

ALTIMASTER SERIES ALTIMETER

Owners Manual

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Alti-2
INCORPORATED
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Sport parachuting is a hazardous activity that can result in injury or death. An altimeter is a mechanical device and may malfunction, even when properly designed, built, assembled, maintained and used. Do not rely upon an altimeter for your safety. Your altimeter must only be considered as an aid when checking your altitude.

"The needle can stick during both ascent and descent – a visual cross reference with the ground should be used in combination with the altimeter": USPA Skydivers Information Manual 8-5.03.C.2.



ALTIMASTER OWNER'S MANUAL

Congratulations on purchasing an Altimaster Altimeter: the original skydiving altimeter, and still the world's best !

This owner's manual applies to the following Altimaster Altimeters:

- ❑ Altimaster II
- ❑ Classic Altimaster III
- ❑ Altimaster Galaxy
- ❑ Altimaster Stratosphere

Please take the time to read all sections of this manual before using your Altimaster Altimeter.

**WARNING! - FAILURE TO FOLLOW ALL
WARNINGS, INSTRUCTIONS, AND REQUIRED
PROCEDURES MAY RESULT IN SERIOUS
INJURY OR DEATH.**

DISCLAIMER

- ❑ Read and follow all warning labels, manuals, instructions, requirements, and recommendations on use of the altimeter.
- ❑ Use only Alti-2 Inc recommended compatible components.
- ❑ Replace or repair ANY defective, or deteriorated component parts.
- ❑ Check all altimeters and spare parts before each use.
- ❑ Never attempt to use equipment assembled by someone other than Alti-2 Inc, or an Alti-2 Inc approved service agent.
- ❑ Information supplied in this document does not substitute for a training course. You must be a licensed skydiver, or a student on a recognized skydiving course, to use Altimaster Altimeters

- Sport parachuting is a hazardous activity that can result in injury or death.
- An Altimeter is a mechanical device and may malfunction, even when properly designed, built, assembled, maintained and used. Failure to be aware of such malfunctions may result in serious injury or death.

THEORY OF OPERATION

Altmaster Altimeters do not measure altitude! The altimeter relies upon the relationship between air pressure and altitude (air pressure decreases as altitude increases, and vice versa), and the fact that this relationship does not change significantly during the time period taken to perform a normal skydive. The altimeter is a mechanical device that indicates changes in altitude by reacting to changes in air pressure. A sealed capsule changes volume as the outside air pressure changes, and moves a needle through a mechanism to indicate relative altitude.

It is the responsibility of the user to adjust the altimeter so that it will indicate altitudes that correspond with the above ground level (AGL) altitude above the intended landing area, and that the altimeter will read 0 (zero) on the ground at the intended landing area.

Capsule

The mechanism of the altimeter consists of an evacuated aneroid capsule and a mechanical movement to amplify the linear motion of the capsule to a rotational motion of the pointer.

The aneroid capsule consists of two diaphragms made of an alloy of copper and beryllium. The two diaphragms are welded together under high vacuum to produce a virtually airless capsule. Since the atmospheric pressure decreases with an increase in altitude and the pressure inside the capsule remains constant, the capsule expands with an increase in altitude. As the altitude decreases, the capsule will return to its normal state. The motion of the capsule's expansion and contraction is transferred to the mechanical movement to cause the pinion to rotate.

Since the capsule will expand and contract with changes in the barometric pressure, the altimeter is designed to allow the user to adjust the mechanism to the zero setting on the dial.

Mechanism

The mechanical movement transfers the linear motion of the capsule to a rotational motion of a pinion through a system of levers and gears. A pointer is attached to the pinion so the rotation of the pinion can be indicated.



USING YOUR ALTIMASTER

Equipment usage

DO NOT use this equipment unless you are on, or have passed an approved skydiving training course.

Alti-2 Inc. highly recommends at LEAST one of the following be used as a backup device for your altimeter:

- use more than one altimeter.
- use an audible altimeter.
- use an Automatic Activation Device.

Altimeter handling

An altimeter is a delicate instrument used for safety purposes. Handle the altimeter in a careful manner.

Warning Segments

The Altimaster Altimeters have red and yellow warning segments on the faceplate of the altimeter. These brightly colored warning segments should be used as additional indications of close proximity to the ground.

The warning segments are not intended to indicate exactly when to deploy your parachute. You must deploy your parachute at a safe altitude. This altitude may depend upon the type of skydive. For example, students, tandems, and sky surfers usually begin parachute deployment at higher altitudes than other skydives. Break-off and deployment altitudes should be agreed amongst all jumpers prior to starting the skydive.

Use other methods to confirm your altitude. Do not rely upon the altimeter and/or the warning segments as the only method for determining proximity to the ground.

Altitude Indication Limits

The standard Altimaster II Altimeter can measure altitude up to 17,000 ft. MSL (above Mean Sea Level). The altimeter will not read altitudes higher than 17,000 ft. MSL. The altimeter needle may not move once the altitude is over this limit. The needle will begin to move again once the altitude is lower than 17,000 ft. MSL.

Altimeter Adjustment

An altimeter is an AGL device sensing air pressure and needs to be adjusted to account for the following variable conditions:

- Barometric Pressure
- Drop Zone Altitude

Adjustment for Barometric Pressure

The capsule in the altimeter senses air pressure, therefore, an altimeter also needs to be adjusted to account for changes in barometric pressure.

Barometric pressure can change dramatically in a short amount of time.

WARNING! - Always ensure your altimeter is adjusted to zero to account for any changes in barometric pressure.

Drop Zone Altitude is different than airport altitude.

In some cases, particularly on demo jumps, the drop zone elevation may differ significantly from the elevation at the airport where you take off. In this case, a correction must be made when adjusting your altimeter.

If possible, travel to the drop zone shortly before the jump and set your Altimaster to zero; if not, follow this procedure to adjust your Altimaster:

1. Determine the altitude of the DZ and the airport using sectional maps or other means.
2. Calculate the altitude of the airport relative to the DZ by subtracting the DZ altitude from the airport altitude.
3. **At the airport**, set the altimeter to the altitude calculated above. If the number calculated above is a **negative** number, you should set your altimeter to a **negative** altitude.



EXAMPLE:

| | |
|----------------------------------|--------------|
| DZ elevation | 5,000 ft MSL |
| Airport elevation | 0 ft MSL |
| Airport elevation relative to DZ | -5,000 ft |

Alti-2 Inc strongly recommends that you plan to pull higher on any skydive where this method has been used to calibrate your altimeter as a safety precaution.

WARNING

If the DZ elevation is lower than the airport, the airport elevation relative to the DZ is always a positive number. If the airport elevation relative to the DZ is miscalculated to be a negative number, you are placing yourself in great danger. For example, if the DZ elevation is 500 ft below that of the airport, the altimeter should be set to +500 ft. *If by error, it is set to -500 ft instead, the altimeter will read 1000 ft lower than it should.*

Altimeter Adjustment Process

This adjustment is completed by moving the adjustment knob or bezel so that the needle points to the zero position before each use. Examine the instructions specific to your altimeter to complete this necessary adjustment.

Any adjustment during usage AFTER “zeroing” an altimeter can result in serious consequences. This could occur by many means including, but not limited to:

- upon/during exit of the aircraft
- contact with other skydivers in freefall.

WARNING

It May Not Be Possible To Determine If Your Altimeter Has Been Adjusted Without Your Knowledge During Freefall.



Altitude Determination - Considerations for Safety

Use other methods for determining your altitude

It is ***HIGHLY RECOMMENDED*** to ***ALWAYS USE OTHER METHODS*** in addition to an altimeter to determine the current situation, use common sense, and act appropriately- Some methods are listed below:

- Learn to visually judge the distance from the ground.
- Check your second altimeter.
- Listen for your audible altimeter.
- If other jumpers in your group pull, this may indicate a low altitude or other danger.

Altimeter accuracy during maneuvers

WARNING

Altimeters may give erroneous readings if you are tumbling or the altimeter is in a burble (wake), such as when sit flying or sky surfing. Chest mount altimeters are more vulnerable to this problem. If you are in doubt about how this limitation affects your skydiving, consult a licensed instructor.

DZ at high elevation

If your DZ is located at a high elevation, you may notice that the accuracy of your Altimaster decreases dramatically at higher altitudes. This occurs when you exceed the linear operating range of the unit which is a function of MSL altitude, not AGL. As an example, consider the following situation:

Altimaster altimeter with 0-17,000 ft MSL operating range

DZ elevation is 5,000 ft MSL

When your altitude exceeds 13,000 ft AGL (18,000 ft MSL) the accuracy of the altimeter may decrease rapidly. This is normal and will not cause damage to your Altimaster. This effect will also be evident when making high altitude jumps from any DZ.



Testing the altimeter

Proper use of an altimeter involves constant checking to ensure safety.

To ensure your safety, Alti-2 Inc. HIGHLY RECOMMENDS checking your altimeter using the following methods:

- ❑ Test your altimeter on the ground using an altitude test chamber.
- ❑ Compare your altimeter performance to other altimeters during the climb to altitude.
- ❑ Visit Alti-2, Inc. at various events throughout the United States for a free Calibration Check on your altimeter. Events are listed at www.alti-2.com

Base jumping

Altimaster altimeters are designed to be useful in the range of altitudes typically used by skydivers. Base jumping altitudes and safety factors are completely different. Alti-2 has not investigated the suitability of Altimaster altimeters for use in base jumping and has no plans to do so in the future.

DO NOT use an Altimaster Altimeter for Base Jumping

Safety Notices

Check and consider safety notices that apply to products being used. Check with PIA, other manufacturers, ALTI-2 Inc. directly or the ALTI-2 Inc. web page, drop zone message boards, riggers, etc., for any applicable safety notices.

Alti-2 Inc Web Page Address - <http://www.alti-2.com>

Malfunction

An altimeter is a mechanical device and subject to failure. Do not rely upon an altimeter for your safety. If the altimeter appears to be non-functional, use other methods to determine your altitude and act appropriately.



MAINTENANCE / SERVICING

Altimeter

Alti-2 does not recommend that the user disassemble the altimeter. Special equipment is required for re-assembly. Unless specifically described here, all maintenance on your altimeter should be performed by Alti-2.

NOTE: Disassembling your Altimeter voids all warranties.

Proper care

No servicing should be required with proper care and use.

Altimeters immersed in water should be returned to Alti-2 Inc.

Altimeters immersed in salt water are probably damaged beyond repair. However, if this does occur, disassemble the altimeter and rinse with fresh water before returning to Alti-2 Inc. (Do not reassemble the altimeter.)

Cleaning the Altimeter

To clean the altimeter, use a brush to remove any dirt that may accumulate. Wipe with a damp cloth to remove any other contaminants.

Do not attempt to wash the altimeter by placing it in liquid.

Do not oil the altimeter.

Return for Servicing

If the altimeter behaves abnormally or unusually, discontinue use IMMEDIATELY and return to Alti-2 Inc.

Discontinue use if the altimeter has been dropped onto a hard surface.

Return to:

Alti-2 Incorporated
2050 Decker Road
Walled Lake, MI 48390
Tel: (248) 668-9911
<http://www.alti-2.com>

Please be sure to include:

A method to contact you, such as daytime phone number, fax number, and/or email



address. And a description of the problem.

Repair Status

The current repair turnaround time for altimeter repairs can be checked on the Aalti-2 Inc Web Page, <http://www.alti-2.com>.

Status on your altimeter can be checked by contacting the Alti-2 Inc. Repair Department, or by initiating a Request for Repair Status through the Alti-2 web-page.

MODEL SPECIFIC INFORMATION

Altimaster II

Additional checks to ensure operation:

Do not block the small air hole on the back side of your altimeter. Free air flow through this hole is critical for proper operation. Do not attempt to clean this hole with compressed air or with any sharp object. Use of light suction to clean this hole is acceptable. If this area has been damaged or blocked, your altimeter should be returned to ALTI-2 for service.

Inspect the small O-Ring located at the base of the calibration knob regularly. This ring is used to provide friction and reduce the chance of inadvertently changing the calibration of your altimeter. If it is damaged or you find that the calibration knob turns too easily or is difficult to turn, you should return the altimeter to Alti-2 for service.

If the lens becomes scratched excessively, it will obscure your view of the needle and faceplate, you should return the altimeter to Alti-2 for service.

Adjusting the Altimaster II Altimeter

This is accomplished by rotation of the knob positioned on the outside of the case. Prior to usage, rotate this knob until the needle is in line with the number zero on the faceplate.

Mounting the Altimaster II:

The Altimaster II can be mounted using a wrist strap or chest mount.

Wrist Mount – The Altimaster II can be mounted on a wrist using the Velcro Wrist Mount Kit.

Chest mount

The Altimaster II can be mounted on the chest using a U-Bracket Kit and a chest mount. The Altimaster II can also be mounted on a chest mount without the U-Bracket. To mount the Altimaster II on a pillow, or other similar chest mount, remove the hand mount and stitch the instrument to the pillow using the four small holes provided in the corner of the case

Altimaster III

Do not attempt to replace lens or O-ring assembly yourself. Special training and equipment is needed to avoid damage to your altimeter.

Adjusting the Altimaster III Altimeter is accomplished by rotation of the mechanism case situated beneath the lens frame.

Altimaster Galaxy & Stratosphere

Adjusting the Altimaster Galaxy & Stratosphere Altimeter is accomplished by rotation of the mechanism case situated beneath the lens frame.

SPARE PARTS

Replacement Lens – Altimaster II, Galaxy & Stratosphere

To remove the clear plastic lens, press lightly on the lens with the palm of your hand and twist lens counter clockwise.

Twist the lens in a clockwise direction to install the replacement lens. You may find that the lens will screw on and off easier with an extremely small (pin head amount) of silicone gel on the threads of the lens.

Wrist Mount Kit

The Wrist mount Kit allows the Altimaster II to be mounted onto your wrist. The Velcro wrist mount strap is adjustable to all wrist sizes.

U-Bracket Kit

The U-Bracket Kit allows the Altimaster II to be mounted on a chest mount.



Mini-Cyalume Retention Sleeve Kit

The Cyalume Retension Sleeve Kit is used for illumination on the Altimaster II Altimeters. The kit contains mounting screws, Cyalume light Retension Sleeve, and two mini-Cyalume light sticks.

Check with Alti-2 Inc. for the part number for the Cyalume Retension Sleeve Kit applicable to your altimeter.

Usage of this kit requires an Altimeter equipped with a U-Bracket or Wrist mount Kit.

TECHNICAL SPECIFICATIONS

| Model | Altimaster II | Altimaster III | Altimaster Galaxy | Altimaster Stratosphere |
|---------------|--|---|---|--|
| Case Material | High Impact fiberglass reinforced lexan. | Aluminum. | Aluminum. | Aluminum. |
| Lens Material | High impact 1/8" thick molded lexan. | High impact 1/16" thick molded lexan. | High impact 1/8" thick molded lexan. | High impact 1/8" thick molded lexan. |
| Mechanism | Single pointer aneroid mechanism with a linear pointer travel from 0-18,000 feet MSL in 1 ½ revolutions. | Single pointer aneroid mechanism with a linear pointer travel from 0-18,000 feet MSL in 1 ½ revolutions | Single pointer aneroid mechanism with a linear pointer travel from 0-18,000 feet MSL in 1 ½ revolutions | Single pointer aneroid mechanism with a linear pointer travel from 0-30,000 feet MSL in 2 ½ revolutions. |
| Dimensions | 3.1" x 3.1" x 1.5" 79 mm x 79 mm x 38 mm | 2.5" x 2.5" x 1.1" 63.5 mm x 63.5 mm x 28 mm | 2.5" x 2.5" x 1.1" 63.5 mm x 63.5 mm x 28 mm | 2.5" x 2.5" x 1.1" 63.5 mm x 63.5 mm x 28 mm |
| Weight | 3.8 ounces 108 grams | 5.9 ounces | 5.9 ounces | 5.9 ounces |



Thank you for choosing an Alti-2 Incorporated product.

Have fun and be safe.

We would be pleased to answer any questions you have.

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