A.A.D. nv/sa.

Upgraded Vigil® 2⁺ Cuatro

User's Manual US v2019.01.14

> **Your Vigil® 2+ with SN** #44101 **with DOM** 10/15 (week/year) **has been upgraded with firmware** v07.01 .
>
> **Before using your Vigil®, we strongly advise you to read and understand this manual that is specially adapted to your Vigil® 2+ Cuatro with the new firmware. Although this manual may look very similar to the manual that came with your unit originally, some settings and manipulations may be different!**

➔

Important differences after the upgrade.	
Before (**Vigil® 2+**)	**Now** (**Vigil® 2+ Cuatro**)
- 3 modes *«PRO»*, *«STUDENT»*, *«TANDEM»*	- 4 modes *«PRO»*, *«STUDENT»*, *«TANDEM»*, and *«XTREME»* (see § 3.3)
- Menu sequence: *«SETUP»*, *«INFO»*, *«CONFIGURATION»* *(SN < #51.000)*	- Menu sequence: *«INFO»*, *«SETUP»*, - *«CONFIGURATION»* (see § 3.5.4 and § 12)

> ⚠ **Please carefully read and ensure that you fully understand this user's manual before any use of the Vigil® 2⁺ Cuatro.** ⚠

YOU MUST ALSO READ, FULLY UNDERSTAND AND AGREE TO THE TERMS OF THE DISCLAIMER AND LIMITED WARRANTY PRIOR TO USING THE VIGIL® 2⁺ Cuatro. IF YOU DO NOT FULLY UNDERSTAND AND AGREE TO ALL OF THE TERMS OF THE DISCLAIMER AND LIMITED WARRANTY, YOU MUST NOT USE THE VIGIL® 2⁺ Cuatro.
YOUR USE OF THE VIGIL® 2⁺ Cuatro IN THE EQUIPMENT YOU USE FOR MAKING A PARACHUTE JUMP IS CONCLUSIVE PROOF THAT YOU AGREE TO ALL OF THE TERMS OF THE DISCLAIMER AND LIMITED WARRANTY.

Vigil® 2⁺ Cuatro is developed, produced & tested in our factory, that is ISO 9001 certified.

Vigil® is endorsed by:

United Parachute Technologies

PARACHUTES de France

SUN PATH PRODUCTS INC.

FIREBIRD

Basik air concept

Wings

Sky Dive Thomas Sports

parachutesystems

CIMSA INGENIERIA DE SISTEMAS

Aerodyne

Jump Shack

Strong Enterprises
The parachute company with imagination

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<u>Table of contents</u>

WARNING

SKYDIVING IS A DANGEROUS ACTIVITY, AND YOU RISK MINOR OR SERIOUS PERMANENT INJURY OR DEATH EACH TIME YOU SKYDIVE. THE CORRECT USE OF THE VIGIL® AAD MAY REDUCE THIS RISK, HOWEVER, THERE ARE SITUATIONS IN WHICH A VIGIL® AAD MAY NOT REDUCE, AND MAY ACTUALLY INCREASE, THE RISK. THE VIGIL® IS A BACKUP DEVICE, WHICH MAY OR MAY NOT SAVE YOUR LIFE, AND IT IS IMPORTANT TO NEVER RELY ON THE VIGIL® AS A LIFESAVING DEVICE. PRIOR TO USING THE VIGIL®, IT IS IMPORTANT TO READ THE VIGIL® 2⁺ Cuatro USER'S MANUAL VERY CAREFULLY.

ALWAYS OBSERVE ALL WARNINGS, AND FOLLOW ALL MANUFACTURER'S INSTRUCTIONS, RECOMMENDATIONS AND SAFETY PROCEDURES. ALWAYS FOLLOW CORRECT OPENING PROCEDURES AND, IF NECESSARY, EMERGENCY PROCEDURES. NEVER SKYDIVE UNLESS YOU ARE FULLY TRAINED AND COMPETENT IN THE USE OF ALL OF YOUR EQUIPMENT, INCLUDING THE VIGIL®.

The **Vigil® 2⁺ Cuatro** is equipped with an integrated Piezo resistive barometric pressure sensor. Do not expose your **Vigil® 2⁺ Cuatro** to pressures above 3000 hPa, (45.5 psi), or to temperatures above 158°F (70°C). The battery pack is designed to operate within a temperature range from -13°F to +158°F (-25°C to +70°C).

DISCLAIMER AND LIMITED WARRANTY (see § 10 & 11)

➔ *You must switch ON your **Vigil® 2⁺ Cuatro** ONLY at the take-off zone (reference altitude or ground zero)*

➔ *If you intend to change to a different take off zone, you need to switch OFF your **Vigil® 2⁺ Cuatro** before travelling, and switch it back ON at the new take off zone, before take-off.*

➔ *Before each jump it is essential to visually check your LCD screen to ensure its functionality, its activation mode («**PRO**», «**STUDENT**», «**TANDEM**», or «**XTREME**») and its pre-selected parameters (altitude correction in feet or in meters) are correctly set.*

⚠ **NEVER JUMP WITH A BLANK LCD SCREEN ON YOUR Vigil® 2⁺ Cuatro !!** ⚠

1   Welcome to the Vigil® 2⁺ Cuatro World!

Vigil® 2⁺ Cuatro is a safety device, with no imposed maintenance schedule. The **Vigil® 2⁺ Cuatro** will automatically check all of its functional features each time it is switched on. The **Vigil® 2⁺ Cuatro** will detect any anomalies by itself. Should an abnormality be found, the controller will display an error message (see § 3.5.3), and the **Vigil® 2⁺ Cuatro** unit will not switch on. In this case, the **Vigil® 2⁺ Cuatro** needs to be analyzed by an authorized dealer, or sent back to the factory for analysis.

The **Vigil® 2⁺ Cuatro** is designed for a life expectancy of maximum 20 years from the date of manufacture.

The above life expectancy is based on the fact that the cutter, the Pulses Plus element and the electronic components have been designed for a functional lifespan of 20 years.
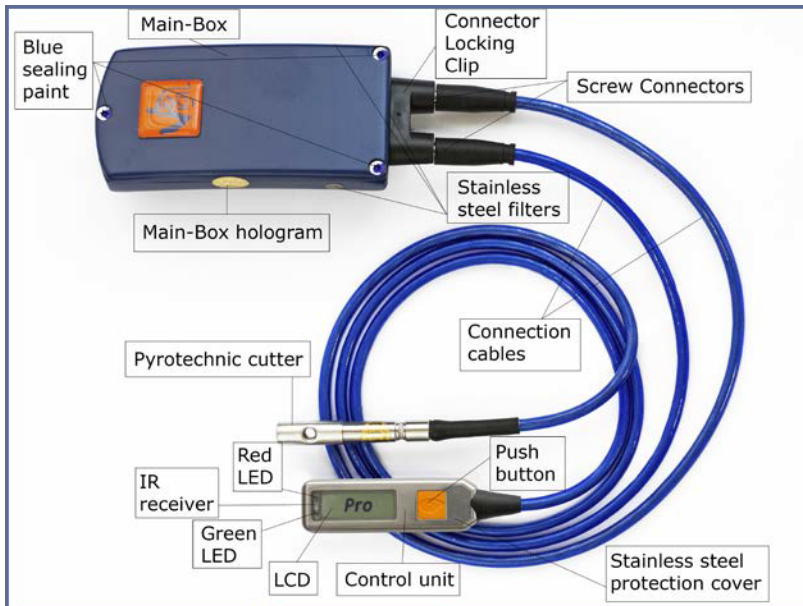
The **Vigil® 2⁺ Cuatro** is very user friendly. It can be used in your choice of 4 activation modes: «**PRO**», «**STUDENT**», «**TANDEM**» or «*X*TREME»

The **Vigil® 2⁺ Cuatro**, an ALL-IN-ONE Automatic Activation Device (AAD) will also work in U.S. or Metric standards units. When traveling on any commercial flight with your **Vigil® II Cuatro**, this manual as well as the **Vigil®** X-Ray Card should accompany you. It contains explanations that will be useful to the airport security staff.

> ⚠️ The **Vigil® 2⁺ Cuatro** is, in principle, a last resort safety device, which may or may not save your life. It has never been intended to be, and is not to be used as, a parachute's primary opening system.
> The procedures written in this manual must be followed to ensure that the **Vigil® 2⁺ Cuatro** functions properly. Incorrect setup or use can lead to improper functioning of the **Vigil® 2⁺ Cuatro**.
> A skydiver should always adhere to all rules and regulations set by his/her country's skydiving federation. The use of a **Vigil® 2⁺ Cuatro** AAD does not exempt the parachutist from performing proper emergency procedures.
> **ALTHOUGH VIGIL®s HAVE SAVED MANY LIVES, NEVER RELY ON THE VIGIL® 2⁺ Cuatro TO SAVE YOUR LIFE, IT MAY NOT DO SO IN SOME SITUATIONS.**

Blue sealing paint

Main-Box

Connector Locking Clip

Screw Connectors

Stainless steel filters

Main-Box hologram

Connection cables

Pyrotechnic cutter

Red LED

IR receiver

Green LED

Push button

LCD

Control unit

Stainless steel protection cover

2   Introduction.

Your **Vigil® 2+ Cuatro** was designed and developed by a team of professional engineers and skydivers. Its function is to cut the reserve closing loop in the event that you reach a freefall speed at an unsafe altitude. The flat aluminum alloy box is exceptionally strong; its ergonomic design fits easily into most current rigs.

A **Vigil®** installation kit (pouch, controller window and cutter retainer) can be supplied to rig manufacturers, on demand. The **Vigil® 2+ Cuatro** can be used for three types of skydiving by pushing just one button. These user programmable modes are: «**PRO**», «**STUDENT**» «**TANDEM**», or «**XTREME**».

The **Vigil® 2+ Cuatro** also has a data recorder function (black box). The unit memorizes the last 16 minutes of freefall time (with a maximum of 16 graphs, whichever is reached first), total time in freefall and total number of jumps.

This data can be viewed directly from the control unit's LCD display, or it can be downloaded to a PC through an infrared communication port.

The infrared reader and the associated software are available as an option (see § 9). The Kevlar reinforced cables are especially developed for the **Vigil® 2+ Cuatro** and deliver a unique combination of strength and flexibility.

The gold plated contacts and the locking system with a special locking clip on the connectors ensure optimal connection reliability in all circumstances.

The control unit: - is equipped with a 32 x 96 dots LCD display which allows interactive and clear communication with the parachutist.
- is protected by a special anti-scratch coating and a stainless steel protection cover

The electromagnetic shielding protects the **Vigil® 2+ Cuatro** from electromagnetic interferences, such as those found in airports and airplanes (see §5.1).

3   Function.

3.1   General Working Principle

The **Vigil® 2⁺ Cuatro** must only be turned on at ground level, it will calibrate itself every 2 minutes progressively to the current ground elevation pressure. This is the "GROUND ZERO" reference. Once your **Vigil® 2⁺ Cuatro** is on, at each take-off it will become armed once 1000 ft above "ground zero" reference is reached, if no or a positive altitude correction is applied. When a negative altitude correction is set, the **Vigil® 2⁺ Cuatro** will become armed 1000 ft above the preset negative altitude correction. So if the negative altitude correction is more than 1000 ft, the **Vigil® 2⁺ Cuatro** will become armed maximum 32 sec. after you have reached 90 ft above or under the "GROUND ZERO" reference (take off location). **Vigil® 2⁺ Cuatro** will then stay armed until 2 minutes after it has come back to the "GROUND ZERO ZONE" reference (Between + 90ft and – 90ft or +27,5 m and -27,5 m).

In freefall, the **Vigil® 2+ Cuatro** continuously calculates the altitude.

When the activation altitude (or lower) is reached by the jumper at a speed equal to or higher than the factory-set parameters, the cutter of the **Vigil® 2+ Cuatro** will instantly fire and cut the closing loop of your emergency parachute (<0,002 sec). An "altitude correction" allows you to implement a positive or negative altitude difference between the departure and landing level (from +6000 ft to -6000 ft or +2000 m to -2000 m) in steps of 150 ft or 50 m.

The **Vigil® 2+ Cuatro** takes this altitude correction into account to calculate the new activation altitude.

This principle also allows you to modify the activation altitude permanently if the airport where you take off and the landing zone are at DIFFERENT altitudes or if there is a hillock near the drop zone.

Each mode «**PRO**», «**STUDENT**», «**TANDEM**», or «**XTREME**» has its own factory-set activation altitude and speed.

Choice of mode can be done in the «**SETUP**» menu (see § 3.3). During your aircraft ascent, the **Vigil® 2+ Cuatro**'s red LED will briefly flash three times when it passes through its pre-set activation altitude.

The **Vigil® 2+ Cuatro** will automatically remain ON for 14 hours; it may of course be switched off manually before that time.

The selected activation mode «**PRO**», «**STUDENT**», «**TANDEM**»,or «**XTREME**» will remain visible on the LCD display until the **Vigil® 2+ Cuatro** is switched off or turns off automatically after 14 hours.

To avoid an "airborne condition" (See page 29 for more detail) of your **Vigil® 2+ Cuatro** due to a difference in pressure that resembles 90ft or more (positive or negative altitude) compared to the "ground zero" reference (pressure), you must ALWAYS manually shut down your **Vigil® 2+ Cuatro** at the end of the day and BEFORE leaving the drop-zone.

3.2   _Installation_

The **Vigil® 2⁺ Cuatro** has been designed to be compatible with most sport harness/container systems on the market today.

If a suitable installation kit for an electronic AAD is not yet installed by the rig manufacturer, a **Vigil® 2⁺ Cuatro** Installation Kit (pouch, controller window, and cutter retainer) can be supplied and installed in your container by the harness/container manufacturer, or by a proper certified authorized rigger.

It can be easily sewn into any harness/container system designed for an electronic AAD.

All reserve closing loops currently on the market that are similar to **Vigil®** Dyneema or the Spectra CSR style #9512-300 or the Cypres™ loop (Spectra Cord) are acceptable for use by the installation of the **Vigil®**. The **Vigil® 2⁺ Cuatro**'s cutter must be positioned and rigged as specified by the harness/container manufacturer's instructions for electronic AAD's.

WARNING: IF THE CLOSING LOOP IS NOT ROUTED THROUGH THE CUTTER, THE VIGIL® 2⁺ Cuatro WILL NOT CUT THE LOOP

3.3   _The Four Activation Modes_

The **Vigil® 2⁺ Cuatro** has four activation modes that can be selected by the user. The choice can be made in the «**SETUP**» menu (see §3.5.4). Each mode has its own factory settings. The cutter activation data is defined by selecting an activation mode.

3.3.1   _«PRO» Mode_

The **Vigil® 2⁺ Cuatro** activates in «**PRO**» mode when it measures* **1100 ft (335 meters) (average altitude** between 840 ft and 1100 ft, depending on body position)** and below, until 150 ft (46 meters), if the freefall speed is equal or superior to **115 ft/sec. (78 mph or 35 meters/sec)**.

3.3.2   _«STUDENT» Mode_

The **Vigil® 2⁺ Cuatro** activates in «**STUDENT**» mode when it measures* **1300 ft (396 meters) (average altitude** between 1040 ft and 1300 ft, depending on body position)** and below, until 150 ft (46 meters), if the freefall speed is equal or superior to **65 ft/sec. (45 mph or 20 meters/sec)**.

3.3.3   _«TANDEM» Mode_

The **Vigil® 2⁺ Cuatro** activates in «**TANDEM**» mode when it measures* **2300 ft (701 meters) (average altitude** between 2040 ft and 2300ft, depending on body position)** and below, until 150 ft (46 meters), if the freefall speed is equal or superior to **115 ft/sec. (78 mph or 35 meters/sec)**.

3.3.4   _«XTREME» Mode_

The **Vigil® 2⁺ Cuatro** activates in « **XTREME** » mode when it measures* **1100 ft (335 meters) (average altitude** between 840 ft and 1100ft, depending on body position)** and below, until 300ft (91 meters), if the freefall speed is equal or superior to **141 ft/sec. (96 mph or 43 meters/sec)**.

⚠️ The «*Xtreme*» mode is specially developed for high performance canopy landings when the vertical speeds exceeds 115 ft/sec. ("**Pro**" mode).
In «*Xtreme*» mode, the **Vigil® 2+ Cuatro** will not activate if the vertical speed does not exceed 141 ft/sec (43 m/sec).
It is important that in certain circumstances, such as low cut-away, it will most likely take longer time to reach the required vertical measured speed of 141 ft/sec of this «*Xtreme*» mode, compared to the «**Pro**» mode (115 ft/sec).
This can make a difference.
The **Vigil® 2+ Cuatro** in «*Xtreme*» mode will not activate below 300 ft above the ground zero level or 300 ft above a negative altitude correction, when set.

⚠️ * The cutter will activate instantaneously once the pre-determined activation mode parameters (altitude and falling speed) are reached. Please take this information into consideration when determining your main canopy deployment altitudes! Always allow enough time to have a fully open main canopy approximately 1000 ft (300 meter) above activation altitude!

⚠️ ** If you are in freefall face to earth, your **Vigil® 2+ Cuatro** is in the depression zone (burble) and could measure up to ±260 ft (±79 meters) higher than your actual altitude (see *§ 3.4*).

⚠️ Before each jump it is essential to visually check your LCD screen to ensure its functionality, its activation mode («**Pro**», «**Student**», «**Tandem**», or «*Xtreme*») and its pre-selected parameters (altitude correction in feet or in meters) are correctly set.

3.4 Information regarding the Activation Altitude

Please be aware that the **Vigil® 2+ Cuatro** functions are based on measured air pressure. This parameter permits the calculation of the exact altitude, in function of the registered air pressure, as well as the vertical speed related to a pressure variation in a certain period of time.

For information: The **Vigil® 2+ Cuatro** is able to register pressure differences of 0,1 hPa which is equivalent to an altitude difference of only ± 2,6 ft (or 0,8 meter)!

Important note: The registered pressure by the sensor will vary, according to the body position of the skydiver (face to earth or back to earth) up to 10 hPa (=mbar) which is equivalent to +-260 ft (+-79 m)!

Example: Let's consider two skydivers in free fall, at exactly the same altitude but one is falling back to earth and the second one is falling face to earth.

The influence of their falling position on their respective AAD reading is as follows:

(I) **back to earth**	(II) **Face to earth**
Depression zone (burble) influence	AAD or pressure sensor No located in depression zone (Burble)
Both at the same altitude Y	
Pressure sensor location	
	Pressure = X hPa – 10 hPa
Pressure = X hPa	
	Vigil® 2+ Cuatro in depression zone will register an up to 10 hPa
Vigil® 2+ Cuatro will register a pressure of X hPa	lower pressure, notwithstanding they are at the same level
The stated or real altitude ➔ Y ft (or m)	**The stated altitude ➔ Y +(±260 ft) or +(±79 m)**

Conclusion

If the **Vigil® 2+ Cuatro** is set in «**PRO**» mode, it will activate at a average altitude of 840 ft or 256 m above the ground, at a falling speed of 115 ft/sec (78 mph or 35 m/sec.) or greater.

It is well accepted that this minimum activation level must be guaranteed whatever the position of the skydiver. If the skydiver is falling in a back to earth position, the reading will reflect the correct pressure, since the sensor is not influenced by a depression (burble), but if the skydiver is falling face to earth, then the sensor located in the depression zone (burble) will read a pressure up to 10mbar lower, or an altitude ±260 ft or ±79 m above the real altitude, and will, in this case, activate later, or ±260 ft or ±79 m lower, i.e. at an actual altitude of 580 ft or 177 m above the ground level, which would be too low.

Therefore, a compensation of +260 ft or +79 m above the nominal activation altitude has been integrated into the software. For example in «**PRO**» mode, a programmed activation altitude of 1100 ft or 335 m has been set to ensure that, notwithstanding the skydiver's body position, activation will always be at a minimum altitude of 840 ft or 256 m (actual altitude) above the ground level.

Remarks:

In a test chamber, the activation in «**PRO**» mode will be at 1100 ft (840 ft + 260 ft) or 335 m (256 m + 79 m) as there is no depression zone (burble).

3.5   <u>Start Up and Shut Down Procedures</u>

⚠ It is imperative that the **Vigil® 2+ Cuatro** be switched ON at the ground level of your take-off zone. (This becomes the "GROUND ZERO" reference altitude).

⚠ **Never switch on your Vigil® 2+ Cuatro in an aircraft !**

⚠ If the **Vigil® 2+ Cuatro** discovers a variable air pressure during the start up procedure, it will not complete the start up procedure, and will show a alternating blinking "GROUND ZERO WARNING" on the controller LCD.

Your **Vigil® 2+ Cuatro** will recalibrate itself for variation in the atmospheric pressure.

3.5.1   <u>Start Up – Display</u>

In its standard configuration, the **Vigil® 2+ Cuatro** is used with the orange push button situated at the right side of the display. The red LED is positioned in the upper corner and indicates the timing of the start up procedure.
The green LED is situated in the bottom corner of the controller and confirms the end of the start up procedure.

➜ *The **Vigil® 2+ Cuatro**'s display is reversible (see § 3.5.7)* **«view» «ʍǝıʌ»**

3.5.2 _Starting Up the **Vigil® 2+ Cuatro**_

The **Vigil® 2+ Cuatro** becomes operational after pressing the orange push button four times.
These short presses must be done immediately after each flash of the red LED. After the first push (hold for 1 or 2 seconds) the «**Cuatro**» message is shown. If no message appears, please repeat the previous operation.
«**Cuatro**» is immediately followed by «**Vigil®**» on the LCD.
Press the push button immediately after the red LED first flashes.
Press the push button immediately after the second flash of the red LED. Press the push button immediately after the third flash of the red LED. The **Vigil® 2+ Cuatro** will then automatically start its self-test sequence.

In short:

Action	Result	Visual on LCD screen
1. Push	**_«Cuatro»_** _followed by_ **_«Vigil®»_** _appears + flash_ ⇨ _(2)_	«▪**Vigil®**»
2. Push	_Flash_ ⇨ _(3)_	«▪**Vigil®**»
3. Push	_Flash_ ⇨ _(4)_	«▪**Vigil®**»
4. Push	_Start of self tests_	«**BAT OK**»

The startup and shut down procedures listed in this manual have been established to reduce the risk of an unwanted start up or shut down sequence and to ensure that the **Vigil® 2+ Cuatro** cannot be turned on or off by accidentally pressing the push button.

3.5.3 _Self Tests_

The **Vigil® 2+ Cuatro** automatically goes through a complete test sequence each time it is switched on.
It verifies that the battery pack, the cutter and the electronic circuits (main functions) are in proper working order.

The following messages are shown:

- «**Bat OK**»   The battery pack is functioning properly.
- «**Cut OK**»   The cutter resistance is tested O.K.
- «**Ctrl OK**»   The electronic circuits are functioning properly.

If an error is detected the following messages may be shown:

- «**Bat Low**»   Low Battery, the **Vigil® 2+ Cuatro** is still operational, but the dual battery pack must be replaced as soon as possible. *(see page 35 §7.1)
- «**Bat Rpl**»   The dual battery pack must be replaced, the **Vigil® 2+ Cuatro** will not switch on.* (see §7.1)
- «**Cut Err**»   Cutter resistance is out of tolerance, the **Vigil® 2+ Cuatro** will not switch on.
- «**Ctrl Err**»   A discrepancy in one of the electronic circuits is observed, unit will not switch on.

If one of these messages is displayed (except for «**Bat Low**»), the startup procedure will end, and the **Vigil® 2+ Cuatro** will switch itself off.

If the «**Bat Low**» message appears, the battery pack must be replaced as soon as possible (see §7.1)

If the «**Bat Rpl**» message appears, the battery pack must be replaced prior to the next jump (see §7.1)

If the «**Cut Err**» message appears, the cutter unit must be replaced prior to the next jump (see §7.2).

A new cutter will be supplied free of charge if a completed "Life Saving Report" is posted and approved

(see our website http://www.vigil.aero on the download page).

➔ *We recommend that Vigil® 2+ Cuatro parts (exempt the batteries) be replaced by a proper certified and authorized rigger or by a Vigil® approved expert.*

The regulations in some countries require a certified rigger to do such replacements. The user may not have authorization to replace the cutter or controller unit. In such situations, you must adhere to your country's rules.

⚠️ If the «**Ctrl Err**» message appears due to a failure in the electronic circuits, you must send the **Vigil® 2+ Cuatro** back to your dealer or to the factory for a complete checkup, before the next jump. (see § 7.4).

If the «**Ctrl Err**» message appears, DO NOT try to restart the **Vigil® 2+ Cuatro** again.

This first test procedure is followed by 3 different menus: «**INFO**», «**SETUP**», and «**CONFIG**» (see § 3).

Recommendation*: If the **Vigil® 2+ Cuatro** is not yet configured to your standard measurement units, go first to the «**CONFIG**» menu (see § 3.5.7) to set the required units (U.S. or metric) before other settings.*

3.5.4 *«INFO» Menu (Information)*

- This menu allows you to display your **Vigil® 2+ Cuatro**'s reference parameters (version, date of manufacture and serial number), data of previous jumps, as well as temperature and atmospheric pressure.
- To enter the «**INFO**» menu, press the push button as soon as the display shows «**INFO**» and the red light flashes.
These parameters are in clear language in function of the chosen units and as follows (*see § 3.5.7):

Display	*Note: the number 8 is used for illustration (all segments used in a number)*
Ver :88.88	*Software **Ver**sion*
Lcd :88.88	*Controller version*
#88888	*Electronic Unit Serial Number*
88/88	*Production week and year* *(for example 26/06 = week 26 in 2006)*
TJ :8888	***T**otal **J**umps (Total number of jumps with this unit)*
TFF :88**h** 88**m**88**s**	***T**otal **F**ree **F**all - Total free fall time with this unit in* ***h**ours, followed by **m**inutes and **s**econds*
LFF :188**s** 888 **km/h**	***L**ast **F**ree **F**all - Duration displayed is **s**econds* *and maximum speed of the last freefall displayed in **km/h** or **mph***
Saves 8	*Number of activations on your **Vigil® 2+ Cuatro***
T:+88°**C** or +88°**F**	***T**emperature of **Vigil® 2+ Cuatro** main unit in °**F** or °**C** depending on the configuration*
88.88**inHg** or 8888**hPa**	*Atmospheric Pressure in **inches of mercury** (inHg) or **hectopascal** (hPa)*

3.5.5 «*SETUP*» Menu (Parameters) Altitude correction

The «**SETUP**» menu enables you to implement a positive or negative altitude correction (in feet or meters) between the departure and arrival ground levels, as well as select the desired mode («**PRO**», «**STUDENT**», «**TANDEM**», or «*X*TREME») (*§ 3.5.6*).

It is possible to enter the «**SETUP**» menu at the end of the self testing sequence.

To do this, press the push button as soon as the display shows «**SETUP**» and the red LED flashes.

It is possible to implement an altitude correction from +6000 ft to -6000 ft or from +2000 m to -2000 m. To enter or modify a positive or negative altitude correction, press the push button while «**Alt Cor**» appears.

The arrow facing up corresponds to an increase of the altitude value and the arrow facing down to a decrease of the altitude value.

The correction is made in increments of 150 ft or 50 m when the **Vigil® 2+ Cuatro** is set in meters.

Press the push button until the desired positive or negative altitude correction is achieved.

For example: +100 m for higher landing zone compared to the take-off zone and -100 m. for a lower landing zone.

When the required altitude correction is displayed wait for a few moments and the mode selection («**PRO**», «**STUDENT**», «**TANDEM**», or «*X*TREME») will appear on screen.

> ⚠️ **If you land at a different altitude than your "GROUND ZERO", please be aware that the original "GROUND ZERO" reference, will remain in the Vigil® 2+ Cuatro's memory and will be applied to all following jumps, as long as your Vigil® 2+ Cuatro has not been switched off. Your Vigil® 2+ Cuatro MUST be reset after you have landed, and prior to your next jump at the other drop zone.**
> **By switching your Vigil® 2+ Cuatro off and back on again, the Vigil® 2+ Cuatro will reset itself.**

> ⚠️ **Please remember that any implemented "Alt Cor" will remain in the Vigil® 2+ Cuatro memory and will only be cancelled if manually reconfigured in the «SETUP» menu.**

> ⚠️ **When an altitude correction is applied, and the system of measurement is changed in the «CONFIG» (US to Metric or visa versa) the altitude correction will be divided or multiplied by 3.**
> **For example, 900 ft becomes 300 meter or 150 meter becomes 450 ft. Be aware that there is a deviation ! This is due to the fixed increments of 50 meter or 150 ft.**

3.5.6 <u>Using a positive altitude correction to raise the activation altitude</u>

As stated, in «**PRO**» settings (see § 3.3) a **Vigil® 2⁺ Cuatro** activates at a measured altitude of 1100.ft (335 m) (actual altitude of 840-1100 ft, depending on body position).
To increase safety margins, an altitude correction can be performed (see § 3.5.5)
<u>Some important points to remember:</u>
- Once an altitude correction is applied, this will stay in the **Vigil® 2⁺ Cuatro**'s memory, until you manually remove it in the «**SETUP**» menu.
- When you raise the activation altitude, always allow enough time to have a fully open main canopy approximately 1000ft above your new activation altitude. During a slow opening, it may take longer until you have a fully open main canopy, which may bring you closer to the activation altitude you choose.
- A **Vigil® 2⁺ Cuatro** will activate at the measured altitude it is set in. Please read pages 14, till 17 carefully to understand this!!
- When a positive altitude correction is implemented, the **Vigil® 2⁺ Cuatro** can activate at the preset/default altitude plus the added altitude correction until 150 ft above the "start ground zero reference". This is the same altitude as if no altitude correction is applied.
- This means on a positive altitude correction, you will increase the activation window. The "stop activation" altitude of 150 ft above the "start ground zero reference" does NOT change!
When a negative altitude correction is implemented, the **Vigil® 2⁺ Cuatro** can activate at the preset/default altitude minus the added altitude correction until 150 ft above the preset negative altitude correction (the "new landing zone").

> **It is each's individual's responsibility to make sure he or she, has a fully open main canopy well above the activation altitude. We recommend allowing approximately 1000 ft between a fully open main canopy and the activation altitude. This should allow enough time to deal with emergency procedures (if necessary) and prevent a possible two-canopy out situation.**

The possibility to raise the activation altitude, and keep it until manually changed in the «**SETUP**» menu, has always been in all **Vigil®** AAD's produced since 2003.

Vigil® 2+ Cuatro in «**Pro**» settings, without altitude correction.	**Vigil® 2+ Cuatro** in «**Pro**» settings, with positive altitude correction of 100 meter.
Vigil® 2+ Cuatro in «**Student**» settings, without altitude correction.	**Vigil® 2+ Cuatro** in «**Student**» settings, with negative altitude correction of 600 feet.
Vigil® 2+ Cuatro in «**Tandem**» settings, without altitude correction.	**Vigil® 2+ Cuatro** in «**Tandem**» settings, with negative altitude correction of 300 meter.
Vigil® 2+ Cuatro in «**Xtreme**» settings, without altitude correction.	**Vigil® 2+ Cuatro** in «**Xtreme**» settings, with positive altitude correction of 1200 feet.

(*) Certain special models may be equipped with custom-built or experimental software.
In such cases, a specific identification logo on the cover is used, and a specific manual will be issued. The information supplied for those units could be different from that supplied for the **Vigil® 2+ Cuatro** units.

Vigil® II and Vigil 2+ logo

Vigil® Cuatro logo

Vigil® Xtreme 46m/sec logo

3.5.7 *«CONFIG» Menu (Configuration)*

This configuration menu allows you to choose the type of measurement units you wish to display, reverse the display characters and adjust the contrast of the display.

To enter into the configuration menu, press the push button as soon as the display indicates «**CONFIG**» and the red LED flashes.

Initially, the display indicates «**Feet**» or «**Meters**», depending on the existing configuration. To change the measurement unit, press the push button.

You can choose «**U.S.**» or «**Metric**» by pressing the push button (°Fahrenheit, mph, inches of mercury or ° Celsius, km/h, hectoPascal).
Press «**view**» to choose to view the display in its normal configuration or flipped 180° «**view**»**«ʍǝᴉʌ»**

Once the «**CONFIG**» menu is completed, the **Vigil® 2+ Cuatro** is operational and will keep in memory the chosen configuration.

For example:

Action	Display
1. Wait	*«CONFIG» displayed*
2. Push	*Choose between «Feet» or «Meters»*
3. Push	*Choose between «U.S.» or «Metric»* *(°Fahrenheit, mph, inches of mercury or °Celsius, km/h, hectoPascal)*
4. Push	*Choose between normal or reversed display «view» or «ʍǝᴉʌ»*

All of the parameter sequences are described in the Parameter Sequence Flow Chart. (see §12)

3.5.8   Choice confirmation

The green LED flashes five times and the message « ☺ *Enjoy*» is displayed for a few seconds to confirm the **Vigil® 2+ Cuatro** is ready for use.

➔ *Remark: While the message « ☺ Enjoy» is displayed, by pushing the button you can go back to the three menu's («INFO», «SETUP» or «CONFIG») for a possible verification or modification.*

If no altitude correction is entered, the chosen («**PRO**», «**STUDENT**», «**TANDEM**», or «**XTREME**») mode remains displayed.

If an altitude correction was entered, the chosen mode will be displayed as "**P**" (for «**PRO**»), "**S**" (for «**STUDENT**»), "**T**" (for «**TANDEM**»), or "**X**" (for «**XTREME**») followed by a «**+**» or «**-**» sign preceding the value of the implemented altitude correction (see example page 24). The value will be shown in feet (**ft**) or meters (**m**).

➔ *BEFORE EACH JUMP, check the unit carefully for any implemented mode or altitude correction (in ft. or meter).*

After switch on, the **Vigil® 2+ Cuatro** stays on for a period of 14 hours, and will then switch off automatically (see page 29 for more detail).

At the next switch-on, **Vigil® 2+ Cuatro** will remember and keep all of the previous settings used with the exception of the ground zero reference. The ground zero reference is recalibrated at each switch on.

➔ *The Vigil® 2+ Cuatro is now ready for use and is in a stand-by status. While in stand-by status, the unit re-calibrates itself every 2 minutes. After take-off the Vigil® 2+ Cuatro will become armed once 1000 ft above "ground zero" reference is reached, if no or a positive altitude correction is implemented. When a negative altitude correction is implemented, the Vigil® 2+ Cuatro will become armed 1000 ft above the preset negative altitude correction (see § 3.1)*

➔ *After take-off (max 32 sec. above 90 ft) the Vigil® 2+ Cuatro will go in to fast measuring mode (Airborne status). You can notice this when the LCD pixels invert. (see § 5.6)*

➔ *For 2 minutes after each landing, your jump information will be displayed (Last FF time & speed). LCD pixels remain inverted. This same jump information is accessible at any time (displayed for 30 sec.) by pushing the LCD button once.*

⚠ **If the LCD pixels are inverted on the ground and prior to take off, your Vigil® 2+ Cuatro is Airborne and therefore not reading the correct Ground Zero reference. In this case, you must switch off and restart your Vigil® 2+ Cuatro, to get the correct Ground Zero reference.**

3.5.9   Shut down. (The shut down procedure is similar to the start up procedure)

A quick press of the push button after each LED flash(4 times) will shut down the **Vigil® 2+ Cuatro**

On the first press the «■ **Sys OFF**» message is displayed. Press the button a second and third time; do this as soon as the red LED flashes.

Press the button as soon as the red LED flashes a fourth and last time. The display will show «**Goodbye**» followed by «**Vigil®**» for a few seconds. Finally, the green LED flashes very briefly and then the **Vigil® 2+ Cuatro** shuts down.

For example:

Action	*Result*
1. Push	*Short flash ⇨ (2) «■ Sys OFF»*
2. Push	*Short flash ⇨ (2) «■ Sys OFF»*
3. Push	*Short flash ⇨ (2) «■ Sys OFF»*
4. Push	*«Goodbye» followed by «Vigil®» are displayed before the AAD shuts down.*

4   Flight restriction for the pilot – Airborne.

+90 ft / +27,5 m

"Ground Zero"

-90 ft / -27,5 m

The plane may not fly more than 100 sec. in a zone of 90ft/27,5m above or below "Ground zero level" reference. In all modes with or without altitude correction.
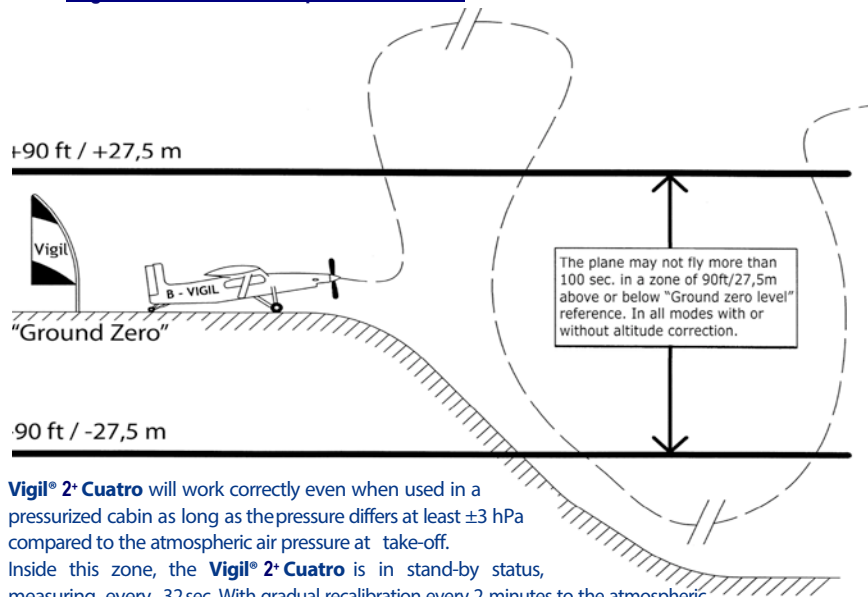
Vigil® 2⁺ Cuatro will work correctly even when used in a pressurized cabin as long as the pressure differs at least ±3 hPa compared to the atmospheric air pressure at take-off.
Inside this zone, the **Vigil® 2⁺ Cuatro** is in stand-by status, measuring every 32 sec. With gradual recalibration every 2 minutes to the atmospheric air pressure. Outside this zone, **Vigil® 2⁺ Cuatro** will go in fast measuring status, measuring 8 times per sec, with a fixed ground zero reference in a maximum delay of 32 sec.

➔ *Vigil® 2⁺ Cuatro is the most accurate AAD on the market. It becomes armed once 1000 ft above "Ground zero" reference is reached if no or a positive altitude correction is implemented.*
When a negative altitude correction is implemented, the Vigil® 2⁺ Cuatro will become armed 1000 ft above the preset negative altitude correction, also known as the new landing zone.
The Vigil® 2⁺ Cuatro will not activate below 150 ft above "Ground zero" reference in «PRO», «STUDENT» or «TANDEM» mode when no or a positive altitude correction is implemented.
When negative altitude correction is implemented, Vigil® 2⁺ Cuatro will not activate below 150 ft above the preset negative altitude correction in «PRO», «STUDENT» or «TANDEM» mode.
The Vigil® 2⁺ Cuatro will not activate below 300 ft above "Ground zero" reference in «XTREME» mode when no or a positive altitude correction is implemented.
When negative altitude correction is implemented, Vigil® 2⁺ Cuatro will not activate below 300 ft above the preset negative altitude correction in «XTREME» mode.

➔ *To avoid unexpected cutter activation, you must switch OFF your Vigil® 2⁺ Cuatro before travelling in a closed vehicle (car, bus, train ...) or before placing the Vigil® 2⁺ Cuatro in a closed traveling bag, due to possible air pressure variation.*
However, there is no problem travelling in an open vehicle at the drop zone altitude.

➔ *Prior to opening the door of an aircraft in flight while it is in the activation zone (below 500 m or 1640 ft.), it should be determined whether or not there are any Vigils on board which are set to «STUDENT» Mode.*
Certain aircraft configurations can create a pressure spike which can activate a Vigil® 2⁺ Cuatro AAD, when it is set to «STUDENT» Mode and the aircraft is in the activation zone.

➔ *As long as your Vigil® 2⁺ Cuatro is not measuring the switch on pressure or its "Ground zero" reference (90 ft / 27,5 m) it will stay airborne, (measuring 8 times/sec.) You must ALWAYS switch off your Vigil® 2⁺ Cuatro before any move to another location and switch on your Vigil® 2⁺ Cuatro at the new take-off zone/location to implement the new "ground zero" reference.*

➔ *Be aware that any implemented altitude correction will not affect the original "Ground zero" reference altitude.*
It will adjust the activation altitude in function of the implemented altitude correction parameters. After such a jump, you need to switch your Vigil® 2⁺ Cuatro off and back on again to implement the new "Ground zero" reference altitude and manually remove the previous altitude correction. (If no longer required).

➔ *If descending in an aircraft with an armed Vigil® 2⁺ Cuatro, the pilot must be advised of the status of your Vigil® 2⁺ Cuatro to limit his descent rate according to the mode less than 65 ft/sec. (3900 ft per minute) for «STUDENT» and less than 115 ft/sec. (6900 ft per minute) for «PRO» or «TANDEM» and in the activation zone (this is especially important for Vigil® 2⁺ Cuatro programmed in «STUDENT» mode). In these circumstances we recommend that the Vigil® 2⁺ Cuatro be switched off, if possible.*

4.1 Recommendations

➔ *To get the correct GROUND ZERO REFERENCE, you must only switch the Vigil® 2⁺ Cuatro ON once you arrive at the take-off zone. Afterwards, enter any altitude correction, if needed.*

➔ *When the elevation of your landing zone differs by more than 90 ft (27,5 m) compared to your initial take-off zone and this landing zone becomes your new take-off zone, it is necessary to switch your Vigil® 2⁺ Cuatro off and back on again so that it can re-calibrate itself.*

➔ *Check the display carefully before each jump to verify that its settings are correct.*

➔ *Manually shut down your Vigil® 2⁺ Cuatro after the last jump of the day.*

➔ *The Vigil® 2⁺ Cuatro will shut down automatically 14 hours after its start-up.*

➔ *To avoid undesired Vigil® 2⁺ Cuatro cutter activation, if you enter a plane with a pressurized cabin, please notify the pilot that he is not allowed to do pressurization tests to pressures equivalent to the Vigil® 2⁺ Cuatro activation altitude (below 1640 ft or 500 m in «STUDENT», «PRO» or «XTREME» mode, or below 2300 ft or 701 m in «TANDEM» mode), with a pressure variation equivalent to, or in excess of, a vertical speed greater than 65 ft/sec. (45 mph or 20 m/sec).*

5 Vigil® 2+ Cuatro Components.

The **Vigil® 2⁺ Cuatro**'s Dual Battery Pack (see § 5.2), the Pulses Plus Element (see § 5.3) and the Electronic Unit (see § 5.4.) are located in a durable aluminum alloy Main Box (see § 5.1).
Two flexible electric cables, reinforced by 2 Kevlar cords, ensure the junction between the main unit (Main Box) and the Cutter Unit (see § 5.5) as well as between the Main Unit and the Control Unit (see § 5.6).

5.1 _Main Box_

The **Vigil® 2⁺ Cuatro** electromagnetic shield was thoroughly tested to ensure that it would function as intended when exposed to electromagnetic interference (up to 100 volt/m).

Such interference can be found in airports and aircraft.

The special shielding foil protects against electromagnetic interference waves produced by:

•Radio communications	•Mobile phones
•Transponders	•Radar

Two connectors and three integrated stainless steel filters are fixed in the Main-Box.
The stainless steel filter ensures protection against pollution, such as the intrusion of dust, and provides a instant transfer of outside air pressure to the pressure sensor (keep it clean and dry).

⚠️ **NEVER OPEN THE MAIN BOX OF THE VIGIL® 2⁺ Cuatro !!**
Opening the main-box of Vigil® 2⁺ Cuatro voids all warranties !!

5.2 _Dual Battery Pack_

5.2 _Dual Battery Pack_

NATO Stock Number (NSN) 6130-13-119-7106

The battery pack is composed of 2 metal lithium AA cells in the lower half of the case. It is not subject to any memory effect and is extremely long lasting. The battery pack works at a temperature range from -13°F to +158°F or from -25°C to +70°C. The use of low consumption components in conjunction with a sophisticated power management program has significantly improved the battery's life span.
The battery warranty is guaranteed to be a minimum of 5 years or 2000 jumps.
The battery lifespan is maximum 12 years, starting of the Date of Manufacturing(DOM) or from Service Date.

The battery in new **Vigil®** units which are installed starting October 2018 must be replaced (<u>mandatory</u>) between 8 and at latest 12 years after "DOM Vigil".

Vigil® units produced since October 2018 have a « Bat Rpl before : XX » , date on the label at the back side of the **Vigil®**.

Vigil® units with a « DOM Vigil » before October 2018 which do not have a « Bat Repl before : XX » (date on the label at the back of the V**igil®**) need to have their battery replaced (<u>mandatory</u>) between 8 and latest 10 years after « DOM Vigil ».

Type	Vigil Cuatro
Serial Nr	#88888
DOM Vigil	NOV 2018
Bat Rpl before	NOV 2030
Firmware	07.01

Type	Vigil 2+
Serial Nr	#88888
DOM Vigil	JAN 2017
Firmware	06.05

➔   *To replace the battery, the complete Vigil® II needs to be send back to A.A.D. nv/sa Belgium, or Vigil America.*

5.3   Pulses Plus Element

The "Pulses Plus" technology supplies the high peak current necessary for the cutter to activate and cut the loop in less than 2 milliseconds.
This element has a lifespan of 20 years and under normal circumstances it will never need replacement.

5.4   Electronic Unit

The entirely automated assembly of surface-mounted electronic components (SMD, Surface Mounted Devices) is manufactured to the highest standards. The SMD components assemblies are assembled with permanent electronic and optical production control equipment in order to ensure the highest level of quality and reliability, equivalent to military standards. The electronic unit also works as a data recorder. It memorizes parameters (see 3.5.6) such as the total number of jumps, the duration of the last freefall jump and the total freefall time. This data can be viewed directly on the control unit's LCD display.

The **Vigil® 2⁺ Cuatro** memory contains the graphs of the last 16 minutes of freefall and partial canopy ride, and can be downloaded to a PC using the **Vigil® 2⁺ Cuatro** communication port. (see §9)

5.5   Cutter Unit

The Cutter Unit is patented and designed especially for the **Vigil® 2⁺ Cuatro** and has a life expectancy of 20 years.
The cutter severs the reserve loop using a pyrotechnical cutting action with a circular knife. Due to a high internal temperature, it will also melt the loop to ensure its separation.
The cutter is completely enclosed to avoid any possible damage to the parachute.

If the **Vigil® 2⁺ Cuatro** is activated for a lifesaving event, a new cutter will be supplied free of charge, only upon presentation of a complete Life Saving Report, approved by **Vigil®**.
This document can be completed online @ www.vigil.aero/life-saving-report or downloaded from the **Vigil®** website www.vigil.aero/wp-content/uploads/life_saving_report.pdf

➔   *The cutter is field (rigger) replaceable. (see § 7.2).*

➔   Some countries regulations require a certified rigger to do such replacements.
        In this situation you must adhere to your country's rules.

➔   *A Dual Cutter can be supplied for reserve containers closed with a dual pin.*

5.6 Control Unit

The control unit is composed of a reversible display, a red LED that sets the timing of the start up and shut down procedure, a green LED that confirms the end of the start up procedure and an orange push button situated in the standard configuration, on the right of the display.

The 32 x 96 dots display on the control unit allows clear alphanumerical communication with the parachutist. It is protected by a stainless steel cover.

The red LED is also used as transmitter for the infrared communications port. (see § 9).

Stand-by status
Normal display of the control unit on the ground (not airborne)

Red LED | LCD 32 x 96 dots | Stainless steel protection cover

Pro

Green LED | Push button

Airborne Status
Inverted display of the control unit (airborne in fast measuring mode)

Pro

6   Waterproof-IP 68.

The **Vigil® 2⁺ Cuatro** has been designed to be dust tight and to resist water immersion of up to 1.8 meter (6 ft) depth for a maximum of 24 hours (IP 68). After such immersion or contact with water, always first switch off the **Vigil® 2⁺ Cuatro**.

The **Vigil® 2⁺ Cuatro** built-in stainless steel filters does not need to be replaced.

The 3 filters need to be dried with a water absorbent cloth, household paper or a cotton swab.

Leave the device for 12 hours in an environment with a ambient temperature of +18°C (+65°F) before the installation in a rig. If the **Vigil® 2⁺ Cuatro** has been in contact with salt water, first switch off the **Vigil® 2⁺ Cuatro**, before rinsing it with clear water.

IT IS MANDATORY TO SEND THE **Vigil® 2⁺ Cuatro** BACK TO THE FACTORY FOR AN INSPECTION OF THE UNIT BEFORE THE NEXT JUMP IN THE FOLLOWING CASES:

- IF THE **Vigil® 2⁺ Cuatro** HAS BEEN IMMERSED IN SALT OR CLEAR WATER DEEPER THAN 1,8 METER (6 ft).

- IF THE **Vigil® 2⁺ Cuatro** HAS BEEN IMMERSED FOR MORE THAN 24 HOURS IN WATER.

⚠ **Do not open your Vigil® 2⁺ Cuatro's main box case !**

7   Replacement of Parts of the Vigil® 2± Cuatro,

7.1   *Replacing the Battery Pack*

VIGIL® 2⁺ Cuatro Dual Battery Pack, can only be changed by **A.A.D nv/sa Belgium** or **Vigil America**.
Therefore the **VIGIL® 2⁺ Cuatro** has to be returned for a battery change.

7.2   Replacing the Cutter or Control Unit

➔ *We highly recommend that replacements of a Cutter or Control Unit from the **VIGIL® 2+ Cuatro** be done by a certified rigger, or at **A.A.D. nv/sa Belgium or Vigil America**.*

Every (dis)assembling operation must be done with the **VIGIL® 2+ Cuatro** switched off. (see § 3.5.9)

How to be sure the VIGIL® 2+ Cuatro is switched off.

- Press on the push button only one single time to display «**Cuatro**» on screen.
- Wait until a blank screen appears again (proves that the unit is switched off).
- Perform procedure as shown and described on (see § 7.2.1).
- Perform a new start up procedure for final check. (see § 3.5.2)
- Complete the Spare Part Card (see § 7.3)

7.2.1 Procedure to replace the Cutter or Control unit.

1. Unscrew Connectors Locking Clip (CLC)

2. Remove Connectors Locking Clip (CLC)

3. Manually unscrew connector of spare unit (for example cutter)

4. Unplug connector

5. Reconnect and manually tighten the new spare unit (Cutter or Control unit)

6. Place Connectors Locking Clip (CLC), and check if CLC locks both connectors

7. After CLC is well positioned, secure with original screw.

8. Check if CLC is closely attached to Main Box (no space between both objects)

It is mandatory to CORRECTLY place the Connectors Locking Clip (CLC) !!
If the CLC is missing, damaged, or if not correctly positioned, DO NOT JUMP with this Vigil® 2+ Cuatro !!
You can order a new Free CLC at your dealer, A.A.D. nv/sa Belgium or Vigil America.

7.3 Spare Part Card

Every replacement part comes with a Spare Part Card (**Vigil®** AAD Spare Part Card) with a hologram number and a date of manufacture (DOM) for the cutters, the software version for the control units. Others can be for example a firmware upgrade. The card is identified with a hologram sticker with a new number.

When the replacement of a subpart has been done, it is mandatory to proceed as follows:

1. Fill out the Spare Part Card.

2. Send a copy of the Spare Part Card to A.A.D. nv/sa. by e-mail to service@vigil.aero

3. Hand it to the owner of the **Vigil® 2+ Cuatro**. Make sure that the owner keeps the original Spare Part Card with the original Test Certificate Card and the documents of the rig.

This procedure is important for our After Sales Service, as it allows us to update our files and to guarantee the replacement part with a 2 year warranty.

7.4 RMA (Return Merchandise Authorization)

If your **Vigil® 2+ Cuatro** needs to be returned for repair, firmware upgrade, battery replace or other reasons, please complete the online RMA form @ www.vigil.aero/rma and follow the instructions.

Vigil® AAD Spare Part Card

This spare part have been tested in accordance with Advanced Aerospace Designs manufacturing specifications valid on the Date Of Manufacture (D.O.M.). To validate your customer's warranty, please fill and and send via E-mail to service@vigil.aero

QC Nr: 23008

Vigil model: VIGIL 2+

☒ Cutter   D.O.M.: 08 | 18

❏ Controller D.O.M.:

❏ Other:

Mounted on the Unit:

/ QC Nr:

Jump Counter:

By:

Rigger Nr:

Testing Location: **Tongeren,** Belgium

Tested By: Quality Control
Approved

Date:

Signature:

8   Technical specifications.

8.1   Glossary

Electromagnetic shielding: A special metal shield that protects the electronic circuits from electromagnetic waves to avoid malfunctions of the device by electromagnetic interference (from radars, cellular phones ...).

Cutter Unit: A cutting system that acts by a pyrotechnical double cut of the loop inside the reserve container.

Infrared Port: Transmitter/receiver of infrared signals that allows a bidirectional exchange of data between two devices.

Kevlar: Non elastic carbon fiber used to reinforce the cables. It prevents direct traction on the electrical connections, and it reinforces mechanically the junction cables of the Control Unit and the Cutter unit.

LCD: Liquid Crystal Display. The LCD is used to visually convey information from the Control Unit to the user.

LED: Light Emitting Diode; A LED is used to flash during the start up and shut down procedures of the device.

SMD: Surface Mount Device. Small electronic components manufactured to be of reduced size and low power consumption. Such technology allows the electronic circuit to be mounted automatically, which gives very reliable and compact electronic systems.

Connectors Locking Clip (CLC): A plastic molded clip that prevents the Cutter or Control Unit connector from unscrewing unintentially or accidentally from the main-box.

8.2 *Dimensions*

Main Box:	102 x 51 x 20 mm		
Cutter Unit:	55 x 9 mm	Standard Wire Length:	Cutter unit: ± 600 mm
Control Unit:	64,3 x 19,1 x 8,5 mm		Control unit: ± 900 mm
Total Weight:	400 g	Volume:	130 cm³

8.3 *Operating descripton*

Altitude correction:	from +6000 ft (+2000 m) up to -6000 ft (-2000 m)
Operating range:	-1800 ft (-600 m) up to more than 100.000 ft (30.000 m)
Active Airborne range:	-1800 ft (-600 m) up to +30.000 ft (9200 m)
Operation:	**Vigil® II Cuatro** ➔ (see § 3)
Working temperature:	from -13°F (-25°C) to 158°F (+70°C)
Life time:	Maximum 20 years life expectancy
Maintenance:	No scheduled maintenance required
	In function of self tests messages during start-up
Waterproof:	IP 68 - dust tight and water immersion at 1.8 m (6ft) for a maximum of 24 hours
Stand-by:	14 hours
Power Pack:	3.6V dual lithium **Vigil®** AA battery, min 2000 jumps or 5 years

8.4 *Units and conversion factors*

Length:	… Ft x 0,3048 = …m	or	…m x 3, 281 = … ft
Pressure:	… inHg x 33,86 = … mbar/hPa	or	… mbar/ hPa x 0,02953 = … inHg
Speed:	… mph x 1,6093 = … km/h	or	… km/h x 0,6214 = … mph
Temperature:	(… C° x 9/5) + 32 = … F°	or	(… F°- 32) x 5/9 = … C°

9   Communication Port – IR Download Box (optional).

NATO Stock Number (NSN) 7025-13-119-7111

The **VIGIL® 2⁺ Cuatro** Control Unit is equipped with an infrared communication port that allows the user to download the freefall data recorded from the previous jumps.

An I.R. Download Box and the associated management software is available as an option (see your dealer for more information).

All of the parameters of the last 16 minutes of freefall and partial canopy ride are recorded (maximum 16 jumps), as well as the total number of jumps and other information.

(see §3.5.6)

43

Reminder:

• *The **VIGIL® 2⁺ Cuatro** is a safety device and is NOT engineered to be used as a data logger.*

• *AAD nv/sa operates a policy of continuous development. Therefore, we reserve the right to make modifications and/or improvements to any of the products described in this manual, without notice.*

• *All trademarks mentioned in this manual are the property of their respective owners.*

10   SERVICE LIFE LIMIT OF VIGIL® 2+ Cuatro UNITS.

The **VIGII® 2+ Cuatro** has been designed for maximum 20 years of use. It will do a complete check of each operating parameter each time it is switched on. If a parameter is out of tolerance, this will be indicated on the Control Unit display screen, and the unit will not switch on.

11   DISCLAIMER AND LIMITED WARRANTY.

THE USER MUST READ, UNDERSTAND, AND AGREE TO THE TERMS OF THIS DISCLAIMER BEFORE USING THE VIGIL® 2+ Cuatro.

AAD NV/SA intensively tests each **VIGIL® 2+ Cuatro** to assure its reliability. Each **VIGIL® 2+ Cuatro** has passed various documented technical inspections, calibration tests, quality control inspections and a final functional test (7 simulated jumps in a test chamber) before shipment. These are all documented and available to customers. However, the risk of electronic mechanical or external factors causing a malfunction or failure cannot be totally excluded.

BUYER UNDERSTANDS THAT BECAUSE OF THE UNAVOIDABLE DANGER ASSOCIATED WITH THE USE OF A PARACHUTE SYSTEM, SKYDIVING, AND THE USE OF A VIGIL® 2+ Cuatro, THE MANUFACTURER MAKES NO WARRANTY WHATSOEVER, EXPRESS OR IMPLIED, ARISING BY LAW OR OTHERWISE, EXCEPT THAT THE MANUFACTURER WILL REPLACE OR REWORK DEFECTIVE PARTS FREE OF CHARGE WITHIN TWO YEARS FROM THE DATE OF PURCHASE. OTHER THAN THE FOREGOING, THE VIGIL® 2+ Cuatro IS SOLD WITH ALL FAULTS AND WITHOUT ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR USE.

DISCLAIMER AND LIMITED WARRANTY
THE MANUFACTURER DISCLAIMS ANY LIABILITY UNDER THE LAW, IN TORT OR OTHERWISE, FOR DAMAGES, DIRECT OR CONSEQUENTIAL, INCLUDING BUT NOT LIMITED TO DAMAGES FOR PERSONAL INJURIES, WRONGFUL DEATH, PROPERTY DAMAGE AND LOSS OF USE OF EQUIPMENT, RESULTING FROM ANY MALFUNCTION, OR FROM ANY DEFECT IN DESIGN, MATERIAL, WORKMANSHIP OR MANUFACTURING, WHETHER CAUSED BY NEGLIGENCE ON THE PART OF THE MANUFACTURER, OR ANY MANUFACTURER OF ANY PART, ACCESSORY, COMPONENT, OR APPLIANCE MADE A PART OR APPURTENANT TO THE VIGIL® 2+ Cuatro. BUYER, BY USE OF THE VIGIL® 2+ Cuatro, AND/OR ALLOWING IT TO BE USED BY OTHERS, WAIVES ANY LIABILITY ON THE PART OF THE MANUFACTURER FOR PERSONAL INJURIES, WRONGFUL DEATH, LOSS OF CONSORTIUM, PROPERTY DAMAGE AND LOSS OF USE OF EQUIPMENT. THE WARRANTIES SET FORTH ABOVE AND THE OBLIGATIONS AND LIABILITIES OF THE MANUFACTURER THEREUNDER, ARE EXPRESSLY IN LIEU OF, AND BUYER HEREBY WAIVES AND RELEASES, ANY AND ALL OTHER WARRANTIES, AGREEMENTS, GUARANTEES, CONDITIONS, DUTIES, OBLIGATIONS, REMEDIES OR LIABILITIES, EXPRESS OR IMPLIED, ARISING BY LAW OR OTHERWISE, INCLUDING WITHOUT LIMITATION GUARANTEES, CONDITIONS, DUTIES, OBLIGATIONS, REMEDIES OR

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IMPORTANT NOTE: THERE IS A QUALITY CONTROL NUMBER HOLOGRAM (1 Alphanumeric digit plus a 5 digit nr) ON EACH OF THE UNITS OF A UPGRADED VIGIL® 2⁺ Cuatro (Pyrotechnic Cutter, Pulses Plus Element, Control Unit, and Main Box). REMOVAL OF ANY Q.C. HOLOGRAM STICKER, OR THE BLUE SEALING PAINT, (EXCEPT BY THE MANUFACTURER) VOIDS THE WARRANTY.

⚠ **NEVER JUMP WITH A BLANK LCD SCREEN ON YOUR Vigil® 2⁺ Cuatro !!** ⚠

12. Grafcet/Road Map (Parameter sequence flow chart)

Set up

Cuatro

Bat OK — or — **Bat Low** — **Bat Rpl**

Cut OK — or — **Cut Err** → **Stop** → (Vigil will not switch on / Consult your dealer)

Ctrl OK — or — **Ctrl Err**

(1)

INFO — or

(2)

SETUP — or — **Alt Cor**

(3)

CONFIG — or

Go to (1)

Ver: 88.88 — **+8888m**

☺ *ENJOY* — or — Meters — or — Feet — **lcd: 88.88** — **↑+8888m**

X+8888Ft — Metric — or — U.S. — **#88888** — **↓+8888m**

Info after jump

▯ *Sys OFF* — View — or — ʍǝᴉΛ — 🌡 : 88/88 — *Pro* — *Student* — or — *Tandem*

▮ *Sys OFF* — **TJ:18888** — or — *Xtreme*

▮ *Sys OFF* — **TFF: 88h** — **Go to (1)**

goodbye — **88m 88s**

Vigil — **LFF: 888s**

888 km/h

Finished — **Go to (3)** — **Saves 88**

T: +88°C

8888 hPa

Go to (2)