

## Some thoughts on sights (and sighting) for ISSF Pistol Events...

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## Effect of arm length

**READ THIS BIT FIRST!** It is essential to understand the other bits

Much of the following discussions will depend on the distances:

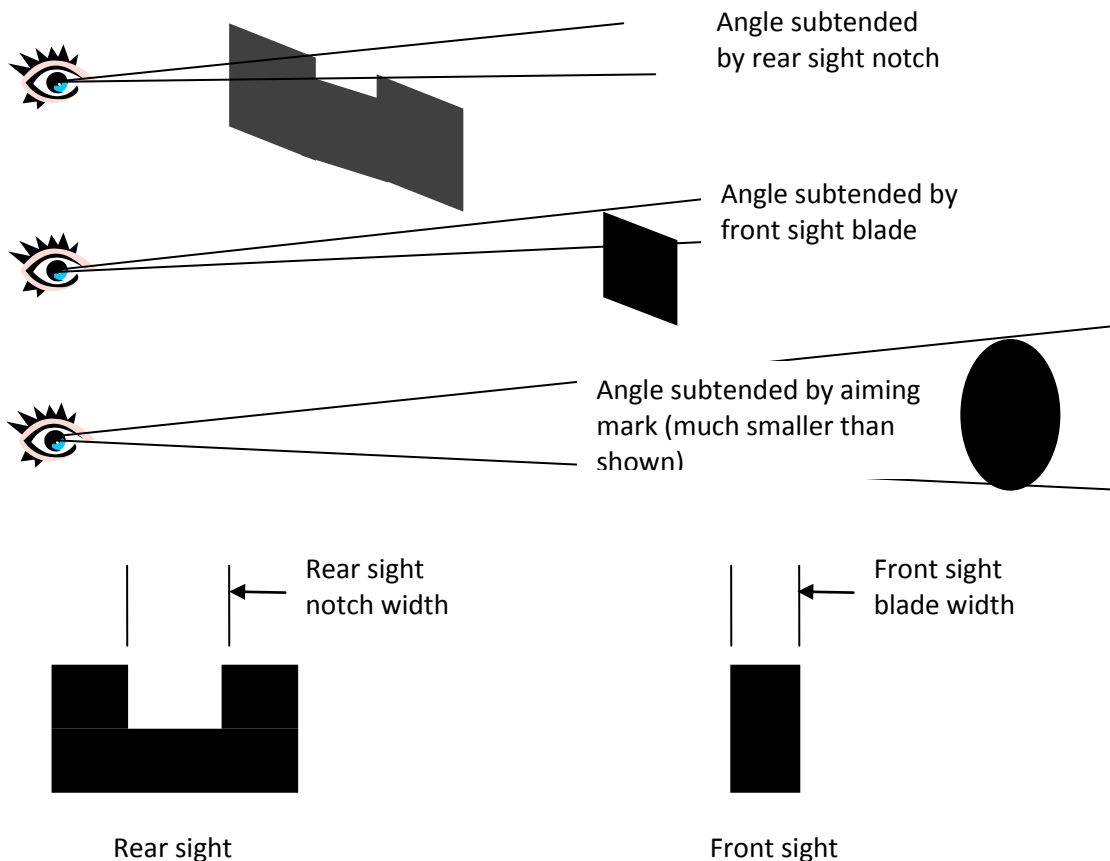
- From **YOUR** eye to the rear sight (this will depend on your build and arm length, and the individual pistol's configuration)
- From **YOUR** eye to the front sight (this will depend on the individual [pistol's configuration>>](#))
- From **YOUR** eye to the target – for all intent and purposes, while there will be a difference between shooters (depending on their stance, build and where they stand in the firing point) it is so slight that it can be ignored. I.e. a 10M target is  $\approx 10M$ , 25M target is  $\approx 25M$ , etc.

For the same pistol and sights:

- the closer the pistol to your eye, the wider the rear sight notch appears
- the closer the pistol to your eye, the wider the rear sight notch appears to be in relation to the apparent width of the front sight
- the closer the pistol to your eye, the wider the rear sight notch and front sight appears to be in relation to the apparent width of the target aiming mark
- the target will remain at the same apparent size (subtend the same angle)

And, of course, the reverse applies depending on the further away the pistol is from your eye.

For the technically minded



Rw = rear sight notch width  
 Rd = distance between eye and rear sight blade  
 Fd = distance between eye and highest part of the front sight  
 Td = distance to the target (10, 25 or 50M)  
 Fw = front sight blade width  
 Tw = diameter of aiming mark (10M = 59.5mm, 25M & 50M Precision = 200mm)

Subtended angle of rear sight notch = **xxxx**  
 Subtended angle of front sight = **xxxx**  
 10M Precision  $\approx$  20 minutes (1/3 of a degree)

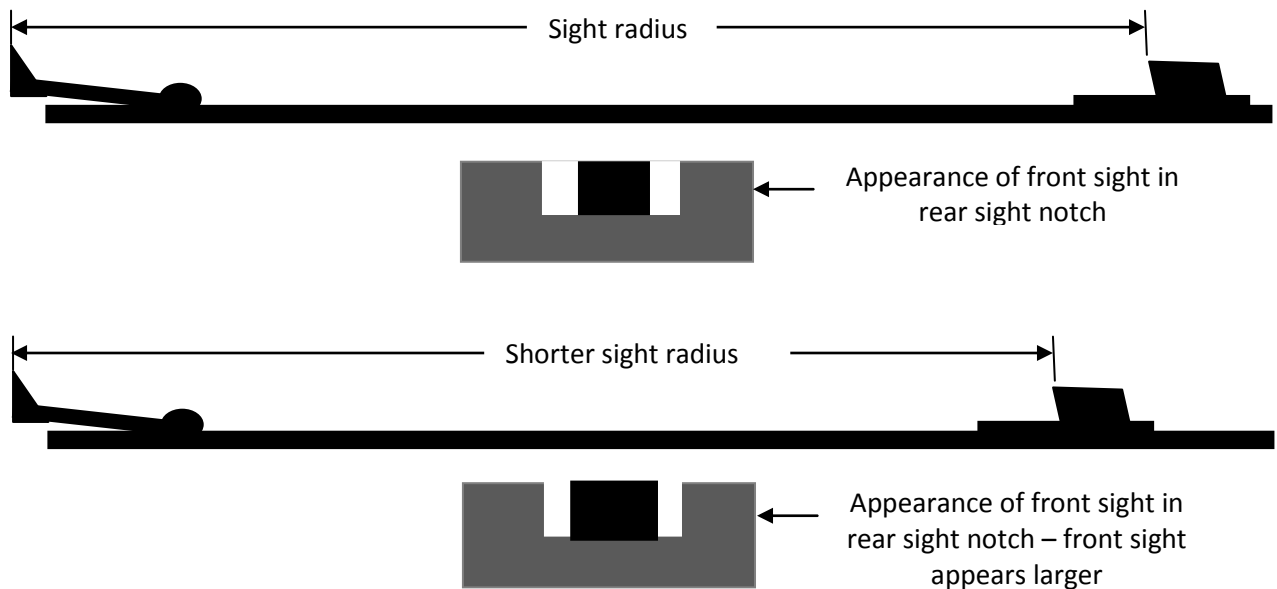
Subtended angle of aiming mark 25M Precision  $\approx$  27.5 minutes  
 50M Precision  $\approx$  13.75 minutes

### **What it all means...**

For the same pistol and sights the 'apparent' width of the rear notch, width of the front sight, ratio between the sight widths, and ratio to the aiming mark diameter **will vary from shooter to shooter!** – the difference will be very apparent if a pistol set up for a shooter with shorter reach is used by another shooter with long arms (or vice versa)

## Effect of sight radius

READ THIS BIT NEXT!



While most ISSF pistols have sights that are fixed (while adjustable for elevation and windage) in position on the pistol:

- Some have sights that can be adjusted for sight radius (length between the front and rear sight) – usually this will be the front sight.
- If you are determined, a good pistolsmith can reposition the sights on any pistol to change the sight radius

The longer the sight radius (remembering that 25M pistols must fit in the 'box'), the greater any misalignment of the sights will appear.

If your hold is 'steady', a longer sight radius might be an advantage – if (like most of us) your hold is not steady the additional apparent wobble of the sights is probably not of any advantage.

There is a theoretical advantage in having the longest sight radius you can cope with as this will theoretically allow you to aim more accurately/finely – in fact, for **most** shooters there is no real advantage in having a sight radius greater than 200mm for 25M; for a 10M or 50M shooter this would be maybe 250mm.

The shorter the sight radius, the lesser any misalignment will appear.

The shorter the sight radius:

- The larger the front sight width will appear in relation to the rear sight notch, and
- Depending on the position of the sight combination on the pistol, can increase the apparent width of the front sight in relation to the aiming mark

## Some Data

1. The further away any item (in this case, the rear sight, the front sight, and the target) the smaller they appear (a matter of simple perspective).
2. The reality is that you can only focus on **one** of the sighting components (i.e. target, front sight and rear sight) at any one time.  
Not only can you **not** focus on two (or three) of these at the same time, you never could!  
When younger you may have been able to quickly change the eye's focus to give the **impression** that you could – but you couldn't!
3. There are two 'natural' shapes for the human eye to appreciate:
  - a. The golden rectangle (sides in the ratio of approximately 1:1.618), and
  - b. Square
4. Your eyes change with age – this will affect your ability to use 'fine' sights (both the width of the front sight and the apparent gap width of the rear sight).
5. Nobody can hold a pistol perfectly still while shooting in an ISSF pistol event – there will **always** be some wobble, shake, or whatever!
6. Common Sense / Logic can lead you astray.
7. What 'you think you do', and 'what you are actually doing' can be very different things
8. What you see and what you perceive are two very different things.
9. The 'relaxed' focal length of your eyes will change throughout the day by +/- 1/8<sup>th</sup> of a dioptre.

## Where to Focus

There is a good reason why all coaches agree\* on where you should focus for ISSF pistol – i.e. at (and on) the front sight – **it works!**

\*OK! Some coaches will advise that you can focus at a distance slightly forward of the front sight; but all agree that you do not focus at the rear sight or the target!

The (perceived) problems of focussing at/on the front sight:

- **But, I cannot see the target clearly!**
  1. You don't need to! The lack of being able to focus at the target relates to the concept of 'area aim' and giving up any concept or attempt to aim at a point on the target – and this will be explained more fully in later sections.
  2. The target does not move around – it is the one constant factor in the sighting process.
  3. Particularly with .22 calibre you probably will not be able to see where you shot/s were on the target – this is a good thing.
- **But, I cannot see the rear sight clearly to align the sights!**
  1. You don't need to!
  2. The perception in many shooters' minds that a shooter needs to have both the front and rear sights clearly seen so that they can be perfectly aligned is a false concept. This will be explained later in this document.
- **My eyes get tired!**
  1. If (like the vast majority of people) your relaxed focus is at some length other than the distance from your eye to the front sight, the answer is 'yes' – however, the problem is not with the principle of focussing at the front sight; it is with your relaxed focal length – and this is easily corrected; a lens with the appropriate correction for the shooting eye.
  2. This problem gets progressively worse as you get older – young people's eyes have a greater accommodation and the eye muscles that control the change of focus are in better condition.
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### The real problems of focussing at this distance

There aren't any!

### How to focus at the distance of the front sight

If you can see well enough to be safe on a pistol range, you can focus at the length between your eye and the front sight (depending on your stature and the pistol, typically about 900 to 1000 mm) – **however**, unless very short sighted (myopia) you will need some level of corrective lens to bring your relaxed focus to the distance to the front sight.

## Where to look

The answer to this is just as simple – look **at** the front sight!

In practice, this is not simple to explain; but it is simple to do! It is probably easiest explained by first explaining what **look at the front sight** does **NOT** mean:

- It does not mean look at the top of the front sight – you will probably let your focus drift to the target
- It does not mean look at the sides of the front sight – if you look at the sides of the front sight you will be looking at edges rather than the sight itself
- It does not mean look at the light gaps either side of the front sight – you don't need to (this will be explained in [Aligning the sights](#))

Looking **at** the front sight means what it says – focus on, and look **AT** the rear face of the front sight

## How wide should the front sight blade be?

For the ISSF precision targets, the best apparent width of the front sight is the same as the apparent width of the target aiming mark.

This is not to say that having the apparent width of the front sight blade and the apparent width of the aiming mark the same is the only way to go – a number of top shooters have had the blade width appear considerably narrower than the aiming mark; but if you check on the setup that most of the world's current ISSF shooters use, it will be 1:1.

For ISSF rapid fire targets:

- a. For 25M Womens, Junior and Center Fire events, use the same width as for the precision stage (it works)
- b. For 25M Rapid Fire Pistol, a front sight width of 5 to 7mm seems to be best (i.e. it is not all that critical)

## What shape should the front sight be?

For ISSF pistol, forget about any shape for the front sight other than a rectangle or square – if not a square, then a golden rectangle. See 3 above. I.e. either one of the options for 3.a above or 3.b

Note that here I am discussing the apparent sight shape – i.e. the shape it appears to be when framed in the rear sight notch when the sights are properly aligned. This will differ from the shape of the front sight blade if viewed in isolation – the notch of the rear sight will (or it should) obscure the base of the front sight blade. It is the apparent height and width of the front sight when viewed in the rear sight notch that we are discussing.



For an apparent sight shape based on the golden rectangle (3.a) the apparent sight shape can be either:



Apparent 'elongated' golden rectangle, or



Apparent 'flat' golden rectangle

Both are in the ratio of the golden rectangle. The 'flatter' second example is probably the more suitable of these two; particularly for the ISSF Rapid Fire Pistol event.



Apparent square (3.b)

The advantage of using one of these three options is that your brain will automatically be 'happy' with the shape and ratio of the front sight when it is properly aligned in the notch of the rear sight – and importantly, automatically use your hand/eye coordination to maintain the ratio.

## What shape should the rear sight notch be?



Realistically, there are only two options: either rectangular or 'dished':

Rectangular. Invariably, most of the world's top shooters use the rectangular option – **because it works!**



Dished (rarely encountered these days)



Shallow dished (was used for RFP – now out of favour)

## How wide should the rear sight be?



Approximately 1:1:1 (enables rapid acquisition of sight picture – not really suitable for any other than the Rapid Fire Pistol event, and even then probably too much for most shooters)



Approximately 1:2:1 (a good compromise for 25M events)



Approximately 1:4:1 (a good compromise for ISSF 10M and 50M events; OK for 25M events for shooters with good eyesight)



Approximately 1:5:1 (for ISSF 10M and 50M events only if you have exceptional, young eyes; too fine for most shooters for use in 25M events)

## How deep should the rear sight notch be?

## What colour should the sights be?

You have a choice: either flat black, or flat black.

Coloured sights, sights with 'luminous' lines, sights with light gathering inserts, etc. may have their place; **but not for ISSF pistol events!**

### How to get flat black sights:

- Xxx

## Aligning the sights

Most shooters do not make use of one of their greatest assets; their inherent hand/eye coordination and the related ability to:

- “Line things up”, and
- Find the centre of shapes.

Together these two assets (developed when you were a toddler, and reinforced every day since) will:

- Enable you to detect any misalignment of the sights, and
- **Automatically** correct any misalignment, both:
  - For misalignment sideways, and
  - For misalignment vertically, and
  - Any combination of these two!

The acceptance that this will happen if you let it (as opposed to you **trying** to align them) is one of the four great revelations of ISSF pistol shooting. All you have to do is focus and look **at, and on** the front sight and the alignment with the rear sight notch is automatic **if you let it happen!**

### Revelation #1

All you have to do is focus and look **at, and on** the front sight and the alignment with the rear sight notch is automatic

Not only will it happen, it will happen so accurately that you can align the sights accurately to group smaller than the inner-10 on the target.



Looks well aligned – **AND** what your inherent hand/eye coordination will do automatically



Looks badly aligned – **AND** what your inherent hand/eye coordination try to correct automatically



Looks badly aligned – **AND** what your inherent hand/eye coordination try to correct automatically

### If your sights consistently drift out of alignment with each other in any one given direction

If your sights consistent drift out of alignment in any one given direction, it is almost certainly a problem with your grip design – see a good gripmaker and get this problem fixed.

Sometimes this problem becomes more pronounced as you get further into an event (i.e. you are starting to tire) – the advice is the same; see a good gripmaker and get this problem fixed.

**If your sight combination consistently drift out of alignment with the target in any one given direction**

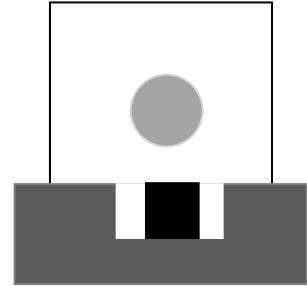
If your sight combination consistently drifts out of alignment with the target in any one given direction, it is almost certainly a problem with your stance – see a coach and fix this problem.

## Where to aim on the target (a) for precision targets

Another of the four great revelations of ISSF pistol shooting is that the bit that does not move is the target!

Additionally:

- Wherever you opt to aim on the target is immaterial – if you aim at the same **part** (note that I do **not** say **point**) every time, getting the shots to hit the desired part of the target is merely a matter of adjusting the sights
- It is easier to see black sights (particularly the front sight) against the white of the target



### Revelation #2

The bit that does not move is the target!  
You don't have to look/focus on the target!

Again, most shooters do not make use of one of their greatest assets; their inherent hand/eye coordination and the related ability to:

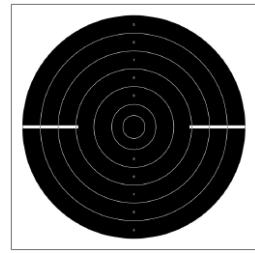
- “Line things up”, and
- Find the centre of shapes.

If you aim '**somewhere**' below the black aiming mark, your inherent hand/eye coordination will place the sight alignment **about** halfway between the bottom edge of the target and about half way across the target - it is automatic **if you let it happen!**

## Where to aim on the target (b) for rapid fire targets

### The problems with sighting at a rapid fire target

1. The sights are not clear against the large black aiming mark.
2. All ISSF events using the rapid fire target involve movement of the pistol to the target (from the READY for the rapid fire stage of womens, Junior, Centre Fire and the first target of a Rapid Fire Pistol series – or across to the subsequent targets in a Rapid Fire Pistol series)



### The sights are not clear against the large black aiming mark.

This is more a perceived problem than a real one – the more you think this a problem the greater the problem will be (for you).

When a shooter has this problem it invariably means that the shooter is not focussing on/at the front sight

### Where to look while waiting for the targets to face (or the green light for Electronic Targets)

Many shooters will assume that the process of getting ready for a rapid fire shot or series involves:

- Taking a sight picture
- Lowering the pistol to the READY position and (**the wrong bit**) lowering the line of sight (**or worse**) the head and line of sight to the lowered pistol
- When the target/s face, raising everything to the target.

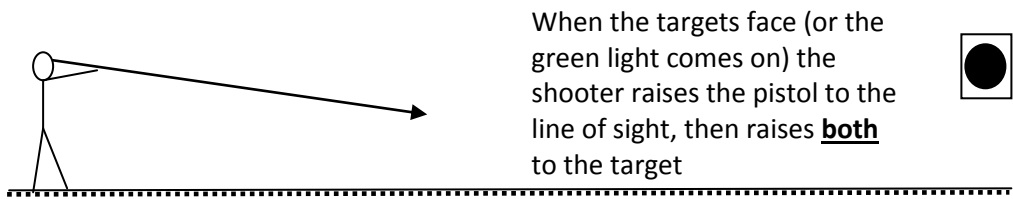
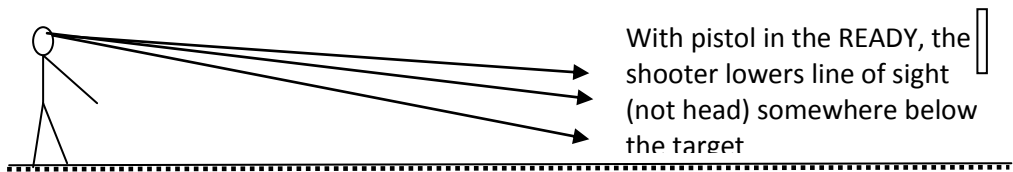
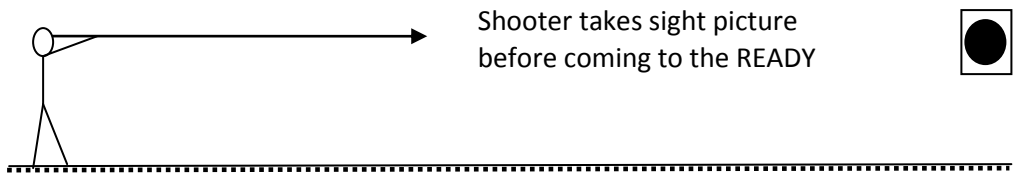
In fact, the proper procedure should be:

- Taking a sight picture
- Lowering the pistol to the READY position and **without moving the head**, lowering the line of sight slightly  
Most shooters will lower the line of sight somewhere below the target, though some will lower their line of sight to line up somewhere about 20M downrange.
- Focus the eye on, and at, the area where the front sight will come into the lowered line of sight
- When the target/s face, raising the pistol through the (slightly lowered) line of sight, and picking up the sight picture.
- Continue raising the pistol and line of sight to the target area.

This procedure will take practice and training, but it works!

- **If the sights are not aligned** when you have raised from the READY, there is a problem with the shape of the pistol grip and/or a problem with the way you are holding the pistol.
- **If the sights are aligned but the pistol is pointed off target** there is a problem with your stance. When you raise the pistol from the READY it should always go through the vertical centre axis of the target.

**Do not lower your eyes to the pistol – raise the pistol to the eyes!**



**For the Rapid Fire Stage of Womens/Junior/Sport/Centre Fire**

**For Rapid Fire Pistol Event**

## Accepting your 'wobble' and 'Area Aim'

Nobody can hold a pistol perfectly still while shooting in an ISSF pistol event – there will **always** be some wobble, shake, or whatever!

- Some shooters can hold the pistol without any apparent movement, but there will be some.
- Being in good condition will reduce the amount of wobble/shake – Note that this refers to physical conditioning, not physical strength: strenuous weight training will be counter-productive.

### Revelation #3

Your wobble will not prevent you from shooting 10s!  
Learn to live with your wobble!

The trace from an electronic trainer such as Rika or Scatt reveals that even the world's best ISSF pistol shooters do not always have the pistol aimed to get a shot in the 10-ring while in the process of releasing a shot – however, a lot of the time if the shot was released the result would be a '9' or better; and often that 'better' is a '10'.

What the top shooters can do (with proper technique, lots of **effective and proper** training and practice, and having good general physical condition) is keep the pistol pointing somewhere within an area of the '9' ring – with a reasonable proportion of the time while the shot is being released having the pistol pointing **somewhere** in the '10' ring

### Revelation #4

You do not have to shoot perfect tens every time!

#### **You do not have to shoot perfect tens every time**

In any of the ISSF Pistol events at an ISSF sanctioned Championship, if you fired 60 competition shots (40 for Womens Air Pistol) that all were so close to the 10-ring that they required gauging and they were all 10s, you would be the undisputed World Champion – and all without a 'good' ten!

If you fired 60 competition shots that scored '9' or better, chances are that you would have a score of around 550/600 – the lowest score you could have is 540 (60 x 9), but the law of averages will give you +20% '10s'.

The downside of trying to release a 'perfect' shot every time is that by the time the aiming process looks perfect, there will be a time gap (0.1 to 0.3 seconds) between the shot looking perfect and the release of the shot – by the time the shot is released chances are that one or more of the myriad movements in your body will have moved the sighting process

Worse:

- You will have a tendency to 'snatch' the trigger, pulling the pistol
- You are putting unnecessary strain on your body and mind
- For the faster series (20/10 seconds Standard Pistol, Rapid Fire Stages and Rapid Fire Pistol) there is not time to have the sights 'perfect'

All this comes together in the concept of...

**...Area Aim**

## Your sights – and follow-through

When coaching, I teach shooters that there are four follow-through components:

- Where the sights were when the shot released
- Adding pressure to the trigger even after the shot has been released (not part of this particular section on sights/sighting)
- Where the sights were after the recoil has finished (then you can take the pressure off the trigger – Yes! Even for 4-seconds series of Rapid Fire Pistol)
- Analysing what happened

### Revelation #5

**A proper follow-through includes the sight pictures**

## Shooting Glasses

### Eye protection

**Eye protection is essential!** Always wear eye protection when on a shooting range!

### Coloured lenses

At some time you will be tempted to try coloured lenses for shooting

### Adjustable irises

### Getting the correct prescription for your shooting lens

### Specialist shooting frames

### Blinkers and blinders