchanged, although user has removed the probe away from the magnetic field, the tested peak value will not be changed. To start a new testing, user must press “RESET” pushbutton.

3. 1/4 x 4 four times testing:

For testing the uneven magnetic field, we usually used the “Averaging” method, which is by testing the flux density of some testing points, add the results and get the average, in order to get a more precise value. Especially for the flux density in the gap of loudspeaker、headphone、microphone magnet , for the same magnet , some gap is wider, its flux density becomes smaller; while some gap is narrower, its flux density becomes larger, if using the averaging method, the tested result is precise and objective. Before using, user must first press in pushbuttons (6) and (8), and press once “RESET” pushbutton. For detail usage and steps, please refer to item 8 of the previous page.

Notes

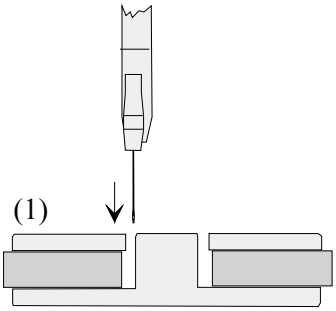
1. The “Sensor Chip” embedded at the tip of the probe is the most delicate part of the probe, please take extra careful while using it , be sure to pull back the protector right after using, to ensure good protection of the “Sensor Chip”.

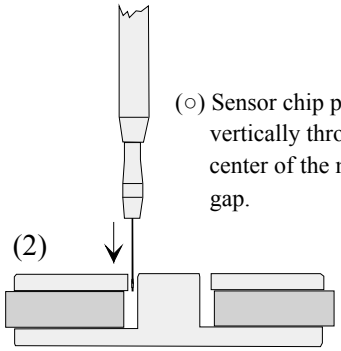
2. The sensor chip must always keep vertical to the magnetic field, to ensure that the “Sensor Chip” and the flux are vertical to each other, otherwise, the reading value will not be accurate. Particularly, when the magnet gap is too large, user might insert the probe non vertically without notice. User please refer to the following page (page 14) on the correct and wrong usage of the probe.

3. When testing the Gauss value in the gap, the “Sensor Chip” must pass vertically to the center of the “Magnetic Gap”，never insert the “Sensor Chip” near the yoke or let the “Sensor Chip” touch the “brink” of the “T” magnet, as long as the user is sure that the “Sensor Chip” have passed through the “ Crosscut section of the yoke ”, then, he may pull back slowly the “Sensor Chip”, never let the “Sensor Chip” touch the bottom of the “T” magnet, and damaging the “Sensor Chip”. Please refer to the following page (page 14) on the correct and wrong usage of the probe.

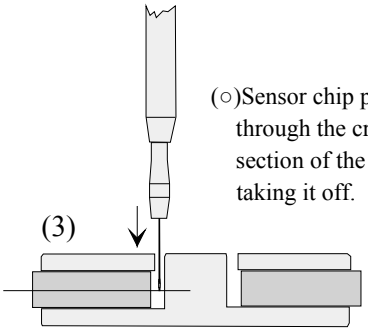
4. The “Sensor Chip” of the probe differentiates with the polarity, when testing the magnetic field, if Model-138A sounds ”Beep”, It means that the polarity is in reverse position, and its tested value is inaccurate, user must turn the probe in 180°(counterclockwise) , before re-start the testing.

(○) Correct usage and steps

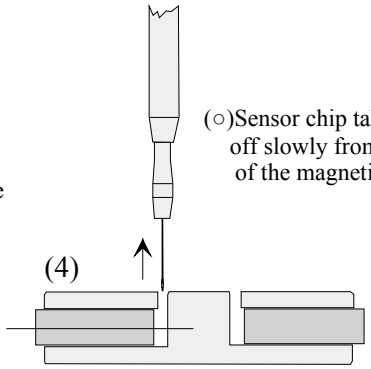




(○) Sensor chip passed vertically through the center of the magnetic gap.

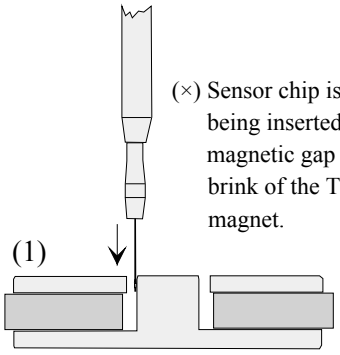


(○)Sensor chip passed through the crosscut section of the yoke before taking it off.

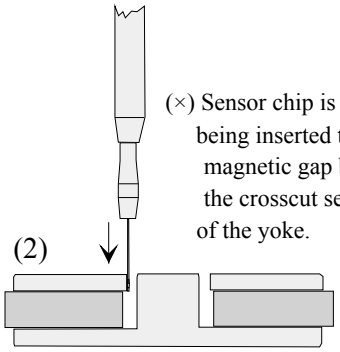


(○)Sensor chip taking off slowly from the center of the magnetic gap.

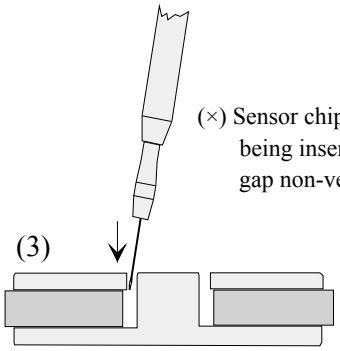
(×) Wrong usage



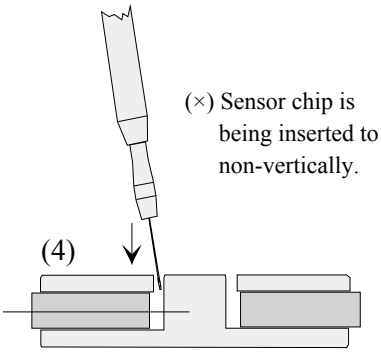
(×) Sensor chip is being inserted to the magnetic gap by the brink of the T magnet.



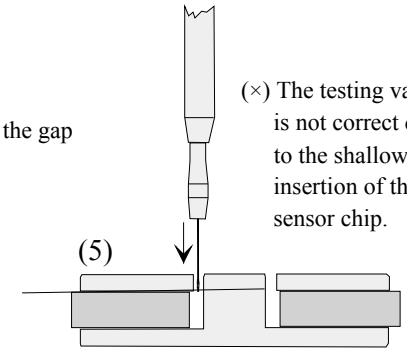
(×) Sensor chip is being inserted to the magnetic gap by the crosscut section of the yoke.



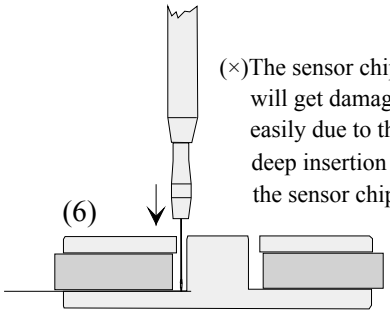
(×) Sensor chip is being inserted to gap non-vertically.



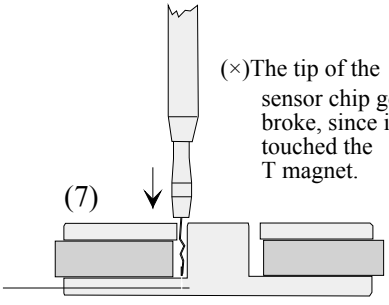
(×) Sensor chip is being inserted to the gap non-vertically.



(×) The testing value is not correct due to the shallow insertion of the sensor chip.



(×)The sensor chip will get damage easily due to the deep insertion of the sensor chip.



(×)The tip of the sensor chip got broke, since it touched the T magnet.

IV、 Importance Statement

**** Importance Statement · Please read carefully ****

The Probe of the Gauss Meter, its sensor chip embedded at the tip of the probe, is very tiny and delicate, it can get fracture easily and can't be repaired due to the improper handling of a person , the probe can revert to its normal function only after replacing a new sensor chip, as the sensor chip is quite costly, we, Sunlight hereby strictly announced: 『For the Gauss Meter sold by Sunlight, Sunlight is responsible for one year warranty free post service only to the main frame Gauss Meter, and not including the Probe』 After the date when the Probe have been delivered and accepted by the user, should due to other factors, causing the defective of the Probe, and such probe is still purchased within one year period, Sunlight will still have to charge the cost for repair, please pardon us for this rule, hopefully, please instruct the user to take extra careful while using the probe. Thanks for your kind cooperation !

V、 Specifications

1. Digital Display: 3 1/2 digits, Resolution: 1 gauss.
2. Measuring Range: 0～20.0K gauss, autoranging.

   Two ranges: 0～2.0K, 2.0K～20.0K gauss.
3. Accuracy (probe excluded):

   Normal : ±(0.1% Rdg.+ 0.05% FS)

   Peak hold : ±(0.2% Rdg.+ 0.1% FS)

   (1/4) x 4 : ±(0.3% Rdg.+ 0.1% FS)
4. Peak hold decay < -0.05% /sec.
5. Accuracy (probe included) :

   At 10K gauss : ±1.7%

   0～15K gauss : ±(2% Rdg.+ 0.1% FS)

   15～20K gauss : ±2.5%
6. Dim. : 14 (L) x 22.5 (H) x 23 (D) cm.
7. Net Weight : 2.8 KGS.

VI、 Calibration Procedure

(A) To make calibration, user must prepare by himself a standard magnet (5.000K Gauss standard magnet is recommended).

(B) Connect the probe to the socket at 138A Gauss Meter, then power on 138A; let the pushbutton stay at “Normal” position.

(C) Insert carefully and steadily the sensor chip of the probe to the loop of the standard magnet, if the value displayed on the Model-138A display window is within the tolerable range:+/_2% Reading+0.1% FS.; then, Model-138A is qualified that does not need any calibration..

(D) Further calibration shall be done only if the displayed value exceeded the tolerable range, please refer to step (E):

(E) Unscrew carefully the two screws at the connector of the probe (If such connector is protected with a transparent membrane, must tear off first such transparent membrane), then move outward the connector until the potentiometer inside the connector appeared, then, adjust the potentiometer to let the reading value at the display window be equal to the value of the standard magnet, the calibration is now completed, remember to revert the connector to its original position and screw tightly the two screws.