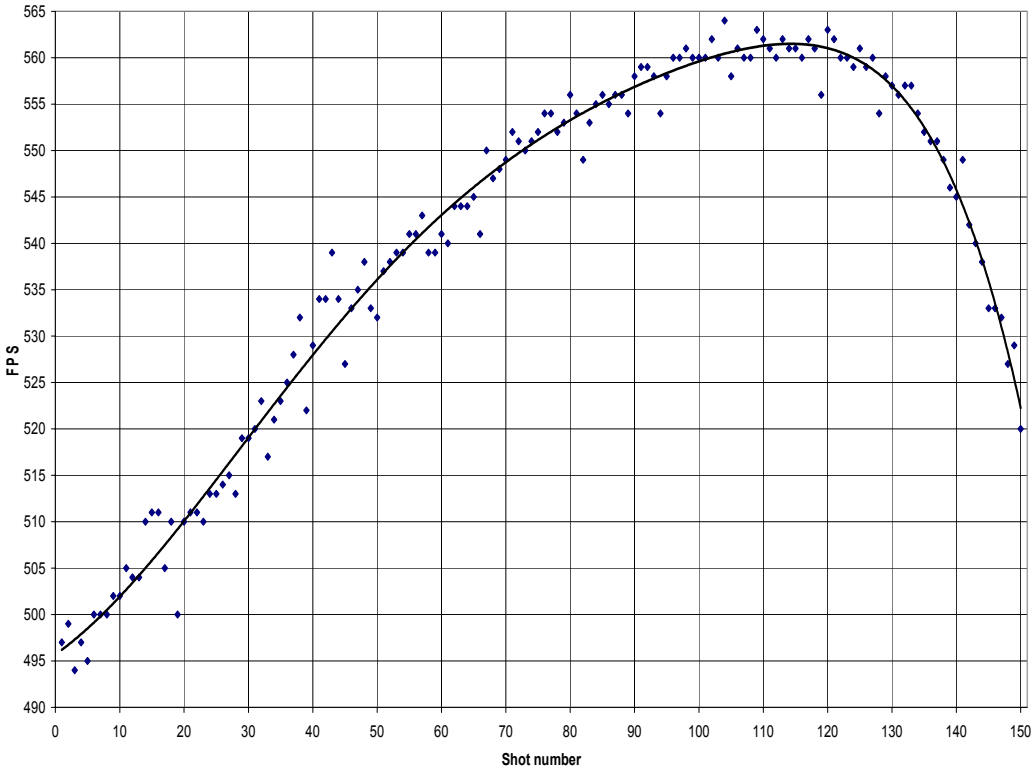
Testing the Air Arms S410K with the Cobmro MK4

Having just received the new Combro MK4 chronoscope, I've just tested my S410K with it to check theory with practice.

The Combro MK4 chronoscope:

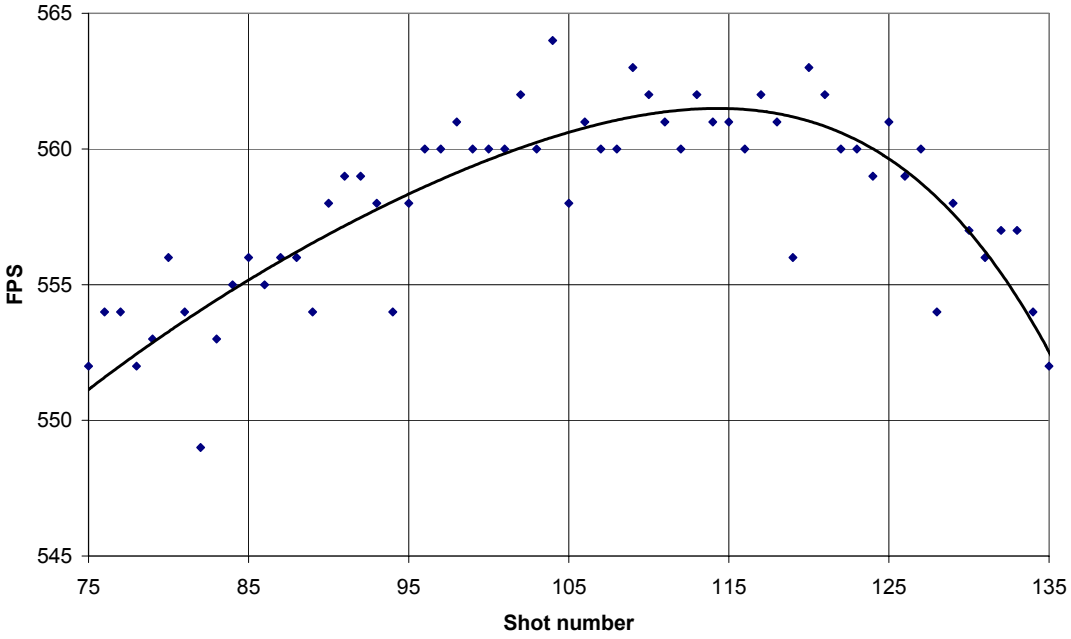
I charged the 410 up to full capacity (190 bar) and then fired off shot after shot until the readings began to drop off dramatically at 60 bar. Here are my guns results:

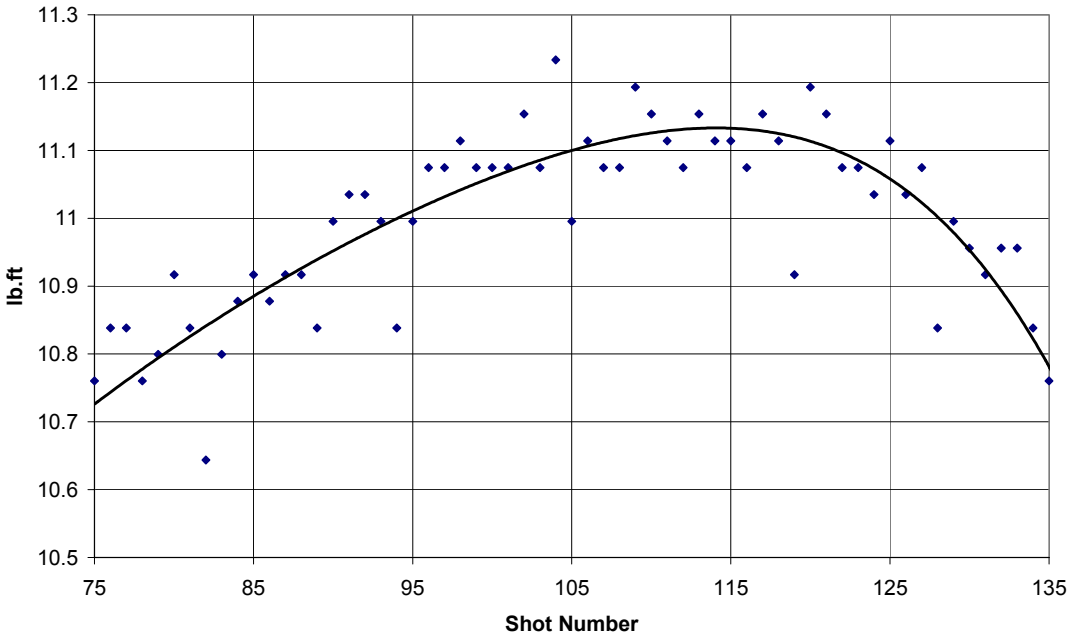
Shot #	Charge	FPS	lb.ft
1	**190**	497	8.72
2		499	8.79
3		494	8.62
4		497	8.72
5		495	8.65
6		500	8.83
7		500	8.83
8		500	8.83
9		502	8.90
10		502	8.90
11		505	9.01
12		504	8.97
13		504	8.97
14		510	9.19
15		511	9.22
16		511	9.22
17		505	9.01
18		510	9.19
19		500	8.83
20		510	9.19
21		511	9.22
22		511	9.22
23		510	9.19
24		513	9.29
25	**175**	513	9.29
26		514	9.33
27		515	9.37
28		513	9.29
29		519	9.51
30		519	9.51
31		520	9.55
32		523	9.66
33		517	9.44
34		521	9.59
35		523	9.66
36		525	9.73
37		528	9.85
38		532	9.99
39		522	9.62
40		529	9.88
41		534	10.07
42		534	10.07
43		539	10.26
44		534	10.07
45		527	9.81
46		533	10.03
47		535	10.11
48		538	10.22
49		533	10.03
50		532	9.99
51	**150**	537	10.18
52		538	10.22
53		539	10.26
54		539	10.26
55		541	10.34
56		541	10.34
57		543	10.41
58		539	10.26
59		539	10.26
60		541	10.34
61		540	10.30
62		544	10.45
63		544	10.45
64		544	10.45
65		545	10.49
66		541	10.34
67		550	10.68
68		547	10.57
69		548	10.61
70		549	10.64
71		552	10.76
72		551	10.72
73		550	10.68
74		551	10.72
75		552	10.76
76		554	10.84
77		554	10.84
78		552	10.76
79		553	10.80
80		556	10.92
81		554	10.84
82		549	10.64
83		553	10.80
84		555	10.88
85	**125**	556	10.92
86		555	10.88
87		556	10.92
88		556	10.92
89		554	10.84
90		558	11.00
91		559	11.04
92		559	11.04
93		558	11.00
94		554	10.84
95		558	11.00
96		560	11.07
97		560	11.07
98		561	11.11
99		560	11.07
100		560	11.07
101		560	11.07
102		562	11.15
103		560	11.07
104		564	11.23
105		558	11.00
106		561	11.11
107		560	11.07
108		560	11.07
109		563	11.19
110		562	11.15
111		561	11.11
112		560	11.07
113		562	11.15
114		561	11.11
115		561	11.11
116		560	11.07
117		562	11.15
118		561	11.11
119		556	10.92
120	**100**	563	11.19
121		562	11.15
122		560	11.07
123		560	11.07
124		559	11.04
125		561	11.11
126		559	11.04
127		560	11.07
128		554	10.84
129		558	11.00
130		557	10.96
131		556	10.92
132		557	10.96
133		557	10.96
134		554	10.84
135		552	10.76
136		551	10.72
137		551	10.72
138		549	10.64
139		546	10.53
140	**75**	545	10.49
141		549	10.64
142		542	10.37
143		540	10.30
144		538	10.22
145		533	10.03
146		533	10.03
147		532	9.99
148		527	9.81
149		529	9.88
150	**60**	520	9.55



As you can see from the graph, the gun continues to rise in power before dropping off dramatically.
To have decent accuracy, it is important to have as little shot to shot variance as possible – within 10 fps if possible. For my gun, the sweet spot appears to be from shot 75 to shot 135 which provides a total of 60 usable shots. This equates to running the gun from 130 bar down to 80 bar.

The “sweet spot” graphs:





So what's the point? Well, I now know exactly the pressure to charge the gun and plugging the numbers into Chairgun, I can produce the following diagrams which are SPOT ON in practice: