

# Tuning Check List

## Right-Hand Archer

Name

Date

### Limb Alignment

Align the limbs with center of long stabilizer using limb aligning marks (Beiter Limb Gage. Use 2 per limb)

Adjust tiller 1/8 to 1/4 inches wider on top limb

Adjust bow to desired draw weight

### Center Shot

Put medium spring in plunger and adjust to center of spring tension.

Install plunger in hole above deepest point on grip

Screw plunger in or out to achieve proper center shot which is:

- When looking from behind and aligning the string with limb aligning marks, 2/3 of the right side of the arrow point is covered by the string (barrelled shafts), or 1/3 of the right side of the point is covered by the string (parallel shafts)

### Nock Height

Initial set should be about 3/8" above 0" if you are using a bow square.

### Brace Height

Set to manufacturer's recommendation.

### Sight

Align the sight rail to run parallel to the string.

Adjust the sight ring left/right so that center of aperture or pin is centered above the arrow tip. This will be a baseline setting.

**Walk Back** (The walk back process will determine dynamic center shot. This process needs to be done in calm wind conditions)

Place a vertical line using tape or a plumb line down the center of a target butt. Identify a small target at the top of the target on the center line. Adjust your sight for 8m and shoot a group of arrows from 8 m at the spot at the top of the target. Adjust the sight until the arrows hit the center of the spot.

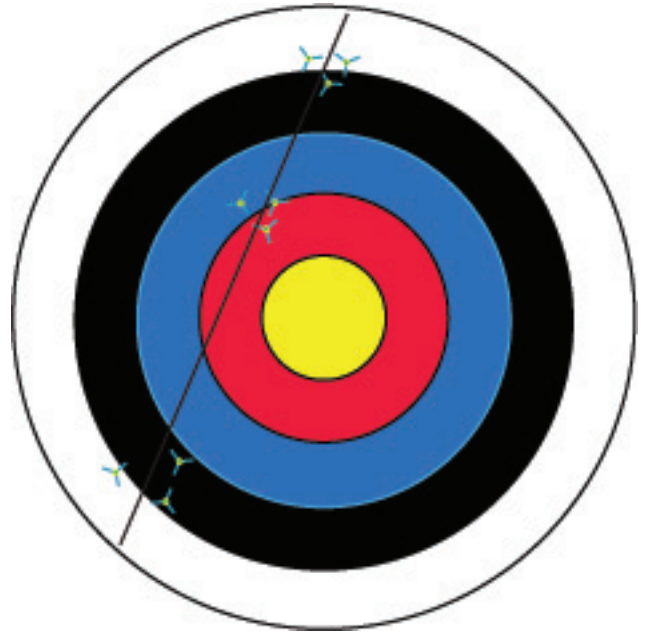
Move back to 20m or far enough back that the next group of arrows will impact below the first group. Aim at the same spot at the top of the target but do not adjust your sight.

Move back to 30m, aiming at the same spot and shoot another group. Do not adjust your sight.

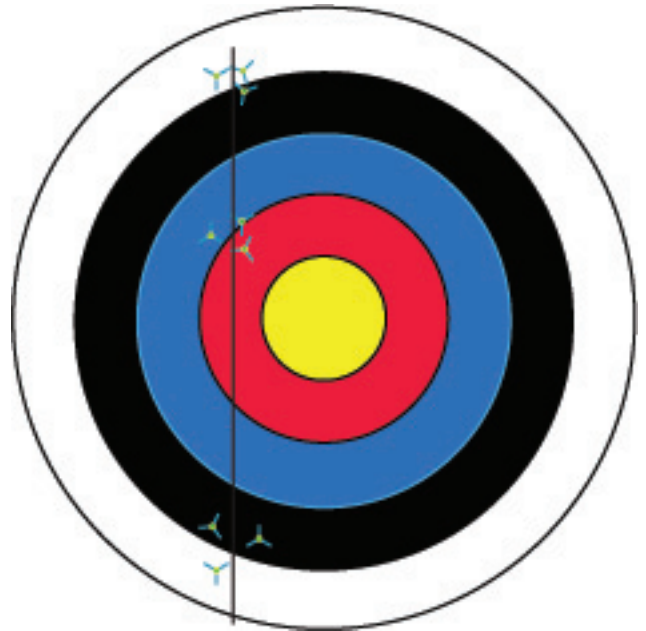
Now you will observe if the arrow groups are in a vertical line or if the groups are drifting to one side or the other. If the groups are all in a vertical line and are still centered left-to-right on the target you are done. If the arrow groups impacted on a diagonal line you will have to adjust the center shot by screwing the plunger in or out. Refer to Figure 1 to determine which way to move the plunger. Keeping the same sight position originally set, repeat the walk back process until the groups are in a vertical line. Changing the plunger position will cause your groups to move left or right on the target – this is OK and will be taken care of later.

When the groups are in a vertical line but they are no longer centered on the target do not adjust your sight to get the arrows back to the center line. Instead adjust the plunger spring tension. This will move the arrow groups to the right or left as necessary (Figures 2, 3). Again, repeat the walk back process if you change spring tension. Keep in mind that you may have to change springs in the plunger (Beiter) to keep the spring tensioned about in the mid range of the installed spring.

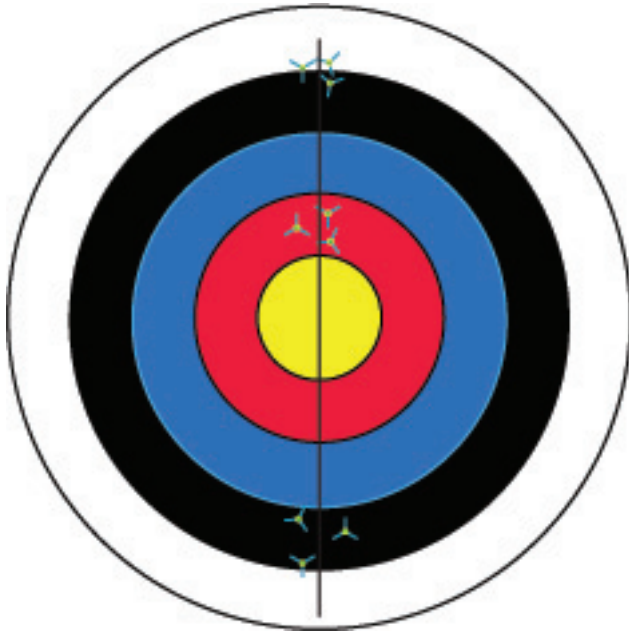
## Right-Hand Archer



*Figure 1. Arrows are falling on a diagonal line slanted to the left. Move the plunger position to the right (screw out counterclockwise). If your arrows are on a diagonal line falling to the right, move the plunger more to the left (screw in clockwise). Do not adjust your sight after moving the plunger.*



*Figure 2. The arrow groups are falling on a vertical line but the line is now positioned to the left of center. The vertical line indicates the plunger **position** is correct. Now, weaken the plunger spring (screw out counterclockwise) to move the vertical line to the right. Do not adjust your sight; use the plunger tension to adjust the left/right position of the shot.*



*Figure 3. Arrows are falling on a vertical line centered on the target from left to right. This is ideal.*

### Bare Shaft – Fine Tuning (This should be done in calm wind conditions)

Shoot 3 fletched arrows and 3 bare shafts at a target from 18m. Adjust the nock set to get bare shafts to impact target at group height or just above group.

Make necessary adjustments to get bare shaft arrows to impact target with the group of fletched arrows.

Adjustments include: Draw weight, arrow length, point weight, nock weight, brace height, number of strands in the string, center serving length. See footnote below.\*\*

Bare shafts are above arrow group: This is caused by the nocking point being too low. Correct this by raising the nocking point on the string.

Bare shafts are below the arrow group: This is caused by the nocking point being too high. Correct this by lowering the nocking point on the string. However, some archers prefer to have the nocking point a touch high to facilitate greater clearance between the fletching and the arrow rest.

Bare shafts to the left of the arrow group: The arrows are stiff.\*\* Correct this by increasing point weight, increasing the draw tension slightly, increasing brace height, decreasing the weight of the string, or even using a longer nock to increase arrow length.

Bare shafts are to the right of the arrow group: The arrows are weak.\*\* Correct this by decreasing point weight, decreasing the draw tension slightly, increasing the weight of the string, or shortening the arrow slightly.

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\*\* Note: Plunger spring tension does not affect the bending of the arrow and cannot be used to adjust for incorrect arrow spine.

## Right-Hand Archer

nock too high

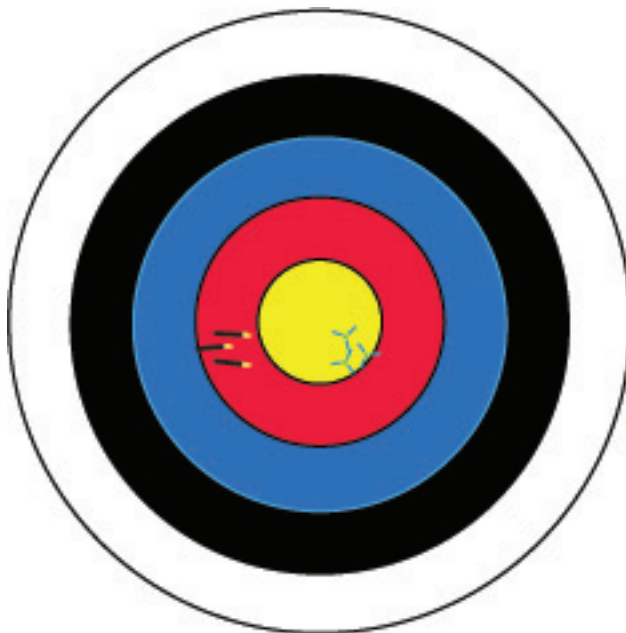


nock too low



Figure 4. Bare shaft tuning. First, get the nocking point location right. Left figure: The bare shafts group below the fletched shafts. This indicates that the nocking point is too high. Right figure: The bare shafts group above the fletched shafts. This indicates that the nocking point is too low.

arrow too stiff



arrow too weak

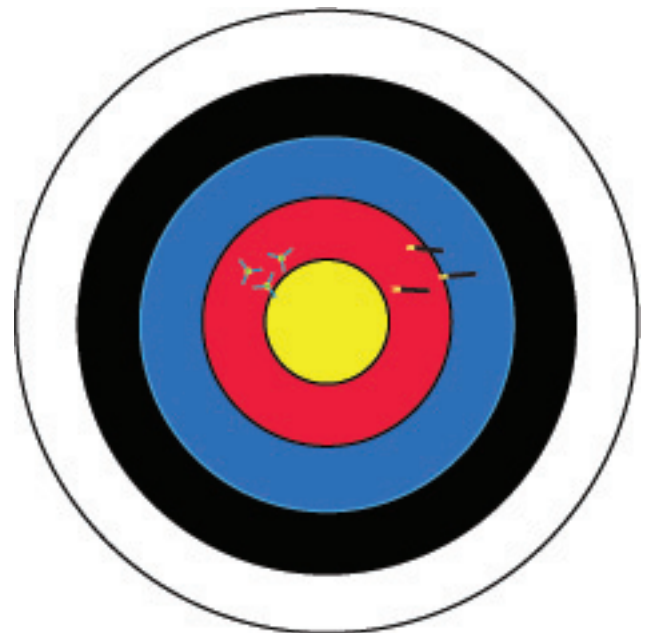


Figure 5. Bare shaft tuning. After setting nocking point height, adjust for arrow spine. Left figure: The bare shafts group to the left of the fletched shafts. This indicates that the arrow spine is too stiff. Increase draw weight, increase point weight, lighten string, etc. Right figure: The bare shafts group to the right of the fletched shafts. This indicates that the arrow spine is too weak. Decrease draw weight, point weight, shorten the arrow, etc. If the arrow cannot safely be shortened any further, purchase new arrows in a stiffer spine.

## 50m or 70m Group Tuning

After you have made your sight adjustments for longer distances, you can adjust the plunger tension to achieve the smallest group size. Make note of where the plunger tension is and then turn the plunger spring tension clockwise one full turn. Note how this affects your group size. If the group size gets bigger you need to move the plunger tension the opposite direction. If the group size gets smaller you can continue to turn the plunger tension clockwise until the groups size starts to get bigger. The idea is to find the plunger tension that gives you the smallest group size. You may have to change springs to keep the plunger near the center of it's compression range.

After obtaining the smallest group size, you may find that the adjustments you made to the plunger spring tension have caused your groups to drift slightly left or right. At this point, you can adjust your sight left/right to compensate for the change in spring tension.