

Using Profiles

Your Rampage™ board has the ability to store up to 5 programmable profiles. The default profile is used whenever you turn on the maker. By invoking a startup sequence, you can easily switch between the 4 additional profiles. A profile is a complete clone of your marker settings. Therefore, a profile consists of ALL Setpoints including your definable ramping modes. Profiles allow you to instantly re-program your marker. The following steps will guide you through modifying the Red profile to change the available firing modes. Even though this example only changes one Setpoint, keep in mind that you can change ANY number of Setpoints and store them in your profile.

1		Pull and Hold the Trigger, press and release the Power button, then release the Trigger.
2		The Blinking Red LED indicates you have accessed the Startup Options Menu and are at the first Menu Option—Programming Mode.
3		Press and Release the Power button to enter Programming Mode. The Rear Blue LED on the Power Button will be lit indicating you are in the Default Profile. Pull and Release the Trigger one time to scroll to the Red Profile.
4		Press and Release the Power Button to select the Red Profile
5		Pull and Release the Trigger 7 times to scroll to the Group 1 Firing Mode Enable Setpoint indicated by the Solid Blue LED. Pull and Hold the trigger for 2 Seconds to select it.
8		Pull and Hold the Trigger for 2 seconds to indicate you wish to select this setting. The Blue LED will blink out the current value.
9		Pull and Hold the Trigger for 2 seconds to indicate you want to enter a new value. The Blue LED will go out.
10		Pull the trigger 1 time to input the new value. The Blue LED will blink with each trigger pull to indicate it has been registered.
11		Press and Release the Power button to store the new value. The Blue LED will blink 1 time indicating the new value.
12		Press and Hold the Power button for 3 seconds to Store all changes and power off the marker. All four LEDs will flash indicating you are powering down.

Starting in a Profile

To start your marker using the settings in the 1<sup>st</sup> or Red Profile do the following:

1		Pull and Hold the Trigger, press and release the Power button, then release the Trigger.
2		The Blinking Red LED indicates you have accessed the Startup Options Menu and are at the first Menu Option—Programming Mode.
3		Pull and Release the Trigger to scroll to the next Menu Option—Profile Load indicated by the Blinking Yellow LED.
4		Press and Release the Power button to select this Menu Option. The Solid Red LED indicates you are at the Red Profile.
5		Press and Release the Power button to select this profile
6		The Rampage board will instantly reconfigure to the settings in the Red profile and startup in firing mode.

Your marker will now be operating under the Red profile. In the previous exercise we disabled the Burst, Reactive and Full Automatic firing modes. To test that your programming is correct, first you must satisfy the “no ball in breech” alert. You can simply drop a ball in the breech or stick your finger in the breech to satisfy the alert. Once that is complete, the solid Red LED will be displayed indicating you are in the Semi Automatic firing mode. Press and Release the Power button to scroll to the next firing mode. Since the Burst (solid Yellow Led), Reactive (solid Green LED) and Full Auto (solid Blue LED) have been disabled, the next firing mode Rampage 1 (blinking Red) should be displayed. As you keep pressing the Power button to scroll through the available firing modes you will see you only have the five remaining modes available.

Ramping Worksheet

This tool is provided to help you pre-determine the settings for Rampage Ramping Modes.

1st Ramp Mode	Semi	Burst	Reactive	Auto
1st Ramp Mode Rounds	(Shots) 1 to 10	(Pull) 1 to 10	(Pull & Release) 1 to 10	(Pull & Hold) 1 to 10
1st Ramp Mode Pull Rate	2 - 10 hz	2 - 10 hz	2 - 10 hz	n/a
1st Ramp Mode BPS	10 - 40 bps	10 - 40 bps	10 - 40 bps	10 - 40 bps
2nd Ramp Mode	Semi	Burst	Reactive	Auto
2nd Ramp Mode Rounds	(Shots) 1 to 10	(Pull) 1 to 10	(Pull & Release) 1 to 10	(Pull & Hold) 1 to 10
2nd Ramp Mode Reset Timer	.1 to 2.0	.1 to 2.0	.1 to 2.0	.1 to 2.0
2nd Ramp Mode Pull Rate	2 - 10 hz	2 - 10 hz	2 - 10 hz	n/a
2nd Ramp Mode BPS	10 - 40 bps	10 - 40 bps	10 - 40 bps	10 - 40 bps
3rd Ramp Mode	Semi	Burst	Reactive	Auto
3rd Ramp Mode Rounds	n/a	(Pull) 1 to 10	(Pull & Release) 1 to 10	n/a
3rd Ramp Mode Reset Timer	.1 to 2.0	.1 to 2.0	.1 to 2.0	.1 to 2.0
3rd Ramp Mode BPS	10 - 40 bps	10 - 40 bps	10 - 40 bps	10 - 40 bps

Note - Pull rate is not used when Full Auto Mode is set / Matrix value is 1 for combination calc

Rampage 1		Rampage 2	
Input 1	1st Ramp Mode		
Input 2	1st Ramp Mode Rounds		
Input 3	1st Ramp Mode BPS		
Input 4	1st Ramp Mode Pull Rate		
Input 5	2nd Ramp Mode		
Input 6	2nd Ramp Mode Rounds		
Input 7	2nd Ramp Mode BPS		
Input 8	2nd Ramp Mode Reset Timer		
Input 9	2nd Ramp Mode Pull Rate		
Input 10	3rd Ramp Mode		
Input 11	3rd Ramp Mode Rounds		
Input 12	3rd Ramp Mode BPS		
Input 13	3rd Ramp Mode Reset Timer		

How to Determine Your Markers Mechanical Maximum Rate of Fire

Like the Speedometer on your car, just because it shows a maximum speed of 150 mile per hours doesn't mean it can actually go that fast. Several factors need to be considered when determining your markers top end balls per second (BPS) speed. Some factors include physical upgrades such as aftermarket bolts, etc. In addition to Physical changes, Marker adjustments to Dwell and Bolt Return Delay will determine your maximum rate of fire.

To determine your markers top BPS rate, you must first establish the minimum values for the Bolt Return Delay and Dwell. Based on the default values, your marker will operate from 10 to 18 bps with no changes to the Bolt Return Delay or Dwell. Since aftermarket upgrades will make these settings different from marker to marker, you will need to determine the values particular to your marker. First, establish the minimum Dwell time which your marker will operate consistently. This is essentially a trial and error process. Once your minimum Dwell time has been determined, follow the same process with your Bolt Return Delay setting. Once you have determined your minimum Bolt Return Delay value, complete the following formula to determine your markers top BPS rate of fire.

The Table below uses a simple formula using the following calculation:

$1000 \div (\text{Solenoid Dwell} + \text{Bolt Return Delay}) = \text{Maximum Rate of Fire}$

Bolt Return Delay (in Milliseconds)

Solenoid Dwell (in Milliseconds)	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
	5	66.7	62.5	58.8	55.6	52.6	50.0	47.6	45.5	43.5	41.7	40.0	38.5	37.0	35.7	34.5	33.3	32.3	31.3	30.3	29.4	28.6	27.8	27.0	26.3	25.6	25.0	24.4	23.8	23.3	22.7	22.2
	6	62.5	58.8	55.6	52.6	50.0	47.6	45.5	43.5	41.7	40.0	38.5	37.0	35.7	34.5	33.3	32.3	31.3	30.3	29.4	28.6	27.8	27.0	26.3	25.6	25.0	24.4	23.8	23.3	22.7	22.2	21.7
	7	58.8	55.6	52.6	50.0	47.6	45.5	43.5	41.7	40.0	38.5	37.0	35.7	34.5	33.3	32.3	31.3	30.3	29.4	28.6	27.8	27.0	26.3	25.6	25.0	24.4	23.8	23.3	22.7	22.2	21.7	21.3
	8	55.6	52.6	50.0	47.6	45.5	43.5	41.7	40.0	38.5	37.0	35.7	34.5	33.3	32.3	31.3	30.3	29.4	28.6	27.8	27.0	26.3	25.6	25.0	24.4	23.8	23.3	22.7	22.2	21.7	21.3	20.8
	9	52.6	50.0	47.6	45.5	43.5	41.7	40.0	38.5	37.0	35.7	34.5	33.3	32.3	31.3	30.3	29.4	28.6	27.8	27.0	26.3	25.6	25.0	24.4	23.8	23.3	22.7	22.2	21.7	21.3	20.8	20.4
	10	50.0	47.6	45.5	43.5	41.7	40.0	38.5	37.0	35.7	34.5	33.3	32.3	31.3	30.3	29.4	28.6	27.8	27.0	26.3	25.6	25.0	24.4	23.8	23.3	22.7	22.2	21.7	21.3	20.8	20.4	20.0
	11	47.6	45.5	43.5	41.7	40.0	38.5	37.0	35.7	34.5	33.3	32.3	31.3	30.3	29.4	28.6	27.8	27.0	26.3	25.6	25.0	24.4	23.8	23.3	22.7	22.2	21.7	21.3	20.8	20.4	20.0	19.6
	12	45.5	43.5	41.7	40.0	38.5	37.0	35.7	34.5	33.3	32.3	31.3	30.3	29.4	28.6	27.8	27.0	26.3	25.6	25.0	24.4	23.8	23.3	22.7	22.2	21.7	21.3	20.8	20.4	20.0	19.6	19.2
	13	43.5	41.7	40.0	38.5	37.0	35.7	34.5	33.3	32.3	31.3	30.3	29.4	28.6	27.8	27.0	26.3	25.6	25.0	24.4	23.8	23.3	22.7	22.2	21.7	21.3	20.8	20.4	20.0	19.6	19.2	18.9
	14	41.7	40.0	38.5	37.0	35.7	34.5	33.3	32.3	31.3	30.3	29.4	28.6	27.8	27.0	26.3	25.6	25.0	24.4	23.8	23.3	22.7	22.2	21.7	21.3	20.8	20.4	20.0	19.6	19.2	18.9	18.5
	15	40.0	38.5	37.0	35.7	34.5	33.3	32.3	31.3	30.3	29.4	28.6	27.8	27.0	26.3	25.6	25.0	24.4	23.8	23.3	22.7	22.2	21.7	21.3	20.8	20.4	20.0	19.6	19.2	18.9	18.5	18.2
	16	38.5	37.0	35.7	34.5	33.3	32.3	31.3	30.3	29.4	28.6	27.8	27.0	26.3	25.6	25.0	24.4	23.8	23.3	22.7	22.2	21.7	21.3	20.8	20.4	20.0	19.6	19.2	18.9	18.5	18.2	17.9
	17	37.0	35.7	34.5	33.3	32.3	31.3	30.3	29.4	28.6	27.8	27.0	26.3	25.6	25.0	24.4	23.8	23.3	22.7	22.2	21.7	21.3	20.8	20.4	20.0	19.6	19.2	18.9	18.5	18.2	17.9	17.5
	18	35.7	34.5	33.3	32.3	31.3	30.3	29.4	28.6	27.8	27.0	26.3	25.6	25.0	24.4	23.8	23.3	22.7	22.2	21.7	21.3	20.8	20.4	20.0	19.6	19.2	18.9	18.5	18.2	17.9	17.5	17.2
	19	34.5	33.3	32.3	31.3	30.3	29.4	28.6	27.8	27.0	26.3	25.6	25.0	24.4	23.8	23.3	22.7	22.2	21.7	21.3	20.8	20.4	20.0	19.6	19.2	18.9	18.5	18.2	17.9	17.5	17.2	16.9
	20	33.3	32.3	31.3	30.3	29.4	28.6	27.8	27.0	26.3	25.6	25.0	24.4	23.8	23.3	22.7	22.2	21.7	21.3	20.8	20.4	20.0	19.6	19.2	18.9	18.5	18.2	17.9	17.5	17.2	16.9	16.7
	21	32.3	31.3	30.3	29.4	28.6	27.8	27.0	26.3	25.6	25.0	24.4	23.8	23.3	22.7	22.2	21.7	21.3	20.8	20.4	20.0	19.6	19.2	18.9	18.5	18.2	17.9	17.5	17.2	16.9	16.7	16.4
	22	31.3	30.3	29.4	28.6	27.8	27.0	26.3	25.6	25.0	24.4	23.8	23.3	22.7	22.2	21.7	21.3	20.8	20.4	20.0	19.6	19.2	18.9	18.5	18.2	17.9	17.5	17.2	16.9	16.7	16.4	16.1
	23	30.3	29.4	28.6	27.8	27.0	26.3	25.6	25.0	24.4	23.8	23.3	22.7	22.2	21.7	21.3	20.8	20.4	20.0	19.6	19.2	18.9	18.5	18.2	17.9	17.5	17.2	16.9	16.7	16.4	16.1	15.9
	24	29.4	28.6	27.8	27.0	26.3	25.6	25.0	24.4	23.8	23.3	22.7	22.2	21.7	21.3	20.8	20.4	20.0	19.6	19.2	18.9	18.5	18.2	17.9	17.5	17.2	16.9	16.7	16.4	16.1	15.9	15.6
	25	28.6	27.8	27.0	26.3	25.6	25.0	24.4	23.8	23.3	22.7	22.2	21.7	21.3	20.8	20.4	20.0	19.6	19.2	18.9	18.5	18.2	17.9	17.5	17.2	16.9	16.7	16.4	16.1	15.9	15.6	15.4
	26	27.8	27.0	26.3	25.6	25.0	24.4	23.8	23.3	22.7	22.2	21.7	21.3	20.8	20.4	20.0	19.6	19.2	18.9	18.5	18.2	17.9	17.5	17.2	16.9	16.7	16.4	16.1	15.9	15.6	15.4	15.2
	27	27.0	26.3	25.6	25.0	24.4	23.8	23.3	22.7	22.2	21.7	21.3	20.8	20.4	20.0	19.6	19.2	18.9	18.5	18.2	17.9	17.5	17.2	16.9	16.7	16.4	16.1	15.9	15.6	15.4	15.2	14.9
	28	26.3	25.6	25.0	24.4	23.8	23.3	22.7	22.2	21.7	21.3	20.8	20.4	20.0	19.6	19.2	18.9	18.5	18.2	17.9	17.5	17.2	16.9	16.7	16.4	16.1	15.9	15.6	15.4	15.2	14.9	14.7
	29	25.6	25.0	24.4	23.8	23.3	22.7	22.2	21.7	21.3	20.8	20.4	20.0	19.6	19.2	18.9	18.5	18.2	17.9	17.5	17.2	16.9	16.7	16.4	16.1	15.9	15.6	15.4	15.2	14.9	14.7	14.5
	30	25.0	24.4	23.8	23.3	22.7	22.2	21.7	21.3	20.8	20.4	20.0	19.6	19.2	18.9	18.5	18.2	17.9	17.5	17.2	16.9	16.7	16.4	16.1	15.9	15.6	15.4	15.2	14.9	14.7	14.5	14.3

Maximum Rate of Fire (in BPS)