

G O T T L I E B



INVENTIONS, INC.

***DG-1 Digital Geometer
Owner's Guide***



Version 2.0

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Thank you for purchasing the DG-1 Digital Geometer from Gottlieb Inventions, Inc. The DG-1 is a state-of-the-art land survey device, and we are confident that you will be pleased with its performance, accuracy, and time-saving benefits. Gottlieb Inventions, Inc. builds its rugged, industrial-grade products to handle heavy demands. With proper care, your new DG-1 will provide you years of great service.

This Owner's Guide is provided to help you learn about the features and capabilities of your DG-1. In order to get the most out of your DG-1, we suggest you read the entire manual before operating the device.

DG-1 Features

- Measures AREA of a walked perimeter and displays results in square-feet, square-yards, or square-meters
- Measures distance and displays results in feet, yards, or meters
- Simple selection of and conversion between measurement units
- Unique "Averaging" feature to increase the accuracy of area measurements
- Quick calibration procedure to ensure the accuracy of area measurements
- Large buttons and a user-friendly, menu-driven control system
- Large, easy-to-read digital display
- Ergonomic and compact – adjustable height
- Durable construction
- **Made in U.S.A.**

Installing the Battery

Insert a new 9-Volt battery (included) into the battery compartment, located on the bottom side of the display box. An alkaline battery is required.

The battery should be replaced when:

- The display looks weak, dim, or erratic
- The measurement results are unreasonable or vary dramatically over the same area
- The *BATTERY LOW PLEASE REPLACE* message flashes on the display

Tip: It is recommended that a spare, fresh battery be kept on-hand when measurements are being performed.

Adjusting the Height

You may easily adjust the height of your DG-1, which makes the unit adjustable for different users, as well as more convenient to store and transport. To save packaging space, the DG-1 ships in a fully collapsed position. Before taking your first measurement, you will probably need to adjust the height of your DG-1:

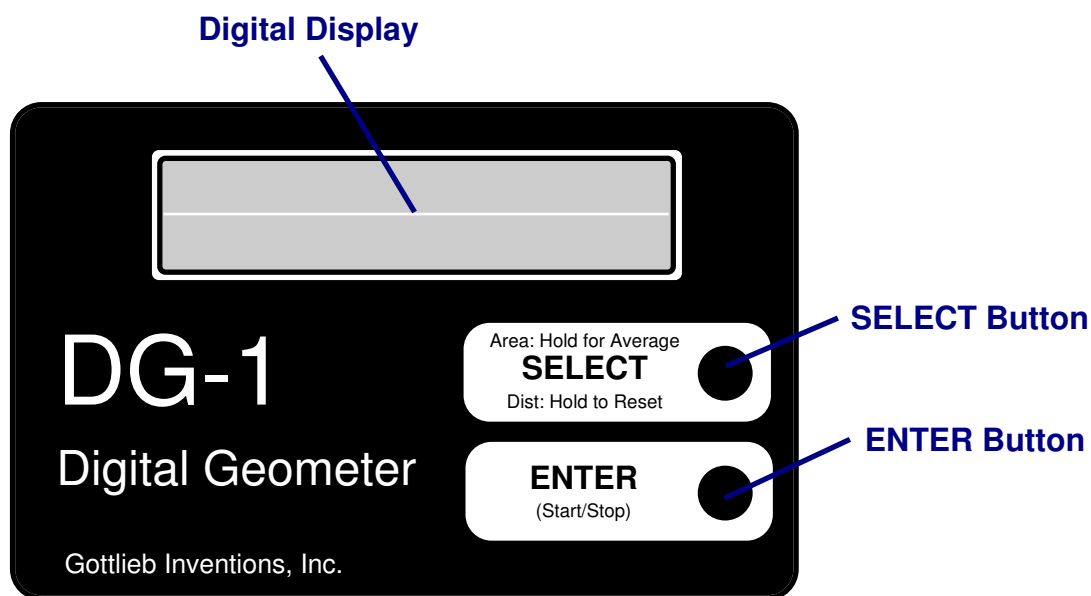
- Loosen the locking mechanism located at the junction of the inner and outer tubes of the shaft between the wheel and display box. Twist the locking mechanism until the inner tube slides freely.
- Adjust the DG-1 to the desired height and tighten the locking mechanism. The handle should be at a comfortable walking height while the display box is level with the ground.

Turning your DG-1 On and Off

The DG-1's power switch is located on the front of the display box. Push the "1" on the rocker switch to turn the device on. When you are finished using your DG-1, push the "0" to turn the device off.

Digital Display

The DG-1 has a two-line, 32 character Liquid Crystal Display (LCD). The display allows the user to interact with the menu-driven software system.



SELECT Button

The SELECT button is used to change the mode of operation and information displayed. SELECT is used to toggle between area and distance measurement modes. When tapped, SELECT changes between measurement units (e.g. feet to meters). Pressing and holding SELECT for at least two seconds is used to average values when the DG-1 is in area measurement mode, or to reset the counter in distance measurement mode.

ENTER Button

The ENTER button is used to execute functions, including starting and stopping measurements. ENTER is used to choose the mode selected by the SELECT button.

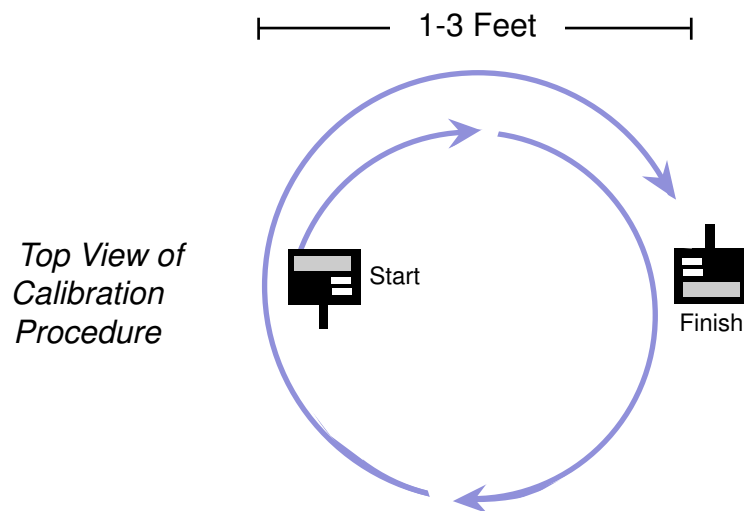
When your DG-1 is powered-on, the words *SELECT FUNCTION: MEASURE AREA* will appear on the display. After pressing ENTER, the display will change to *SEL. RESOLUTION: HIGH HIGH*. Press SELECT to choose between HIGH or LOW resolution. Press ENTER again.

Before taking your first measurement, follow the Digital Display commands to calibrate and test the DG-1, using the procedures outlined in the following sections.

Calibrating the DG-1

In order to ensure accuracy when measuring area, the DG-1 requires a brief calibration procedure prior to use. The device should be calibrated every time it is powered-on. The procedure is simple:

1. Place the device in the approximate center of the area to be measured, making sure the display box is level, not tilted.
2. Press SELECT when the words *SELECT: CALIBRATE OR PRESS ENTER* appear on the Digital Display. The display box will read *ROTATE 1.5 TURNS THEN PUSH ENTER*
3. Wheel the DG-1 in a small-diameter circle 1½ times (540 degrees), making sure the display box remains level. You should finish facing the opposite direction from which you started. A diameter between 1 and 3 feet is recommended, and the finishing point need not be exactly 540 degrees. It is very important however that the display box remains as level as possible during calibration.



4. Press ENTER again to complete the calibration.

Calibration is now complete. Your DG-1 will remain calibrated as long as its power is on.

If the unit has just been turned on, first calibrate and test the DG-1 using the procedures outlined in the section above. Calibration is only required once at power-up.

To Measure Area

1. Press ENTER when the Digital Display reads: *SELECT FUNCTION; MEASURE AREA*
2. The Digital Display message will change to *SEL. RESOLUTION; HIGH* Use the SELECT button to change to the desired resolution. LOW resolution should only be used for areas larger than 3 acres. Press ENTER to choose the resolution.
3. *SELECT; CALIBRATE OR PRESS ENTER* will appear on the Digital Display. Press ENTER if you have already calibrated the DG-1 since turning it on. If you have not calibrated the DG-1, please refer to the previous section entitled “Calibrating the DG-1”.
4. *PLACE AT START THEN PUSH ENTER* will appear on the display. Clearly mark your startpoint. Set the DG-1 at the startpoint, facing the direction that you want to start moving, then press ENTER.
5. The words *START MEAS. AREA* now appear on the display. Slowly roll the device around the perimeter of the area that you are measuring. Keep the upper box as level to the ground as possible.
6. When you return to your startpoint, press ENTER again to stop the measurement. The DG-1 will calculate and display the area.
7. To change the measurement units displayed, tap the SELECT button.

Helpful Tips for Making an Area Measurement

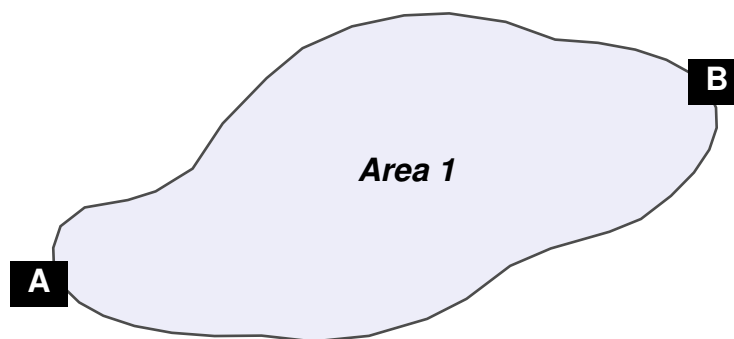
1. It is highly recommended that a flag or other marker be used at the startpoint. The DG-1 employs sophisticated data processing techniques that rely on the area measurement ending at exactly same point at which it was started.
2. Slow down slightly when turning. The DG-1 needs time to collect more direction data when you are changing directions. When walking a straight path, a normal pace is fine.
3. Make sure you press the ENTER before lifting the device off the ground at the end of a measurement, because the wheel may spin when the device is lifted.
4. Do not roll the device backwards. If you accidentally overshoot your startpoint, reset the device and re-measure.

Using the Averaging Feature

For optimal accuracy, multiple measurements are recommended. Best results are observed when different startpoints are chosen. When taking multiple measurements, always take clockwise and counterclockwise measurements from each startpoint.

After each measurement, press and hold the SELECT button to add the reading to the average. The display will read *LAST VALUE ADDED TO AVERAGE*. Don't forget to press and hold SELECT after your first measurement, otherwise that value will not be included in the average. Continue to take measurements until you notice the average changing very little with each additional measurement. Typically, no more than 4 readings are necessary.

Gottlieb Inventions recommends taking readings from convenient locations on opposite ends of a target area.



For example, to accurately measure Area 1, average the following 4 perimeter measurements:

1. Clockwise starting and ending at point "A".
2. Counter-clockwise starting and ending at point "A".
3. Clockwise starting and ending at point "B".
4. Counter-clockwise starting and ending at point "B".

If the area is square or rectangular, take measurements from opposite corners. Remember to always take both clockwise and counter-clockwise measurements from each startpoint.

Note: In some instances, counter-clockwise area measurements may vary from clockwise measurements. This is either due to a calibration error or nearby magnetic distortions. If your first counter-clockwise measurement shows more than 25% variance from your first clockwise measurement, you may try recalibrating the unit. If a significant variance still exists, it will be corrected by the averaging algorithm. Your final, averaged area value will still be accurate.

When your DG-1 is powered-on, the words *SELECT FUNCTION: MEASURE AREA* will appear on the display. Press SELECT to change the DG-1 into distance measurement mode. The words *SELECT FUNCTION: MEASURE DIST.* will now appear. Press ENTER to begin using the DG-1's distance measurement feature. Calibration is not required in order to make distance measurements.

Making a Distance Measurement

1. Set the DG-1 at the starting point and face the device in the direction that you want to start moving.
2. Press ENTER to start the measurement.
3. Roll the device from the starting point to the stopping point. The DG-1 will update the distance on the digital display while you are making the measurement.
4. When you reach the stopping point, press ENTER again to stop the measurement. (Rolling the device backwards will not "subtract" distance. If you overshoot your endpoint, reset the device and re-measure.)
5. The DG-1 will display the measured distance.
6. Measurement units may be changed at any time by tapping SELECT.
7. To reset the distance counter, press and hold SELECT.

Why do my measured values vary so drastically between clockwise and counter-clockwise measurements?

Variances between clockwise and counter-clockwise measurements are usually due to either poor calibration or nearby magnetic distortions. If there is more than a 20% difference between the clockwise and counter-clockwise values ensure your unit is properly calibrated. If large variances still exist, any errors will be eliminated by the averaging routine. Just make sure that an equal number of clockwise and counter-clockwise measurements are taken for the area.

How long should I expect my battery to last?

Battery life depends on a variety of factors, but a new 9V alkaline battery should provide several hours of use. It is highly recommended that a spare battery be kept on-hand when performing measurements. Measurement values and averages are not saved in the device when a battery dies or is replaced.

For larger areas, can I attach the DG-1 to a vehicle and take area or distance measurements that way?

The DG-1 is not designed to be operated from a vehicle. The DG-1 will not accurately report area if it is rolled faster than a normal walking pace. Additionally, the device could easily be damaged if accidentally dropped or run over.

Gottlieb Inventions has taken measures to ensure that the DG-1 is as durable as possible. However, the DG-1 does contain sensitive electronic components.

- Do not immerse the DG-1 in water. It is not waterproof or water-resistant.
- Do not expose the DG-1 to extreme heat sources. Avoid leaving it in your automobile.
- Avoid subjecting the DG-1 to excessive impact or vibration.
- Do not use any chemical cleaners on the DG-1. Remove dirt with a rag dampened with water.

This product, except the battery, is warranted by Gottlieb Inventions, Inc., to the original purchaser to be free from defects in material and workmanship under normal use for a period of ninety (90) days from the date of purchase. During the warranty period, and upon proof of purchase, the device will be repaired or replaced (with the same or similar model) by Gottlieb Inventions, Inc., without charge for either parts or labor.

The purchaser shall bear all shipping, packing, and insurance costs to the repair center – C.O.D. returns will not be accepted. Gottlieb Inventions, Inc. will bear the cost of shipping a repaired unit back to the purchaser. The address of the repair center is listed in the “Contacting Gottlieb Inventions” section of this Owner’s Guide.

THIS WARRANTY WILL NOT APPLY TO THIS PRODUCT IF IT HAS BEEN MISUSED, ABUSED OR ALTERED. WITHOUT LIMITING THE FOREGOING, LEAKAGE OF BATTERY, BENDING OR DROPPING THE UNIT, IMMERSION IN WATER, OR VISIBLE CRACKING OF THE LCD OR CASING ARE PRESUMED TO BE DEFECTS RESULTING FROM MISUSE OR ABUSE.

Neither this warranty nor any other warranty express or implied, including implied warranties of merchantability, shall extend beyond the warranty period. No responsibility is assumed for any incidental or consequential damages, including but without limiting the same, to the mathematical accuracy of the product, keystroke procedures, or example material offered. The procedures and pre-programmed algorithms are sold on an “as is” basis. The entire risk as to their quality and performance is with the user.

Some states do not allow limitations on how long an implied warranty lasts and some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights which vary from state to state and country to country.

Contacting Gottlieb Inventions

Gottlieb Inventions is committed to providing our customers with the best possible level of service and technical support.

For warranty claims, or if you have any problems with or questions about your DG-1, please contact:

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