

# TUNING FAULT FINDING GUIDE

This guide might help you track down some of the commoner faults caused by tuning and related equipment problems. However, please remember that many so-called tuning problems are in fact problems of technique.

As usual all left/right instructions apply to right handers and must be reversed for left handers.

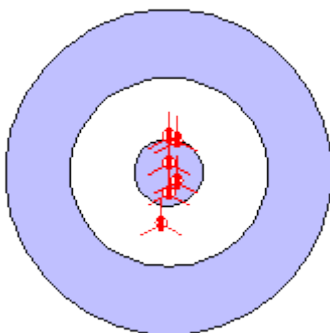
## BEFORE YOU START...

Sorry Folks, but I am going to repeat the advice I gave right at the beginning of the Tuning section. I am embarrassed to think how many hours I could have saved if only I'd followed this advice myself:

- Make sure nothing you are wearing could catch the string or cables.
- Make sure there is no wind anywhere between you and target - walk down the range if necessary. It can be calm at both ends and blowing a gale in the middle. Also look at the tops of any trees. Are they moving? It can be calm on the ground and windy a few feet up.
- Don't try to tune if it is raining, even slightly (and that goes double for snow and hail!).
- Don't try to tune on any sort of a side-slope or on a significant up- or down-slope. A slight up- or down-slope is tolerable if all else fails.
- Don't tune indoors for outdoor shooting and *vice versa*.
- Check all your equipment and make sure nothing is loose, broken, torn fraying or in need of lubrication.
- Don't try to tune when you are tired, and know when to quit.

## POOR VERTICAL GROUPING (all arrows from same distance)

Arrows have a consistent, tight left/right grouping, but poor up/down; just as likely to go high as low.



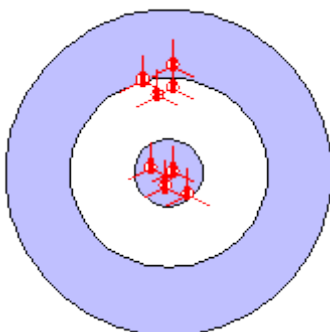
### Probable causes and remedies

I could be facetious and say '*almost anything*' as the probable cause, as that would be a true, if unhelpful, answer. The most likely tuning-related causes are:

- **Nocking height or launcher tension.** If the nocking height is slightly high or low, it can cause 'porpoising', while if it is much too high the arrow can bounce on the rest. Go back to short range nocking height test, and try both changes of height and changes of launcher tension - better still, use a drop-away launcher, then you can forget tension.
- **Cam timing.** Check that both wheels are coming over together or the bow can tend to rock as it is shot.
- **Nock fit.** Loose nock fit can cause vertical grouping problems. The nock should need a distinct 'tug' to free it from the string. On no account should it fall off the string if the arrow is allowed to hang, nor should it be so tight that it distorts the nock.

TWO GROUPS (all arrows from same distance)

Arrows have a consistent, tight left/right grouping, but also a tendency to form two distinct groups. This tendency may only appear at certain distances, not always the longer ones



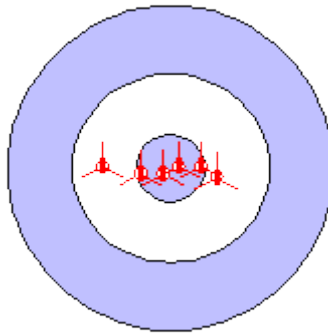
## Probable causes and remedies

- **Tiller.** You should be comfortable at any distance and not feel that you are 'fighting' the bow. If the arrows tend to go high, try tightening the top limb bolt (or loosening the bottom one) in quarter turns and see if that improves matters. Reverse the procedure if the arrows tend to go low.

### POOR HORIZONTAL GROUPING (all arrows from same distance)

Arrows consistently at the right height, but a poor 'horizontal line' left/right group getting progressively worse with distance.

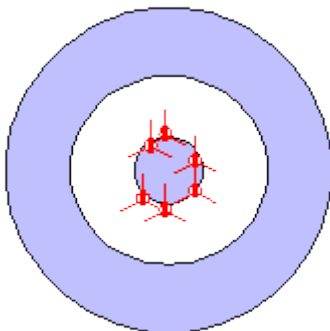
Please note that, provided you have gone through the Standard Tuning routine, this problem is far more likely to be down to technique than tuning.



- **Centre shot.** It is worth checking your centre shot again as this is a very sensitive adjustment, but provided you are not too far out it is unlikely to be the cause of poor groups (as opposed to groups in the wrong place, see below).
- **Fouling.** Is something (usually the fletchings) touching any part of the bow as it leaves? Remember the cables and the sight. If so, fix it at any cost as you are wasting your time otherwise.
- **Nocking height.** Some top class archers believe that very fine nocking height adjustments can affect horizontal grouping. A long shot, but worth trying.

### JAR-LICKING (any distance)

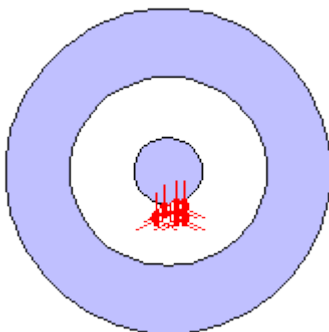
The arrows, in Frank Pearson's words, 'lick the jar' ie they are all around the perimeter of the spot/gold - maybe scoring, maybe not - hardly ever in the middle, even at short distances.



- **Borderline target shyness.** On a good day you will get the score, on a bad day not, but recognise the signs.

#### THE HIDDEN MAGNET (any distance)

Arrows group well, sometimes very well indeed, but at the edge of the spot/gold. A common comment when this happens is along the lines of 'someone must have put a magnet behind this target: I just can't get the arrows up/down/left/right'.

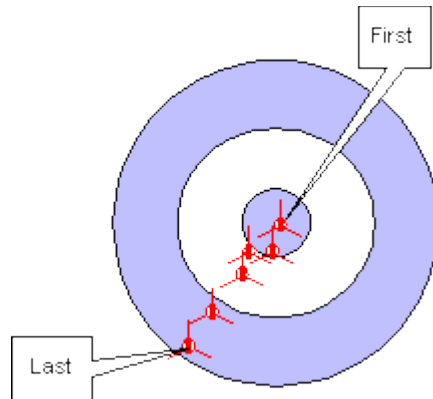


NB - Group could be anywhere so long as it is just at edge of spot/gold

- **Borderline target shyness.** You are shooting well in every other respect, but failing to control your final aim.

#### DROPPING DIAGONAL (all arrows from same distance)

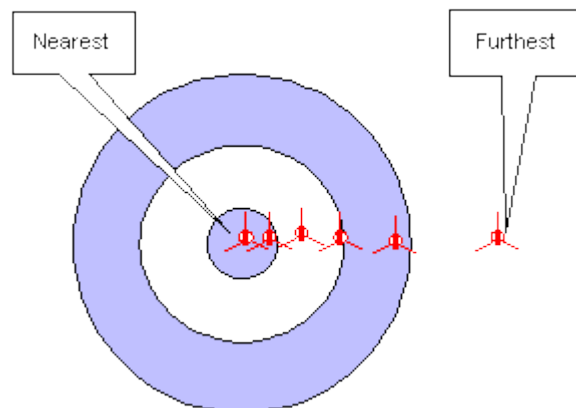
You have been shooting well, but now arrows drop progressively in a diagonal to the left (for a right-hander).



- **Tiredness.** A very distinctive pattern and not much you can do about it, except to rest.

#### HORIZONTAL AIM CHANGES GRADUALLY WITH DISTANCE

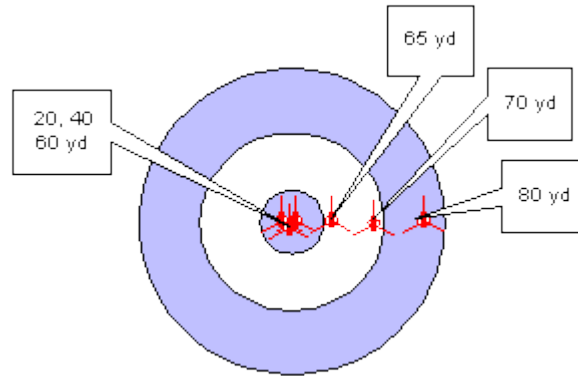
Arrows move consistently and proportionately to the side as distance increases. Can be left or right, but always same direction.



- **Centre shot.** Adjust your centre shot in the logical direction in **very** small steps.
- **Sight bar** not correctly aligned. Adjust accordingly.

#### HORIZONTAL AIM CHANGES SUDDENLY WITH DISTANCE

Up to a certain distance, alignment is good, then arrows move progressively to the side as distance increases. Can be left or right, but always same direction.



NB - Distances are illustrative

- **3rd axis adjustment.** Very distinctive. Adjust 3rd axis accordingly.

### POOR LONG DISTANCE GROUPS

Your long distance group are significantly worse than your short/middle distance groups would lead you to expect (be honest now!). The maths is simple - if all is well and you double the distance, you can expect to double the diameter of the group.

There are two distinct cases:

#### a) **Short distance groups acceptable - suddenly open out beyond a certain distance.**

- **Fletchings too big.** This causes 'parachuting' and instability when the air speed drops below a certain point, although up to that point all is well.
- **Arrow too heavy.** Again, drag comes into play. Remember that arrows can be perfectly matched in terms of spine, but still be too heavy, especially if you have used a heavy point to counteract an otherwise too stiff shaft.

#### b) Long distance groups acceptable - short distance too big.

- **Arrow spine** not matched to bow. Change draw weight or arrows.
- **Shaft or fletchings fouling.** Back to basic set-up and make sure nothing is touching.