

## 10A ZEROING – TARGET RIFLE

In theory, a correctly zeroed rifle should, in nil wind conditions, deliver a good shot to the centre of the target at a known elevation set on the rear sight scale and zero set on the wind scale.

When zeroing in nil wind conditions, the wind vernier should be set to read zero, once the group is central. However, the elevation vernier should not read zero. It should be set to some small positive value at the shortest distance you are likely to use e.g. 5 minutes at 300 yds. This means that, on another day, using a different batch of ammunition or in different weather conditions, or on a different range, you can bring the group down without going into negative elevation.

The range on which you zero is a matter of what is available but an unfamiliar rifle or sight must be zeroed at short range first. Zero's must also be checked if any significant work is carried out on the rifle or sights.

### Wind Zero

A correct wind zero is essential, especially for coached shoots but it is vital for shooting in 'fish-tail' winds.

### Methods Of Zeroing

#### 1. Bore Sighting

If you have really no idea where the sights should be set, it is a good idea to 'bore sight' first, to avoid the possibility of rounds missing too high. The rifle is propped on the firing point, without bolt, so that you can see down the barrel and through the sights. First look through the barrel and move the rifle until you can see the target, then secure. Now move the sights until you can see the target through them. This will give you an approximate sight reading for the distance you are at. This is then refined as below. It works better at longer distances and would not be so necessary at 25 or 100 yds.

Ideally rifles should be zero at 25 or 100 yards, where the wind has no effect on the bullet but in practice we often have to do it where most people want to shoot or on what is available.

#### 2. 25 Yards (Meters)

A small-bore 25-yard aiming mark is suitable for this. Ideally a vertical line should be drawn on the card and a plumb line used to ensure that the target is vertical. (The Bisley zeroing range is just under this distance - see below). The sights should be set so as not to disrupt the aiming mark – i.e. set them so that the shots land above it. Fire shots and move sights left or right until the group is centred on the vertical line. The screws on the wind vernier can then be loosened and the scale slipped so that it reads zero. Now the elevation can be adjusted. The sights are approximately set for 300 yards when the group is about half way between the centre and the top of the aiming mark and for 200 yards when the group is just below centre. Note the reading on the vertical scale, or loosen the screws and set it to whatever reading you wish. (This may not get you in the bull but will be near enough for two sighters to get you in). A good sight setting for 300 yards is 5 minutes. Do not be tempted to set the sights to zero at 300 yards as you might some day want to fire at 200 yards or you might come across a batch of ammunition which groups higher on the target. If you deal with a number of rifles e.g. a cadet team or a number of club rifles, it is a good idea to have them all reading approximately the same at 300 yards. An unfamiliar user can then be sure that the first sighter should at least be in the black!

#### 3. 100 yards (meters)

A small-bore 100-yard target is a suitable aiming mark. Since this is a bigger aiming mark, groups can be fired at it directly and then centred. The windage vernier is then zeroed as before. The elevation reading is then noted. The 300-yard setting will be about 4.5 minutes above this, so, if an elevation

reading of 5 at 300 yards is needed, the sights should be set to 0.5 minutes at 100 yards. (Fine adjustment to the reading might be necessary after a few shoots).

#### **4. Other Distances**

Most often a new or refurbished rifle is first used at the distance which happens to be available on that day. Set the sights to a reasonable elevation and get someone to spot through a telescope for the first few shots, in case they miss. Adjust on the fall of shot until the group is centred on the target and adjust the elevation scale to the reading you want. Take a number of opinions on the mean wind from experienced shots and adjust the windage accordingly. Again, some fine adjustments will have to be made after a few shoots.

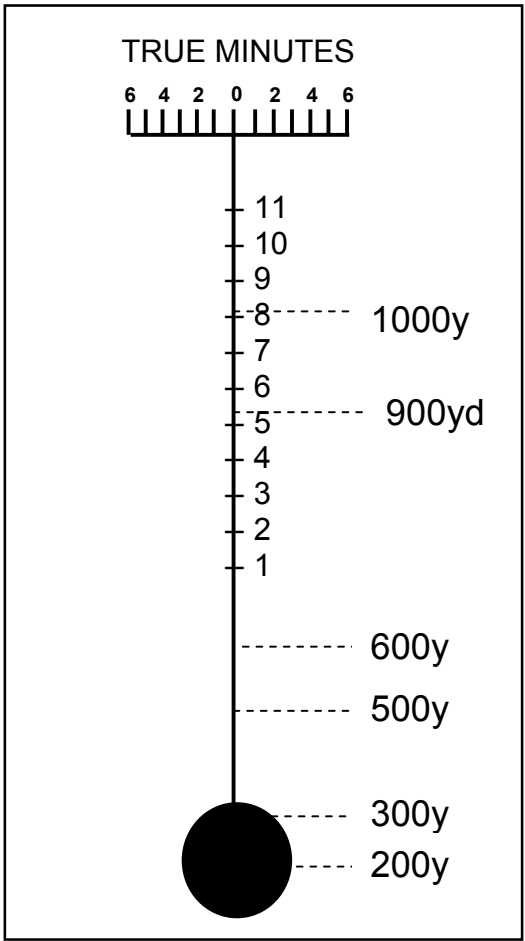
#### **5. Bisley Zero Range**

The Bisley zeroing range is just under 25m, with special targets for the purpose, already marked out or with a master card so that you can mark your own card with distances.

The sights should be set so as not to disrupt the aiming mark – i.e. set them so that the shots land above the aiming mark. Fire shots and move sights left or right until the group is centred on the vertical line. The screws on the wind vernier can then be loosened and the scale slipped so that it reads zero. Now the elevation can be adjusted. The sights are approximately set for 300 yards when the group is about half way between the centre and the top of the aiming mark and for 200 yards when the group is just below centre. Note the reading on the vertical scale, or loosen the screws and set it to whatever reading you wish.

You may then check your zero for each distance but this is only approximate.

Some firers find that as they move up the target, the groups veer left or right of the zero line. This is most likely because the target or frame are not vertical. However, if they are vertical, the wind arm on the sight is not at 90° and may have been damaged (rare). This sight is useless and needs to be fixed or replaced.



**ZEROING – CLASSIC RIFLE**

Zeroing a classic rifle is basically as above though how the sights are moved varies with the model of rifle. The owner must know how their own sights work and what the increments of movement are.