

LEAKALYZER™

Water Loss Sensor

INSTRUCTION MANUAL

#LZ400



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Your Partner in Swimming Pool Leak Detection

Product Purpose:

The Leakalyzer measures water level changes to the 10,000th of an inch. This sensitivity enables rapid identification of water loss that would otherwise only be noticeable over much longer observation periods.

Features:

- Easy to use controls
- LCD readout
- Graph screen that records water loss over time of test
- Detail screen that shows calculated inches and gallons of loss per day or hour
- Adjustable software filter “smoothes” recorded data
- Enter estimate of evaporation for comparison
- Save up to 10 tests for display on handheld unit or for download to your computer for further analysis and report creation using the Leakalyzer Reporter Program.

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Components:

Handheld Analyzer

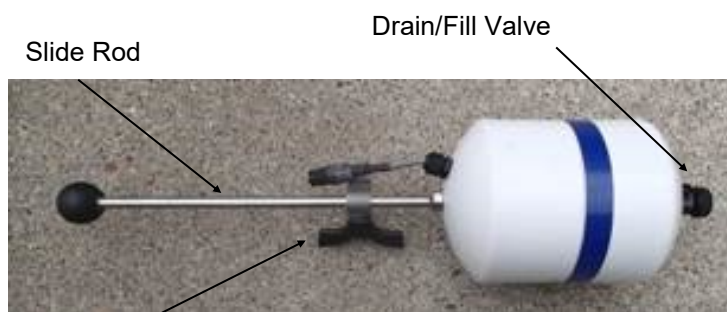


Base Plate



Hook

Sensor Capsule



Slide Rod

Drain/Fill Valve

Slide Clamp

Sensor Capsule Setup

1. Place the **Base Plate** at edge of pool or skimmer with hook extending over the water.
2. Assure that insert for the the drain/fill valve on the bottom of the Sensor Capsule is not screwed in.
3. Hold the **Sensor Capsule** by knob with one hand, with the other hand position the **slide clamp** into **hook** on the **Base Plate**. Slide capsule down so that water level is within blue tape range, then tighten clamp.
4. Reposition **Base Plate** and **Sensor Capsule** so that **slide rod** is as close to vertical as possible and so that the side of the **Capsule** contacts the pool wall.

Optional step for wavy conditions:

After the capsule has had a chance to fill, the Drain/Fill Valve insert can be installed to limit water movement in and out of the sensor. This feature can help to “smooth” the line on the graph. When this valve is completely screwed in it will still allow a limited flow of water.

NOTE:

If possible choose or create a location for the sensor that will remain in the shade for the duration of the test. Changes to the temperature of the Sensor Capsule and the Base Plate during the test can affect results. This can especially be a problem on partly cloudy days when the sensor is going in and out of the sun.

Handheld Analyzer Set Up:

1. Connect cable from Handheld Analyzer to the cable at the top of the Sensor Capsule.
2. Push **ON**.
3. **Press any key** to get to the Main Menu.
4. Use **▲** or **▼** to select "Set Up Test," press **ENTER** to get to the Setup Menu.
5. Use **▲** or **▼** to select "Surface Area", "Evaporation Estimate", or "Filter Strength" then press **ENTER** to see value options.
6. Use **▲** or **▼** to choose appropriate value, press **ENTER** to set value.

Surface area values are in square feet*. This number will be used to calculate gallons of water lost.

Evaporation values are in inches* per 24 hours. This number will be used as a reference line on the graph screen. See **page 10** for more information on estimating the evaporation value.

Filter Strength: A higher value will reduce "jags" in the plotted line but will also slow response time. Use a stronger filter for windy days, a weaker filter on calm days or when more responsiveness is desired.

7. Return to the main menu by selecting "Main Menu" and pressing **ENTER**.
8. Confirm that Sensor is properly positioned as indicated by a "READY" indicator in the top left corner of the screen.
 - "LOW" indicates that sensor should be raised, "HIGH" indicates that sensor should be lowered.
9. From the Main Menu select "Start Test" and press **ENTER**.

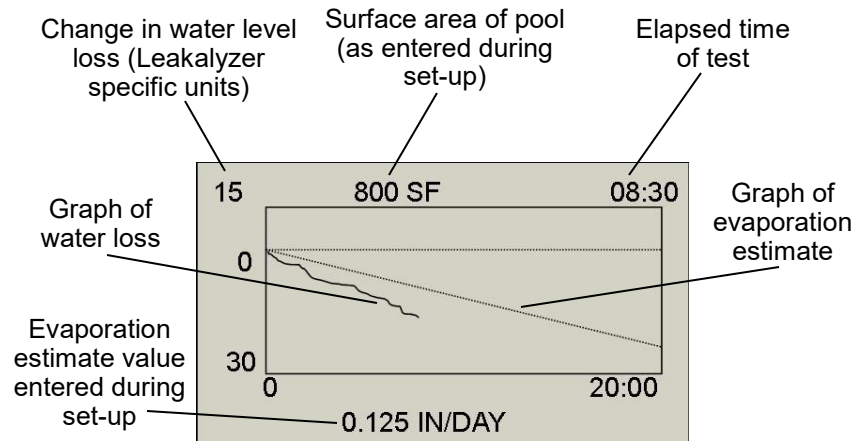
* Square meters, centimeters and liters for metric version.

Initialization Period:

Depending on the Filter Strength selected, The Leakalyzer will spend several seconds (longer for a stronger filter) establishing a stable "zero" value. During this time the screen will indicate that the unit is "Initializing . . ." and provide a countdown of the seconds left for this process.

Graph Screen– During Test:

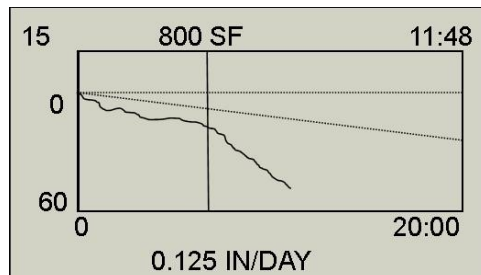
Once Initialization is complete the screen will automatically change to the Graph Display and begin plotting the water loss in the pool.



Vertical scale of graph automatically adjusts based on measured water loss. To adjust this scale manually, press ▲ or ▼. There are four graph scales that range from 40 units (-10 to 30) to 320 units (-80 to 240).

“Marking” the Graph

You can “Mark” the graph while it is running to identify a certain event. For example, you may want to mark when the pump was turned off in order to compare the rate of water loss to that when it was running. To mark the graph: press both the ▲ and the ▼ at the same time. A vertical line will appear on the graph. Additional analysis capabilities are available on the Leakalyzer Reporter computer program for these marked sections.



Same test as above after a mark was made at 8:30 minutes. Note change in slope since mark and change in scale of graph from previous diagram.

Detail Screen

The Detail Screen shows the data gathered from the test in a numerical form. During the test you can change to Detail Display (and back to Graph Display) by pressing **DETAIL**.

Calculations of water loss rate in inches and gallons

15	800 SF	04:15
	IN/HR	GAL/HR
TOTAL	0.020	9.92
EVAP	0.010	5.19
LEAK	0.010	4.73

Data from current test

Calculated rate of total water loss

Calculated rate of water loss due to est. evaporation

Calculated rate of water loss due to a leak

Detail display shows calculated water loss in inches or gallons. Press ▲ arrow to view this information as per day and the ▼ arrow to view information per hour.

NOTE: DETAIL SCREEN IS AN ESTIMATE ONLY

Keep in mind that the inches and gallons of water loss that are displayed on the "Detail Screen" are calculations from input data and the average rate of water loss determined from the start of the test to the end of the test. The numbers calculated are only as good as the data that contributes to them. Use the detail screen numbers as a guide as you consider what is "actually" happening. These detail numbers will be more accurate the longer the test is run under stable conditions.

Stopping Test

Test will automatically stop after 2 hours, but may also be stopped before it has reached its full duration by pressing the **ENTER** key.

DETAIL and **▲** or **▼** buttons can still be used to access analysis of information of this finished test.

Once a test is stopped you will be given an option to Return to Test (without stopping), Re-Start Test, Quit & Save, or Quit & Discard. Use **▲** or **▼** to select and **ENTER** to choose desired action.

Re-Starting Test

If you want to re-start the current test without changing the variables choose the “Re-Start” option from this list shown after a test is stopped. The time and current water level value will re-set to 0 without requiring the initialization period.

Saving Test

It is possible to save up to 10 tests on the Leakalyzer at any one time. This feature allows you to do several tests at the same pool and refer back to earlier tests.

To save a test select “Quit & Save” after stopping the test. Use **▲** or **▼** to select which slot to save the test into and press **ENTER** to save. Slots without previously saved data are indicated as “(empty).” Saving into non-empty slots will overwrite any previously saved test at this slot. Saved tests are stored in memory even when unit is turned off.

Saved tests will automatically be time and date stamped.

All memory can be cleared by Selecting “Clear Memory” from the Main Menu.

Viewing Saved Tests on Handheld Unit

From the Main Menu choose “Review Saved Tests.” Use ▲ or ▼ then **ENTER** to select which saved test to view.

Use **DETAIL** and ▲ or ▼ keys to toggle between desired information in Graph and Detail views as you would during test.

Press **ENTER** to leave.

Using the Leakalyzer Reporter App

The Leakalyzer Reporter App allows saved tests to be downloaded via Bluetooth connection to your Android or iOS device for further editing, analysis, and report generation. The feature requires that you have a Bluetooth enabled Leakalyzer Handheld Unit and download the Leakalyzer Reporter App from either the App Store (Apple) or Google Play Store (Android). To check if your handheld device has the Bluetooth feature enabled, look for the phrase “Bluetooth Ready” to appear on the startup screen once the Handheld Unit has been turned on.

App Features

- Organize tests by job
- Calculate and add accurate evaporation estimates to your graphs
- Add additional information about pool conditions during the test (ie. pump on or off, light covered, lines plugged, etc.)
- “Snip” off the end or beginning of a test to include only pertinent data that matches the identified water loss trend
- Export a series of graphs as a PDF report that can be emailed to your customer
- Save image files of individual tests to your device’s images folder for inclusion in other types of reports*



**These images integrate seamlessly into Anderson’s Leak Logic Job Data Collection & Reporting App. For more information about how this software can take your leak detection service to the next level with guided data collection on the job and professional reports visit leaktools.com/leaklogic.*

Reporter App Instructions

1. Press the “+” icon in the top right corner to add a new “Job”.
2. Enter Job name, pool size, and estimated evaporation rate for the pool.
 - Estimated evaporation rate can be entered manually or calculated using current weather data for your zip code within the app (requires cell service).
3. Once the Job has been entered you can upload tests from your Leakalyzer Handheld. The Handheld must be turned on and show “Bluetooth Ready” on the startup screen in order to send data.
4. On the app you will be shown a list of saved tests from your Handheld Device that are available for upload. Select the ones you want included in the current Job and press “Choose”.
5. You will see the graph of each of these tests on the “Test List” page. Further editing is available by selecting a test.
6. Once tests are edited you can export the data by selecting the “Build Reports” button at the bottom of the test list page. Select which tests to include in your export and choose one of the following options:
 - **Generate Raw Data** to send a .txt file via email to your computer for use with the desktop reporter program.
 - **Export To Library** to save a .jpg graphic of the test to your phone’s image library for inclusion in reports.
 - **Generate Consumer Report** to create and email a basic PDF report that includes additional job data.

Leakalyzer Calibration

Calibration is usually only necessary when pairing a new Sensor Capsule with a Handheld. You may also need to recalibrate if you are not getting a proper “READY” reading when the water level is in the blue stripe, or if the plotted graph line is regularly going off the graph screen even after restarting a test.

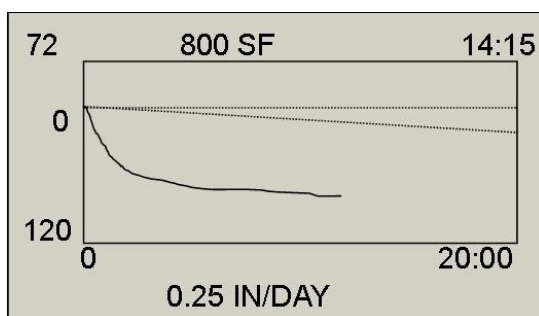
1. Connect the Handheld unit to the Sensor Capsule and turn it on.
2. Press both of the arrow keys at the same time. This should get you to a screen titled SENSOR CALIBRATION.
3. While holding the Sensor Capsule by the black knob (as it would normally be when hanging in a pool), use the arrow keys to move the * to indicate that you accept the “HANGING SENSOR” and press the ENTER button.
4. The screen will automatically switch to one that asks you to accept or cancel the “INVERTED SENSOR”.
5. Now turn the Sensor Capsule upside down so that the opening at the base of the capsule is up and the black knob is down. Make sure that all water is out of the capsule before doing this.
6. Move the * to indicate that you Accept the INVERTED SENSOR and press the ENTER button.
7. With the Sensor Capsule still in the inverted position, the upper right corner of the screen should now indicate “READY”.
8. With the Sensor Capsule in normal hanging position the upper right corner of the screen should indicate “HIGH”.
 - If the indicator text does not change when the capsule is moved from inverted to hanging positions, repeat the process again. If you continue having problems please contact Anderson Manufacturing.
9. To finalize the calibration procedure, turn the Handheld unit off before re-starting for use.

Tips and Suggestions

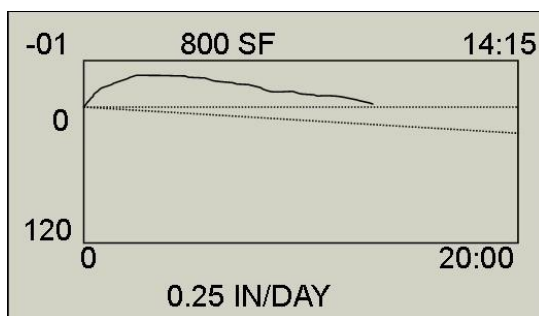
Temperature Variation:

As the base unit and sensor change temperature there is some expansion and contraction of materials that may affect the results of your test. Most of this change will happen when the unit is first set up at a test location. We recommend that you set the sensor up first and wait 10 minutes before starting your test.

Tests that are affected by temperature change will normally be indicated by a curved line. Good tests that are measuring consistent water loss (due to a leak) will display a line with a constant slope.



This graph is from a test where the sensor was cooling for the first 2-3 minutes. The straight line slope at the end of the test is accurate but "Detail" information on this test will be overstated.



This graph is from a test where the sensor was warming for the first 2-3 minutes. The straight line slope at the end of the test is accurate but "Detail" information on this test will be understated.

If your test shows a curve consider that the straight line slope is actually indicative of water loss. Keep in mind that any test showing a curve will not display accurate readings in the "Detail" section. If a curve is shown on the graph we suggest that you 'Re-Start' the current test to enable more accurate Detail Screen calculations.

Evaporation:

Evaporation is not constant. The Leakalyzer is so sensitive that it will measure changes in water level due to evaporation. Although evaporation is often discussed in terms of a rate per 24 hour period, the evaporation rate at any point in time may be very different from this 24 hour average. Evaporation is dependent on a variety of environmental conditions that change at different rates:

Variable	Period of Change	What Increases Evaporation	Significance
Air Temp	Within day	Lower temp	Moderate
Water Temp	Multiple days	Higher temp	Moderate
Humidity	Within day	Low humidity	Low
Water Movement	Dependent on pump operation	More movement	Very Low (unless water fall or fountain)
Wind	Within minutes	More wind	High

As you use the Leakalyzer you will become more aware of these conditions and be able to sense and predict what evaporation “should” be under certain conditions. We would also suggest that you begin regularly checking the “Evaporation Calculator” which is available at www.leaktools.com. This tool will provide a good indication of evaporation rate to be expected based upon the seasonal and daily weather conditions.

You can also do a test with the Leakalyzer sensor in a bucket of water placed in the pool to establish an evaporation rate that can then be entered into the Leakalyzer at the start of the pool test.

Keep in mind that the Detail Screen provides estimated calculations of hourly and daily water loss based on the average rate of water loss during the test. In other words, the daily water loss calculation shows what the water loss would be if the current rate was experienced for 24 hours. Since evaporation rates are usually lower at night (when there is less wind), the actual water loss over a 24 hour period may be much less than what is displayed on the screen.

Wind Gusts:

While wind will effect evaporation, gusting winds will also affect your test by momentarily changing the air pressure pushing down on the pool water. On gusty days it is strongly suggested that a full 20 minute test be used. This will allow the Leakalyzer to “level off” the effect of these gusts and provide a more constant graph.

Pool Covers:

For best results, test with the pool cover on. By testing with the cover on the pool, water loss due to evaporation can be eliminated. Use the safety cover, solar cover, or consider using a thin plastic painters drop cloth which can be floated on the pool surface.

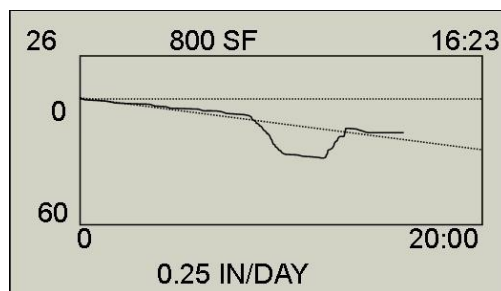
Understanding “Filtering” and making the graph smooth:

The function of the Leakalyzer is to take actual data (water surface measurements at different times) and present it in a form that allows the user to make decisions about long term trends. Specifically, we need to get a sense of what the constant slope of the line plotting water level changes over time is.

You may find different levels of filtering are beneficial for different purposes. For instance when you want to see the effect of taking a bucket of water out of the pool, less filtering will enable a quicker indication of the water level change. When preparing a graph to show to a customer, higher filtering may be beneficial to more simply communicate water loss.

Checking Sensitivity:

To check or demonstrate sensitivity pull, a gallon of water out of the pool and then pour it back in while doing a test. This will help you visualize the actual water loss being recorded.



This graph shows the effect of pulling one gallon of water out of a 16' x 36' pool and then pouring it back in.

Leakalyzer Care:

When taking apart the Leakalyzer after a test, open the drain/fill valve to more quickly drain all water from the sensor capsule. Make sure to keep the capsule upright (knob up) until all water has been drained.

Holding the capsule by the black knob and swinging it gently will expel any remaining water and will help to completely dry the inside of the capsule.

Make sure Handheld Analyzer is kept in its own case to limit moisture exposure.

Allow Leakalyzer Capsule to completely dry before closing the case for an extended period of time. We recommend leaving the case open overnight after use.

Replace Batteries after 8-10 hours of continuous operation. **Low batteries may cause the unit to indicate more water loss than actual.**

Leakalyzer Slideshow + Case Studies

For more information about using your Leakalyzer and interpreting tests, please see the Leakalyzer 101 slideshow at www.leaktools.com/slide-shows.html.

For examples of how the Leakalyzer is used on real jobs, take a look at the case studies on the Anderson Manufacturing blog: www.leaktools.com/blog/category/case-studies/



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