

WICKED AIR SPORTZ

Equalizer[™]

Installation and Usage Manual for AKA Viking and Excalibur

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Introduction

Thank you for purchasing the Equalizer™ board. This board is a direct replacement for the stock circuit board found in your AKA marker.

Please read through this **entire** manual **before** you attempt the installation of your Equalizer™ board!

Installation Requirements

To install your Equalizer™ board, you will need the appropriate sized allen wrenches and a flat, clean, work surface.

The installation of the Equalizer™ board is not difficult. If after reading through this manual, you believe you cannot perform the installation, please seek someone who can assist you.

This manual should provide ample information and clarity to install this product.

Warranty Information

The Equalizer™ board carries a limited lifetime warranty. Units subject to improper installation, misuse, abuse, or modifications will not be covered under this warranty.

Wicked Air Sportz may at its discretion either repair or replace the unit. The customer will pay all freight charges to and from Wicked Air Sportz.

All defective units will be returned to the customer via USPS Priority Mail. At the time of printing this manual, this rate is \$4.40. This amount must be included with any unit to be repaired, or the unit will be returned UPS COD/Freight collect.

Liability

By using this product, you agree to hold Wicked Air Sportz free from any type of liability either directly or indirectly due to the use of this product.

SECTION 1 – INSTALLATION

Step 1 – Removing the Grip Frame

Before disassembling the marker, make sure the marker power switch is in the off position.

Remove the two screws that hold the grip frame to the body.

Step 2 – Removing the Circuit Board From the Grip Frame Tray

Two plastic screws are used to hold the circuit board in place. Using the proper size flat tipped screw driver, carefully remove the screws that holds the circuit board in place.

Once the screws are removed, gently pull up on the circuit board assembly to give yourself enough room to grab a hold of it.

Step 3 – Disconnecting/Connecting the Plugs

Carefully remove each connector from the stock board (one by one) and place each connector in the same socket location on the Equalizer board. Refer to Figure 1 for proper plug placement.

Step 4 – Mounting the Board Into the Grip Frame Tray

Carefully press the Equalizer™ into the area designed for the circuit board to fit in. Make sure that you do not pinch any wires in the harness. Line up the holes (opposite corners of the Equalizer™). Now, insert the plastic screws into the holes and tighten the screws until they are just snug. DO NOT OVERTIGHTEN!

Step 5 – Testing the Board

Before reassembling the marker, you should do a quick test to make sure that connections are correct and that the board is working. Making sure that nothing is grounding the grip frame, move the power switch to the on position. If everything is working, you should see the LED light up orange. If this occurs, turn the power switch to the off position and continue to step 6.

If you don't see the LED light up, make sure your battery is connected. If that is not the problem, then check the connector plugs. If you require further assistance, please email the technical support department (tech@wickedairsportz.com).

Step 6 – Reassemble the Marker

Reassemble your marker by attaching the grip frame to the body, and using the two screws to hold them together.

Congratulations! You have now successfully completed the installation of your Equalizer™ board!

NOTE: The Equalizer board can be used with either the Viking or Excalibur markers. The Equalizer detects which marker it is installed in, and adjusts parameters to handle the different firing sequences and eyes modes.

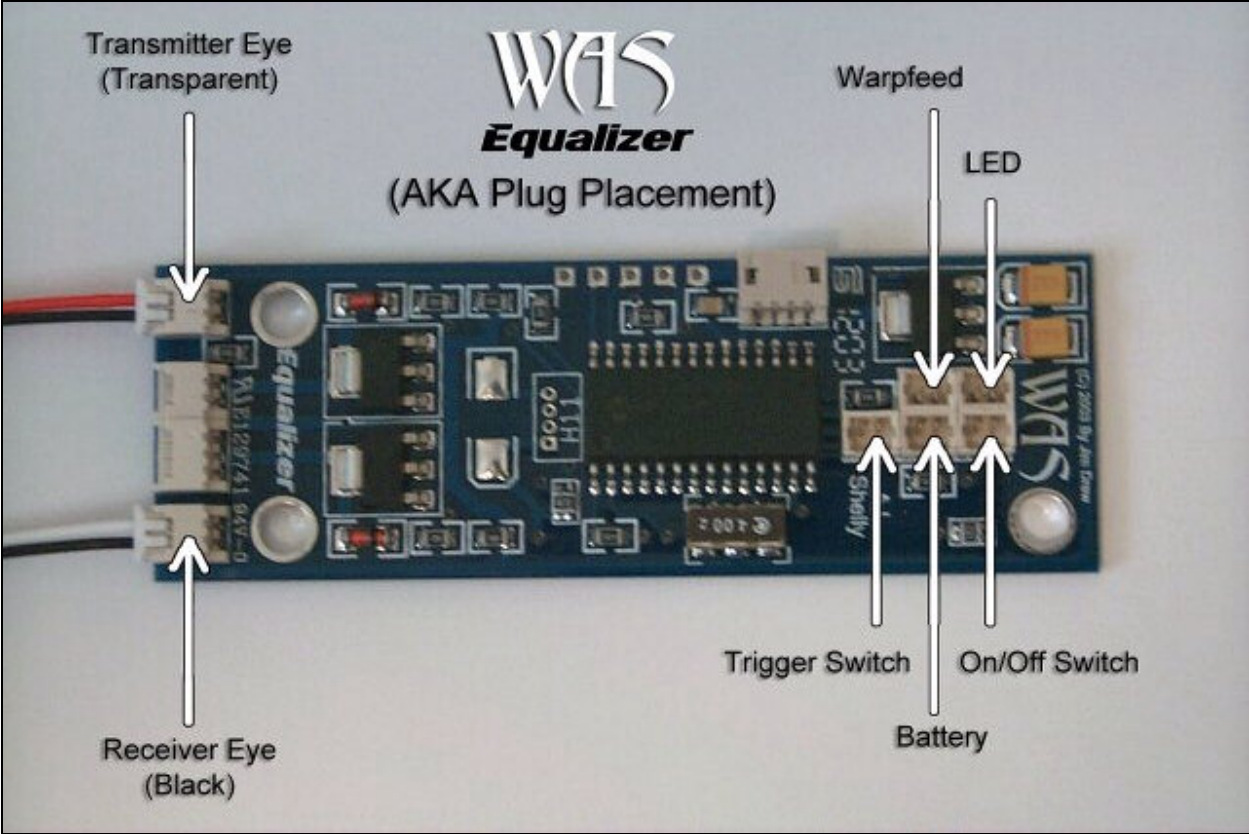


Figure 1 - Plug Placement

SECTION 2 – USAGE

The Equalizer™ has numerous features, which can be a bit overwhelming to those that are not use to having so much flexibility.

The Boot Sequence

When the Equalizer™ boots up, the LED will light up orange and then either green (NORMAL mode) or red (COMPETITION mode).

Feature Descriptions

Dwell

Dwell is the amount of time that the solenoid will be activated. This time is measured in milliseconds (1/1000th of a second). The user can alter the Dwell only when in NORMAL mode. In COMPETITION mode, it is not possible to change settings via the trigger programming. The factory default is 8.0ms. Changes can be made in .1ms units via the Equalink.

Increasing your Dwell will increase the velocity of your marker. If you are experiencing a great variance in your chrono results, try increasing your Dwell. If your dwell is too low, consistency will suffer greatly.

Debounce

Debounce is the amount of time the trigger switch must be stable in the up position before checking for another trigger pull. This time is measured in milliseconds. The user can alter the Debounce only when in NORMAL mode. Possible values are from 1ms to 255ms. The factory default is 10ms. Changes are made in 1ms units.

If you find that your marker is double firing, increase the Debounce time. To make your marker fire faster due to being more responsive to the trigger, decrease the Debounce time.

Remember, if you pull the trigger once and the recoil causes your marker to fire again by itself, it is NO LEGAL for tournament play and is a SEVERE SAFETY HAZARD!

Eye Mode

The Eye Mode is can be set to one of four different modes for the **Viking**:

Bypass - The anti-chop system is disabled. When this occurs, the maximum rate of fire is limited to 13 balls per second to help prevent chopping of balls in the breech.

Delayed – This is like the normal method of firing used in the original Intimidator select fire and semi-only boards. If you pull the trigger and no ball is found in the breech within $\frac{3}{4}$ of a second, the marker is fired anyways. If a ball is found before the time expires, the marker will immediately fire (before the $\frac{3}{4}$ of second time is up). **This is the default eye mode.**

Forced – In this mode, the marker will not fire unless there is a ball in the breech. In this mode, your marker will not “dry fire” ever. **This is the recommended eye mode.**

Simulate – In this mode, a ball is simulated to be in the breech. This allows you to fire the marker with just air, at the full speed that the marker is capable of firing! This mode can be used for practicing trigger pull methods, without wasting paint. **DO NOT SHOOT PAINT IN THIS MODE!**

It is highly recommended that tournament players use the Forced mode. If you have a hopper jam or something hangs up in the feed tube, and you are using Delayed mode, it is possible to chop a ball if one breaks free at the instant the firing sequence starts. Although this is not common, this does happen enough to justify the creation of this mode. The factory default is Delayed.

The Eye Mode is can be set to one of four different modes for the **Excalibur**:

Bypass - The anti-chop system is disabled. When this occurs, the maximum rate of fire is limited to 10 balls per second to help prevent chopping of balls in the breech.

Normal – In this mode, the chambered ball will fire (if there is one) and the bolt will open for up to $\frac{3}{4}$ of a second before automatically closing. If a ball is found before this time expires, the bolt will immediately close. **This is the default eye mode.**

Classic – In this mode, the chambered ball will fire (if there is one), and the bolt will stay open as long as you keep holding the trigger (just like a stock Autococker).

Sniper – In this mode, the chambered ball will fire (if there is one), and the bolt will not cycle until you release the trigger. When the trigger is released, bolt will open for up to $\frac{3}{4}$ of a second before automatically closing. If a ball is found before this time expires, the bolt will immediately close.

NOTE: IN ALL CASES, IF YOU DO NOT HAVE AN EYE SYSTEM, THE COMPUTER WILL AUTOMATICALLY SWITCH TO BYPASS MODE!

Hopper Trigger

The Equalizer™ hardware has the ability to generate a positive or negative going pulse, for a duration that is user programmable. Although the Equalizer™ cannot supply power to your hopper to run it (in place of its own batteries), it can provide a trigger that could force activation for a programmable period of time. More information about the interface to the Equalizer™ will be provided in separate documentation. Possible values are .1 to 2.0 seconds, with either a positive or negative going pulse. **The factory default is positive pulse, lasting 1.0 second.** This configuration was designed to work directly with the Warpfeed from Air Gun Designs. Changes to these parameters require the Equalink cable.

LED Colors and Meanings

The LED is a type that can light up in one of 3 different colors. The Equalizer™ uses this to indicate to the user when certain events are occurring. This is a breakdown of what the LED states represent:

- Solid Green - In or entering programming mode.
- Blinking Green - Normal operation, anti-chop system is enabled.
- Blinking Orange - Normal operation, anti-chop system is disabled.
- Blinking Red - Battery is low.
- Red/Green toggle - There is an error with the anti-chop system.

General Usage Tips

The LED boot sequence is as follows: solid orange (booting), solid green (normal mode) or solid red (competition mode)

You can manually bypass the anti-chop system by moving the bolt forward (blocking the infrared beam) and pulling the trigger 3 times. When the anti-chop system is bypassed the LED will blink orange (instead of green).

The first two times you pull the trigger, the LED will toggle red/green to let you know that an error occurred with the anti-chop system. If a shell fragment entered the breech, it could be cleared on the next shot.

Thus, disabling the anti-chop system immediately on the first problem is something that the Equalizer™ does not do.

With an eye system, the rate of fire is limited only by how fast the pneumatics will cycle, how fast you can pull the trigger, and how fast your loader can feed your marker.

Because the Equalizer™ can easily exceed the feed rate of standard agitated hoppers, it is recommended that you use an advanced hopper (TurboRev equipped Revolution) or a force-feed type of hopper for the best possible performance.

While in programming mode, the marker's ability to shoot is completely disabled.

Tournament Lock

It is possible to put the Equalizer™ into a tournament lock (COMPETITION) mode. You can do this by making sure the power switch is in the off position, grounding (connecting) the two center pins on the Equalink interface connector, and then moving the power switch to on position. Each time you 'reboot' with the pins grounded, the NORMAL and COMPETITION modes will toggle. The marker will not fire with the jumper in place! Removing the jumper will allow the normal operation of the marker.

Programming the Dwell, Debounce, and Eye Mode Using the Trigger

The Dwell, Debounce, and Eye Mode functions are programmable by following these instructions:

Make sure the power switch is on the off position. During programming, make sure that your marker has a barrel condom in place or the air supply shut off. Although it is not possible to fire the marker while in programming mode, it is always good to practice safe marker handling.

Pull the trigger, and hold it in the back position. Now, turn the power switch to the on position. The LED will light green. Now, immediately release the trigger. The LED will light red.

Pulling and releasing the trigger will toggle the LED color between red, green, and orange.

Red indicates you are in the Dwell programming mode, green indicates you are in the Debounce programming mode, and orange indicates you are in the Eye Mode programming mode. Once you have reached orange, an additional trigger pull will start the sequence of colors over again. This is also known as the "programming starting point".

When you decide which programming mode you want, pull the trigger and hold it until the LED goes out and then release the trigger. There will be a 2 second pause, and then the LED will flash the same color of the programming mode you are in (red=Dwell, green=Debounce, orange=eye mode).

For the Dwell and Debounce programming modes, each flash represents 1ms (millisecond) of time. For example, if you were programming the Dwell and the settings were the default, you would see the LED flash red 8 times in a row, indicating the dwell is set to 8ms. The flashing of the LED shows you the current setting **before** you program it.

For the Eye Mode programming mode, the total number of flashes represents the mode of the anti-chop system.

Dwell and Debounce

Once the LED stops flashing, you can now pull and release the trigger once for every 1ms of time you want the setting to be. For example, if you were programming the Debounce for 5ms, you would pull and release the trigger 5 times. On each pull of the trigger, the LED will light up (indicating that the pull has been detected). If you have decided not to program this mode, simply do not touch the trigger for 5 seconds. The LED will toggle green/red alternately to indicate there was a programming error, and then go back to the programming starting point.

Eye Mode

Once the LED stops flashing, you can now pull and release the trigger the number of times necessary to set the Eye Mode.

The following is a list of the possible Eye Modes and the flashes (also trigger pulls required):

- 1 flash – Bypassed mode (for Viking and Excalibur)
- 2 flashes - Delayed mode (Viking) or Normal mode (Excalibur)
- 3 flashes – Forced mode (Viking) or Class mode (Excalibur)
- 4 flashes - Simulate mode (Viking) or Sniper mode (Excalibur)

If you pull and release the trigger more than 4 times, then the LED will toggle green/red alternately to indicate there was a programming error, and then go back to the programming starting point.

Programming Complete

Once you pulled and released the trigger the number of times necessary to set the function, wait a few seconds. The LED will flash red/green/orange in rapid succession (numerous times) to let you know that the new setting has been saved. After this, the LED will return to the color representing what the current programming mode is. At this point, you can once again press and release the trigger to toggle between Dwell, Debounce, and Eye Mode programming modes.

You can perform a complete reset of the Dwell, Debounce, and Eye Mode to the factory defaults when you are in the program starting point (where you can toggle the programming mode).

To do this, just hold down the trigger for 5 full seconds. It does not matter what programming mode you are currently in (Dwell, Debounce, or Eye Mode). The LED will start flashing red, letting you know that a reset operation is being performed. After this occurs, you will be back to the programming starting point.