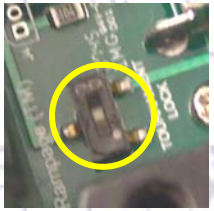
Rampage Gen 4 Programming and Setup Manual

Featuring APE's Exclusive Dual Code Software!

WARNING - ALL PERSONS WITHIN RANGE OF A PAINTBALL MARKER MUST USE PROPER EYE PROTECTION. NEVER DISASSEMBLE A MARKER WHILE IT IS UNDER PRESSURE WITH COMPRESSED AIR OR CO2. ALWAYS REMOVE THE AIR SOURCE BEFORE WORKING ON YOUR MARKER. ALWAYS FOLLOW THE MANUFACTURER'S INSTRUCTIONS WHEN USING OR WORKING ON YOUR MARKER. NOT FOLLOWING PROPER INSTRUCTION MAY CAUSE PERSONAL INJURY AND/OR POSSIBLE DAMAGE TO YOUR MARKER. USE THIS PRODUCT AT YOUR OWN RISK.

Quick Startup of the Rampage™ board - Although the Rampage board offers the most comprehensive set of marker controls available, your Rampage™ board requires *NO* programming and comes pre-configured. Once installed, just add a 9 volt battery, select a mode and GO PLAY!

More Options - For Users that want to get the most out of their marker, go to www.GoApeOnline.com and download the Advanced Programming Guide. This guide will show you how to Unlock the advanced feature sets that are included in your board!



Tournament Lock - Your Rampage Board has a tournament lock switch located on the board. Before installing your board, locate the switch (usually on the "small component" side of the board) and remove the protective orange tape cover. To use the Tournament lock feature, open the grip cover and slide the tournament switch to the "on" position (the "dot" side of the switch). The marker will be "locked" into the "Tournament Mode" setpoint and the "BPS Eyes On" rate of fire. While switched to the "on" position, you will be prevented from selecting firing modes and from accessing the programming mode.

Power On/Off - Press the Power button to activate the marker. While the button is pressed, the battery level is displayed by the LED (Green = above 8.5V, Yellow = above 7.5V, Red = below 7.5V). If a ball is present in the breech, the marker starts in the current Firing Mode. If the breech is empty, the Empty Breech alert is displayed (Solid Purple). Press & Hold the power button for 1 sec. to start the marker with Eyes Off, or load the breech with paint. To turn the marker OFF, press/hold the power button for 3 seconds.

Eye Control and Status - (1 Button Markers) During firing operations, press/hold the Power Button for 1 second to toggle the Eyes On or Off. **(2 button markers)** During firing operations, tap the Eye Button to toggle the Eyes On or Off. The Eye status is as follows: (Solid Purple* = Empty Breech / Slow Purple* Flash = Eyes Off / Fast Purple* Flash = iFault Detected). Note that if the marker is in the Eyes Off state, you cannot switch firing modes. Re-enable the Eyes first, then select a new firing mode.

Selecting a Firing Mode - Your Rampage™ board comes preloaded with 8 firing modes. To change modes just tap the Power Button. Each mode has a corresponding LED color (refer to the Firing Mode Description Table). Your marker will always restart in the last active firing mode you shutdown with.

Programming Mode - To enter Programming Mode, press and hold the trigger while powering on the marker. Release the trigger and power button. You'll now be sitting at the first setpoint in the Marker Control Setpoint Table (BPS—Eye On / Solid Red LED). Use the trigger to advance/scroll forward thru the setpoint table and notice that each setpoint has a unique LED identification (ID). To change any setpoint, advance/scroll to the setpoint ID you wish to change, then tap the Power button. The LED will now blink the current value, then repeat. Tap the Power button again to indicate you wish to change the value (OR alternatively pull the trigger to advance/scroll to the next setpoint ID). If changing a setpoint value, use trigger pulls to enter the value. Tap the Power button once more to store the new value. The LED will resume blinking the newly stored value. Scroll to another setpoint with the trigger, or exit programming mode via power off.

Setpoint Default - While in programming mode, pull and hold the trigger for 5 seconds to reset all setpoints to default.

Tune Assist - This process lets you quickly determine the best Dwell and Bolt Return Delay setting for optimal efficiency. Keep in mind that the current setpoints for Dwell and Bolt Return Delay will both be overwritten by this procedure. To start, your marker MUST BE UNLOADED. Tune Assist is a "dry firing" process. Next, connect your marker to your air source.

NOTE: Be sure you are starting with a FULL tank of air and have pre-adjusted your marker's regulator to fire paint at approximately 285 fps before you begin. You may need to make fine adjustments to your regulator settings after completing the Tune Assist process. Also, when firing the marker in Tune Assist Mode, pause at least 1 second between trigger pulls.

Start the Tune Assist process from Programming Mode (Red/Green flicker). The first half of the Tune Assist process is the solenoid dwell adjustment (starting at 2ms). Each time you pull the trigger, your marker will dry fire a 3 shot burst and increase the dwell by 1ms. Keep pulling the trigger until your marker fires the burst with a consistent "pop" or report. Tap the Power button to move on to the Bolt Return Delay adjustment.

Continue pulling the trigger during the Bolt Return Delay adjustment process, each time firing a three shot burst. The Bolt Return Delay will start at the maximum value and decrease 1ms with each pull. Continue to pull the trigger until the LED flashes purple (iFault) and the onboard speaker beeps. Your marker will automatically shut off and save the optimal Bolt Return Delay. Process complete!

Non-adjustable features:

Forced Shot - You can force the marker to fire during empty breech conditions by holding the trigger down for one second. Forced Shot is useful for initial paint loading using sound activated hoppers.

Trigger Buffering - Trigger buffering allows you to fire a smooth stream of paint by queuing a valid trigger pull during a firing cycle.

Marker Control Setpoints

Feature	LED*	Default	Min/Max Value
BPS Eyes On	Solid Red	15	5-35
BPS Eyes Off	Slow Flash Red	10	5-20
BPS Fine Tune	Fast Flash Red	10	1-10
BPS Capped Firing	Flickering Red	2	1-2
Trigger Leading Edge Debounce (ms)	Solid Green	5	1-30
Trigger Trailiing Edge Debounce (ms)	Slow Flash Green	5	1-30
Trigger Filter Control	Fast Flash Green	1	1-3
Trigger Filter Timer (ms)	Flickering Green	1	1-40
Audio Enable	Solid Yellow	2	1-2
Eye Mode	Slow Flash Yellow	2	1-5
Eye Process	Fast Flash Yellow	1	1-2
Breech Load Delay (ms)	Flickering Yellow	3	1-20
ABS Dwell (ms)	Solid Blue	8	1-8
ABS Reset Time (sec)	Slow Flash Blue	10	1-25
Solenoid Dwell (ms)	Fast Flash Blue	15	1-30
Bolt Return Delay (ms)	Flickering Blue	25	1-40
Ramp Semi Shots	Solid Purple	8	1-8
Ramp Pull Rate	Slow Flash Purple	5	1-8
Ramp Mode	Fast Flash Purple	2	1-4
Ramp Value	Flickering Purple	1	1-3
Ramp Reset (sec)	Solid Teal	1	1-8
Burst Rounds	Slow Flash Teal	3	2-10
Reactive Rounds	Fast Flash Teal	1	1-10
Breakout Mode	Flickering Teal	13	1-13
Tourney Mode	Soild White	6	1-8
Firing Mode Group 1 Enable/Disable	Slow Flash White	15	1-16
Firing Mode Group 2 Enable/Disable	Fast Flash White	15	1-16
Auto Shut Off Timer (min)	Flickering White	1	1-20
Tune Assist Start	Flickering Red/Grn	N/A	N/A

Mode	LED*	Firing Mode Description
Semi	Red	Fires 1 shot per each trigger pull.
Burst	Green	*x* rounds fired per trigger pull (*x* = 2 to 10).
Reactive	Yellow	*x* round fired per trigger pull and *x* round fired per trigger release. (x = 1 to 10)
Full Auto	Blue	Fires continuously while the trigger is held.
Ramp	Red Flash	Semi-Automatic until a *5* trigger-per-second pull rate, then transitions to reactive firing. Maintains reactive firing until rate drops below *5* BPS (RAMP Mode is user adjustable*)*
PSP	Green Flash	Three shots in Semi-Automatic then transitions to 3 Round Burst. Resets to Semi-Automatic after 1 sec. of inactivity.
NXL	Yellow Flash	Three shots in Semi-Automatic then Full Automatic on the 4th pull & hold. Resets to Semi-Automatic after 1 sec. of inactivity.
Millennium	Blue Flash	Semi-Automatic until a *6* trigger-per-second pull rate, then transitions to 100% ramping. Maintains Ramping Mode until the trigger pull rate drops below 6 per second.

LED*	Tune Assist Mode
Teal Flash	Dwell Adjustment Mode (adds 1 ms per burst)
White Flash	Bolt Return Delay Adjustment Mode (subtracts 1 ms per burst)

***NOTE: Shocker User LED colors:**

Purple = Red & Blue / Teal = Green & Blue / White = Red & Green & Blue

Marker Control Setpoint Definitions

BPS Eyes ON - This sets the Eyes On rate of fire (in Balls per second) for all firing modes.

BPS Eyes OFF - This sets the rate of fire when the eyes are off (in Balls per second) for all firing modes.

BPS Fine Tune - This adds a fractional bps offset to the BPS Settings. For example a value of 1 would add .1 to the BPS rate. A value of 10 bypasses the BPS fine tune feature.

BPS Capped Firing - When active (value = 2), the marker fires at the max rate established by the BPS Eyes On setpoint. When off (value = 1) the rate of fire is uncapped for all firing modes.

Trigger Leading Edge Debounce - The Leading Edge debounce timer compensates for the inherent contact bounce/bobble whenever the trigger switch is pulled. This setpoint is the minimum amount of time the trigger switch contacts must be closed to validate a trigger pull. It can also filter out the effects of mechanical recoil that occur during marker operation. Mechanical recoil disturbances can physically "re-trip" the trigger switch, and by increasing the timer value, a recoil disturbance can potentially be filtered out. This timer can be used in conjunction with the Trigger Filter Controls when the mechanical adjustability of the trigger is inadequate or unable to compensate for recoil disturbances.

Trigger Trailing Edge Debounce- The Trailing Edge debounce timer compensates for the inherent contact noise generated whenever the trigger switch is released. This setpoint is the minimum amount of time the trigger switch contacts must be open to validate a trigger release. Noise on the trigger release can potentially cause the marker to "queue" another trigger pull when in fact a valid trigger pull was not made by the shooter. Recoil disturbances can also generate contact bounce/bobble on the trigger release. Longer trailing edge times can also be a pseudo trigger "hold-off" timer, not allowing any new trigger pulls after trigger release until the trailing edge timer has expired.

Trigger Filter Control - The Trigger Filter Control Setpoint determines if or how the Trigger Filter Timer operates. (1 = No Trigger Filtering / 2 = Start Trigger Filter Timer on Noid Activation / 3 = Start Trigger Filter Timer on Noid Deactivation).

Trigger filter Timer - When activated, this timer prevents ANY trigger activity from being registered as a valid trigger pull and subsequently queued up for the ensuing shot. This filter should be used when the mechanical adjustability of the trigger is inadequate or unable to compensate for recoil disturbances, and when excessive recoil disturbances are not compensated by the Leading Edge Debounce setpoint. Setting this filter timer to larger values can potentially cause the marker to start ignoring otherwise valid trigger pulls. Depending on the dynamics of your marker, this filter can be fine tuned to home in on exact mechanical disturbances caused by marker recoil.

Audio - If your board contains a speaker, this setting enables you to turn your sound on or off (1 = Off / 2 = On).

Eye Mode - Your Rampage board has 5 distinct eye modes:
Option 1 - iFault™ Mode: While your eyes are functioning, your marker will fire at the BPS Eyes On rate. If your marker's eyes become disabled, iFault™ will switch to the BPS Eyes OFF rate automatically. If your eye functionality returns, iFault™ will automatically resume firing at the BPS Eyes On rate.
Option 2 - Standard Mode: While your eyes are functioning, your marker will fire at the BPS Eyes ON rate. If your eyes stop working, your marker will stop firing until you manually bypass the eye operation.
Option 3 - Tuning Mode: Used for Bolt Return Delay Tuning and the Tune Assist process. Use this mode only if you want to manually adjust the Bolt Return Delay value. Too short of a delay will produce an iFault™ alert in this mode.
Option 4 - Demo Mode: Fires your marker at the BPS Eyes On rate with all eye processing bypassed. This is a dry fire mode.
Option 5 - OFF: All eye functions are disabled, and the marker operates at the BPS Eyes OFF rate of fire.

Eye Processing - Standard processing (1) checks for a "ball in breech" status after each trigger pull before firing the marker. This process is slightly slower since it forces the board to wait for the breech delay time for each bolt cycle. Advanced processing (2) looks for a "ball in breech" status immediately after the bolt cycle is complete. Once this condition is met, the marker is allowed to fire again immediately if required (the ball in breech status is "queued").

Breech Load Delay - This setpoint establishes the amount of time (in milliseconds) the eyes must see a ball in the breech. This ensures a ball has dropped fully into the breech before the marker fires.

Anti Bolt Stick Dwell (ABS) - This setting allows you to add additional dwell time (in milliseconds) to your solenoid dwell setting. This will only affect the first shot fired after the Bolt Stick Reset Time is exceeded. You should only use this setting IF you experience first shot drop off. A value of (1-7) is the amount of extra dwell that will be added when the ABS feature runs. A value of (8) will disable all ABS operation.

ABS Reset Time - This setting allows you to set the amount of time (in seconds) the trigger must remain idle before adding the Anti Bolt Stick Dwell setting. This value is ignored when the ABS Dwell is (8).

Solenoid Dwell - This setting allows you to adjust how long the solenoid is energized (in milliseconds). Higher Dwell times will consume more power and air when the solenoid is energized. Lower Dwell times consume less power and air when the solenoid is energized. Lowering this value too much may prevent the solenoid valve from opening altogether.

Bolt Return Delay - This setpoint establishes the amount of time (in milliseconds) after firing a round that the marker waits to see the bolt transition back past the eyes. This value can be lowered when using high performance aftermarket bolts or when a proper tuning procedure is performed (Tune Assist). This delay also provides the time out period to determine if an eye fault (iFault™) has occurred.

Ramp Semi Shots - Defines the number of Semi shots required before any ramping is allowed. A value of (1-7) establishes the required number of shots. A value of (8) requires no semi shots for the ramping operation.

Ramp Pull Rate - This is trigger pull rate (trigger pulls per second /1-7) that needs to be achieved before ramping. Any semi shots defined must first be satisfied prior to ramping by pull rate. Likewise, if this setpoint is (8), the marker will ramp immediately after the defined number of semi shots are satisfied.

Ramp Mode - Determines which firing mode to ramp to. (1 = Burst, 2 = Reactive, 3 = Full Auto, 4 = Percent ramping).

Ramp Value - This value is associated with the Ramp Mode. In Burst mode, it's the number of shots in a burst. In Reactive mode it's the number of shots fired with each trigger pull and release. In Percent ramping, it's the percentage of ramping used (Ramp Firing Value x 100).

Ramp Reset - Determines the amount of time in seconds (1-7) the trigger can be at rest and yet still remain in the current ramping stage before reverting back to Semi Mode (ramp reset). If set to (8) the marker will reset ramping when the trigger is released, or your trigger pull rate drops below the Ramp Pull Rate setpoint.

Burst Mode Rounds - This value sets the number of rounds fired for each trigger pull in Burst Mode.

Reactive Rounds - This value sets the number of rounds fired for each trigger pull and release in Reactive Mode.

Breakout Mode - This setting allows you to select several different styles of breakout modes. All shots prior to full auto are semi auto. Breakout mode is off by default. Refer to the table below for operation.

Value	Breakout Mode
1	Fires a Full Auto Burst at Eyes On BPS Rate on the 1st Trigger Pull and Hold
2	Fires a Full Auto Burst at Eyes On BPS Rate on the 2nd Trigger Pull and Hold
3	Fires a Full Auto Burst at Eyes On BPS Rate on the 3rd Trigger Pull and Hold
4	Fires a Full Auto Burst at Eyes On BPS Rate + 2bps on the 1st Trigger Pull and Hold
5	Fires a Full Auto Burst at Eyes On BPS Rate + 2bps on the 2nd Trigger Pull and Hold
6	Fires a Full Auto Burst at Eyes On BPS Rate + 2bps on the 3rd Trigger Pull and Hold
7	Fires a Full Auto Burst at Eyes On BPS Rate + 4bps on the 1st Trigger Pull and Hold
8	Fires a Full Auto Burst at Eyes On BPS Rate + 4bps on the 2nd Trigger Pull and Hold
9	Fires a Full Auto Burst at Eyes On BPS Rate + 4bps on the 3rd Trigger Pull and Hold
10	Fires a Full Auto Burst Uncapped on the 1st Trigger Pull and Hold
11	Fires a Full Auto Burst Uncapped on the 2nd Trigger Pull and Hold
12	Fires a Full Auto Burst Uncapped on the 3rd Trigger Pull and Hold
13	Break Out Mode Off

Tourney Mode - Determines what mode will be locked in for Tournament play when the Tourney Mode Lock Switch is ON. Activate the Tournament mode by placing the Tourney Switch in the ON position and power cycling the marker. Setpoint values 1 thru 8 represent each available firing mode in firing mode order (1= Semi … 8 = Millennium)

Auto Shut Off - Allows you to adjust IF or WHEN your marker will automatically shut off after NO firing activity. Auto Shut Off values range from 2 to 20, with each increment adding 3 minutes of time to the delay (6 to 60 min.). A value of 1 will defeat the Auto Shut Off feature, and your marker will remain on until you shut it off.

Group 1 / Group 2 Firing Mode Enable - Allows you to enable/disable any combination of Firing Modes.

GROUP 1

Value	Auto	Reactive	Burst	Semi
1	Off	Off	Off	On
2	Off	Off	On	Off
3	Off	Off	On	On
4	Off	On	Off	Off
5	Off	On	Off	On
6	Off	On	On	Off
7	Off	On	On	On
8	On	Off	Off	Off
9	On	Off	Off	On
10	On	Off	On	Off
11	On	Off	On	On
12	On	On	Off	Off
13	On	On	Off	On
14	On	On	On	Off
15	On	On	On	On
16	Off	Off	Off	Off

GROUP 2

Value	Mill	NXL	PSP	Ramp
1	Off	Off	Off	On
2	Off	Off	On	Off
3	Off	Off	On	On
4	Off	On	Off	Off
5	Off	On	Off	On
6	Off	On	On	Off
7	Off	On	On	On
8	On	Off	Off	Off
9	On	Off	Off	On
10	On	Off	On	Off
11	On	Off	On	On
12	On	On	Off	Off
13	On	On	Off	On
14	On	On	On	Off
15	On	On	On	On
16	Off	Off	Off	Off

For Support or Assistance with your Rampage Board
Email: Support@GoApeOnline.com

Product Warranty

Rampage boards are covered against manufacturer defects for a period of 1 year. We DO NOT warrant the solenoid OR external wiring. If you have any questions, please ask before you purchase our product.

Voiding your Warranty

- Improper Installation (we can install your product for you)
- ANY alteration to the Circuit Board or code
- Improper use, misuse, abuse or physical damage
- Mishandling and/or Electro-Static-Discharge (ESD) damage

Gen 4 Rev 5