

# HOW TO DETERMINE YOUR MARKERS MAXIMUM RATE OF FIRE

Like the Speedometer in your car, just because it shows a maximum speed of 150 miles 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) rate. The table below uses a simple formula to determine your markers theoretical maximum rate of fire based on your Dwell and Bolt Return settings. The formula is:

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

To determine your markers top end BPS rate, you must establish the minimum values for the Bolt Return Delay and Dwell. Your marker will operate up to 25 BPS using the default values for Bolt Return Delay and Dwell. Aftermarket upgrades, general marker variations and marker condition all affect performance differently from marker to marker, so you need to determine the values specific to your marker. Optimizing your BPS rate will also optimize your markers' air efficiency as well.

- 1 Switch your marker to Eye Mode 4 (Demo). This will allow you to bypass your empty breech alert and dry fire your maker at your max BPS rate.
2. Establish the minimum Dwell time which will operate your marker consistently. This is essentially a trial and error process. Start at the default Dwell and keep lowering the value until the marker will not fire properly—i.e. the bolt “short strokes”. Once you find the best dwell setting, you may want to add 1 or 2 ms for consistency. When complete, switch back to Eye Mode 2 (Eyes On) and adjust your velocity by regulator adjustment and shooting paint over a chronograph.
3. Switch your marker to Eye Mode 3 (Bypass). Follow the same process with your Bolt Return Delay setting, lowering the value until the “iFault Alert” is activated. Once you find the lowest Bolt Return Delay setting, add 1 or 2 ms for consistency.
4. Now that the minimum Dwell and Bolt Return Delay values are known, use the table below to determine your markers top BPS rate of fire.

Bolt Return Delay (in Milliseconds)

	1	2	3	4	5	6	7	8	9	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
1	500.0	333.3	250.0	200.0	166.7	142.9	125.0	111.1	100.0	90.9	83.3	76.9	71.4	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
2	333.3	250.0	200.0	166.7	142.9	125.0	111.1	100.0	90.9	83.3	76.9	71.4	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
3	250.0	200.0	166.7	142.9	125.0	111.1	100.0	90.9	83.3	76.9	71.4	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
4	200.0	166.7	142.9	125.0	111.1	100.0	90.9	83.3	76.9	71.4	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
5	166.7	142.9	125.0	111.1	100.0	90.9	83.3	76.9	71.4	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	142.9	125.0	111.1	100.0	90.9	83.3	76.9	71.4	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	21.7
7	125.0	111.1	100.0	90.9	83.3	76.9	71.4	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	21.7	21.3
8	111.1	100.0	90.9	83.3	76.9	71.4	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	21.7	21.3	20.8
9	100.0	90.9	83.3	76.9	71.4	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	21.7	21.3	20.8	20.4
10	90.9	83.3	76.9	71.4	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	21.7	21.3	20.8	20.4	20.0
11	83.3	76.9	71.4	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	21.7	21.3	20.8	20.4	20.0	19.6
12	76.9	71.4	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	21.7	21.3	20.8	20.4	20.0	19.6	19.2
13	71.4	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	21.7	21.3	20.8	20.4	20.0	19.6	19.2	18.9
14	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	21.7	21.3	20.8	20.4	20.0	19.6	19.2	18.9	18.5
15	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	21.3	20.8	20.4	20.0	19.6	19.2	18.9	18.5	18.2
16	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	20.8	20.4	20.0	19.6	19.2	18.9	18.5	18.2	17.9
17	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	20.4	20.0	19.6	19.2	18.9	18.5	18.2	17.9	17.5
18	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	20.0	19.6	19.2	18.9	18.5	18.2	17.9	17.5	17.2
19	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	19.6	19.2	18.9	18.5	18.2	17.9	17.5	17.2	16.9
20	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	19.2	18.9	18.5	18.2	17.9	17.5	17.2	16.9	16.7
21	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	18.9	18.5	18.2	17.9	17.5	17.2	16.9	16.7	16.4
22	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	18.5	18.2	17.9	17.5	17.2	16.9	16.7	16.4	16.1
23	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	18.2	17.9	17.5	17.2	16.9	16.7	16.4	16.1	15.9
24	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	17.9	17.5	17.2	16.9	16.7	16.4	16.1	15.9	15.6
25	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	17.5	17.2	16.9	16.7	16.4	16.1	15.9	15.6	15.4
26	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	17.2	16.9	16.7	16.4	16.1	15.9	15.6	15.4	15.2
27	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	16.9	16.7	16.4	16.1	15.9	15.6	15.4	15.2	14.9
28	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	16.7	16.4	16.1	15.9	15.6	15.4	15.2	14.9	14.7
29	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	16.4	16.1	15.9	15.6	15.4	15.2	14.9	14.7	14.5
30	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	16.1	15.9	15.6	15.4	15.2	14.9	14.7	14.5	14.3

Maximum Rate of Fire (in BPS)

