ARROW SPINE
(part 2)

What are we looking at when spine checking arrows?

Arrow run out.

From my testing arrows with a ram tester I have seen arrows with a T.I.R. of .003 or greater requires nock tuning. This means buying arrows with .003 or .006 runout you should nock tune. Run out is nothing more than an arrow not being straight between the two ends. Here in figure 1 we can see what run out looks like on this arrow. Looking at this arrow it's easy for people to mis judge this arrow as having a stiff spine point but since the stiff point and weak point are 180 degrees from each other and 90 degrees and 270 degrees are equal, this is an arrow with run out not an arrow showing a stiff spine point.

Figure 1(no weight)

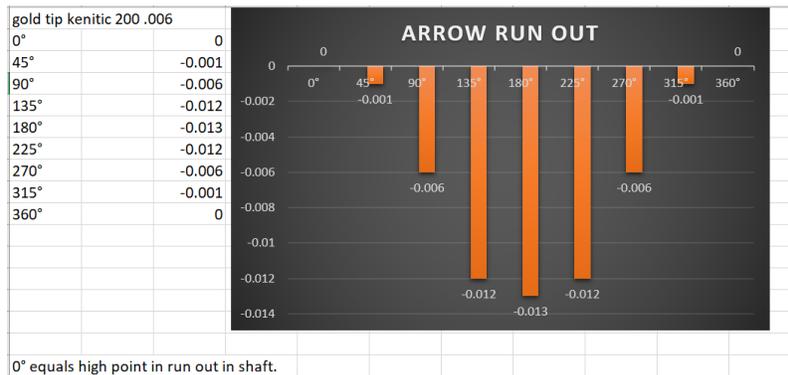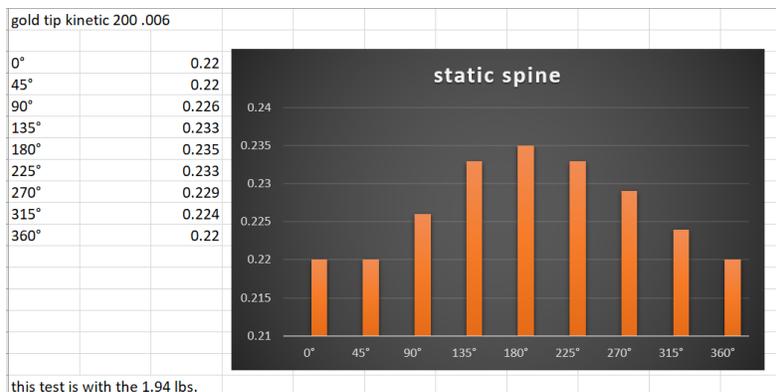| gold tip kenitic 200 .006	
0°	0
45°	-0.001
90°	-0.006
135°	-0.012
180°	-0.013
225°	-0.012
270°	-0.006
315°	-0.001
360°	0

0° equals high point in run out in shaft.

Figure 2 is the same arrow as in figure 1. Figure 2 is the spine reading with the 1.94lbs. added. As you can see the spine reading follows the run out shown with no weight.

Figure 2 (1.94lbs.)

gold tip kinetic 200 .006	
0°	0.22
45°	0.22
90°	0.226
135°	0.233
180°	0.235
225°	0.233
270°	0.229
315°	0.224
360°	0.22

this test is with the 1.94 lbs.

Here in figure 3 is an arrow with a T.I.R of .003 as you can see the run out and then in figure 4 with the weight added it still follows the run out. This means in this arrow we are still looking at run out and not a stiff spine point.
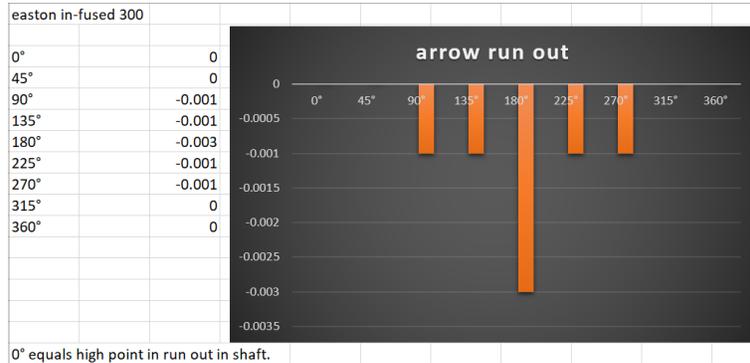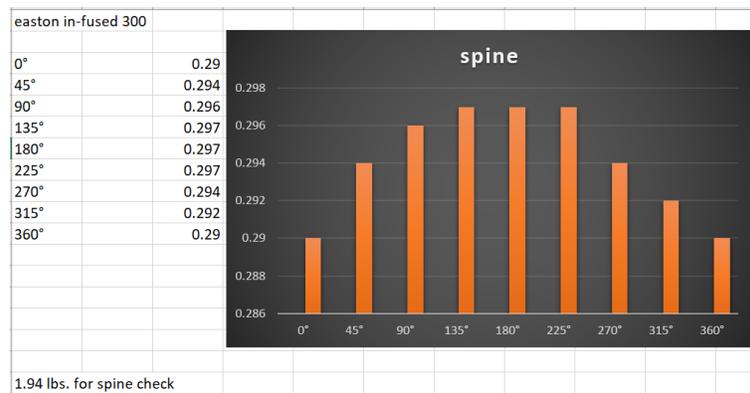
Figure 3 (no weight)

easton in-fused 300

0°	0
45°	0
90°	-0.001
135°	-0.001
180°	-0.003
225°	-0.001
270°	-0.001
315°	0
360°	0

0° equals high point in run out in shaft.

Figure 4 (1.94lbs.)

easton in-fused 300

0°	0.29
45°	0.294
90°	0.296
135°	0.297
180°	0.297
225°	0.297
270°	0.294
315°	0.292
360°	0.29

1.94 lbs. for spine check

Looking at figure 1 through figure 4 you can see the run out of the two shafts, and then the two shafts with the weight added. Since the indication with the weight follow the run out and the two points showing the least amount of deflection and then the greatest amount of deflection coincide shows that we are looking at run out and not a stiff spine point. It's easy to see why people when testing arrows with a ram tester can mistake a stiff spine point when it's just run out.

Arrow spine variance.

This one is a hard one to explain. We know that carbon arrows are wrapped. We know because of this, arrows will have a point where they overlap. This point can show up with RAM testers. But it will be in arrows with less than .003 T.I.R. This indication is what most call a stiff point or stiff spine. Problem with this, is not all arrows show the same readings. Some arrows have zero indication of no stiffer spine point when testing. Why is this? My opinion, better quality arrows. Now we got to look at the arrows that are showing this stiffer spine point.

If we look at an arrow and there is a true stiff point. It must be identical 180 degrees. If it is not, then this is not a stiff spine point.

Let's look at what can give a true stiff indication and have a stiff reading 180 degree. Here in figure 5 we see an elliptical shaft. What I've seen when testing the PAPS system from Firenock is this elliptical shape.
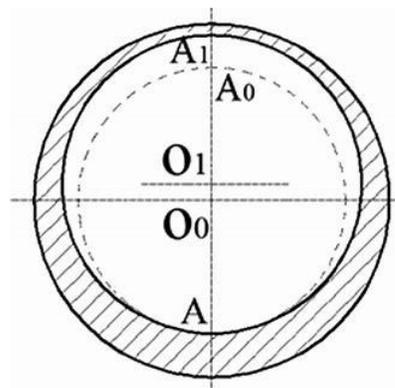
Figure 5
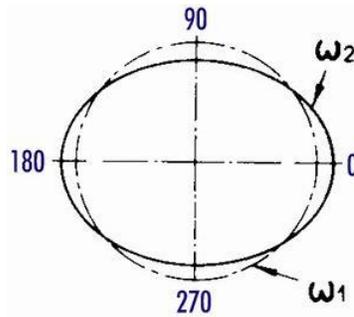
Looking at figure 5 we see two drawings. W1 as being round and W2 as elliptical. In this figure taking an indication reading we would see 0 degrees and 180 degrees as stiff point and 90 degrees and 270 degrees as the weak points.

This elliptical shape will cause arrows to react different, so nock tuning arrows shaped like this would also be required.

Another thing to look at would be if the arrow is concentric. This one may or may not show up on a ram tester as a stiff point being 180 degrees out. Looking at figure 6 this one can cause arrows to look like a spine variance.

Figure 6

Arrows like in figure 6. In my opinion is due to lack of quality of arrows being built.

When setting up arrows and once you understand what you're looking at a ram tester can be used. It just will not be 100%.

Other methods.

There are methods people due to try to locate this point in the arrow without shooting.

1   Floating
2   Compression
3   PAPS
4   Flat line oscillation (flo)
5   Frequency tester

When I looked at these methods I found floating and compression to be the least accurate although compression testing will follow run out. Flat line oscillation is a golf club test for finding the stiff and neutral plain. The ideal with this test your looking for where the arrow flows in a straight line with no wobble.

More testing needs to be done with this test. I however do have thoughts about this test, but this information will be at a letter date. Frequency testing, I have not done. It will be a more advanced method over "flat line oscillation". Currently, I'm testing the PAPS system from fire nock.

PAPS system.

What I can say about the PAPS at this time when testing the arrows in figure 1 and figure 3 the PAPS followed the run out. More testing is needed.

At this time having away to verify spine to build a lethal arrow I would recommend have a ram spine tester at a minimum.

Side note: after all the testing I've done and what I've seen and showed in this publication. Is there truly a stiff spine point or is it just an indication of just run out or arrows just not being round.

I think most of what we see is just wording and the incorrect use of it. Will this ever change I doubt it. Its to easy just to use words like stiff and weak. my point here is to show what we are really looking at and understand what we see and how to use it to our advantage.

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