

## **Jericho Defense scope verification target instructions**

### **Introduction:**

A true rifleman will do everything they can to learn their scope, learn how they can get the best benefit from it, understand the workings of it and will also set it up correctly. The intent of this target is to help show you if your scope is mounted correctly and if you have a minor variation that you have to correct for with your shooting solutions, or if your scope is actually broken or was manufactured so far out of specifications that you may need to seek repair.

Rifle scopes are mechanical items and they sometimes break. Reticles may come loose and will float around in their mount, making it, so you can not shoot a consistent grouping or your elevation and windage turrets will not maintain the correct distance for the amount of adjustment that you dial into them. In a very small number of cases, you may find that your scope is so far off manufacture specifications, you will want to replace it or seek its repair. If you find that your scope is within a close proximity to the shooting solution adjustment you make, this target will give you a calculation method to help you get rounds on target without having to “guess” at your adjustment.

Using this target and its procedure should not be rushed. Take your time with it. You will gain more insight and have a better outcome if you take your time and make every fired shot as perfect as possible. If you find that you are rushing the process and your points of impact are showing that your shots are not where they should be, stop and restart the process to make it as correct as it should be. If you feel that this process is going well and your points of impact are still not correct, this will give you a great opportunity to analysis what is actually happening with your rifle scope. If everything is going well and your points of impact are where they should be, be confident with your mounting and the use of your scope. Good luck and enjoy the process.

### **Goals:**

The scope verification target has 5 goals to make sure your scope is working properly and if you have mounted it correctly on your rifle. The goals are:

1. To see where your 100 yard cold bore shot lands for the given day and environmental conditions.
2. To see if your reticle cross hairs are in alignment with your scope turrets travel of elevation and windage.
3. To see if your elevation and windage adjustments or “clicks” move the amount they should when dialed and if not, what correction factor you should use in your scope data shooting solution.
4. To see if your scope will track back to the spot where you started your shots.
5. To see if your windage mil-dots or hash marks are correctly spaced apart.

**Extra items you will need to correctly use this target:**

1. Laser range finder or tape measure sufficient to measure 100 yards
2. Level
3. You'll need 46 rounds of ammunition to complete the whole target progression. You will need less rounds of ammunition if you only complete portions of this verification process and not all of it.

**Instructions:**

**Step 1 – Set up**

1. Make sure your rifle is zero'd for 100 yards before you shoot any rounds on this target. The better 100 yard zero you have, the quicker and more correct your scope verification will be.
2. Take a tape measure or laser range finder and set your target up at exactly 100 yards from the end of your barrel. Having the target at 99 or 101 yards

will not do. Making sure your target is at 100 yards is critical to this scope verification process.

3. Place a level on either one of the vertical lines or one of the horizontal lines and secure your target so it is as square and plumb to the earth as possible. Having your target level is critical to this scope verification process.
4. Set up a solid shooting position of prone or use a bench rest on a shooting bench.

### **Step 2 – The cold bore shot**

1. Aim at the 1 inch X 1 inch red diamond in the center and on left side of the target. This diamond is 2 mil's to the left of red diamond #5 and is has the words "cold bore" underneath it.
2. Align your scopes reticle vertical cross hair along the vertical mil lines and fire 1 round.
3. Record results in data book.

### **Step 3 – The tall target**

4. Set your scopes power setting to the power the manufacture recommends you would use to range objects. If you do not have ranging capability, then you will not be able to shoot the last portion of this target test. Setting the scopes power setting to its ranging capability will be extremely important when you shoot the last portion of this target where 1 mil should equal 1 mil.
5. Aim at center of red diamond # 1. Red diamond #1 has a 1 inch X 1 inch red diamond in the center and is in the middle of the bottom row of red diamonds.
6. Align your scopes reticle vertical cross hair along the vertical centerline between red diamond #1 and red diamond #2. Aligning your vertical cross hair with the target will make sure your rifle and scope are square with the target.

7. Fire 5 rounds at the center of red diamond #1 while holding the rifle square with the target. This grouping should be centered in the diamond. If not, make the correction, repeat the alignment process and shoot 5 more to make sure the center point of the group is correct.
8. Use your elevation turret and dial bullet impact up 17 1/4 MOA or 5 mil's. Align your scopes vertical cross hair again, aim at the center of red diamond #1 and fire 5 rounds while holding the rifle square with the target. If your scope has mil adjustments the rounds impact should be centered in the center of red diamond #2. If your rifle scope has MOA adjustments, your rounds grouping should be centered at 1/16<sup>th</sup>'s of an inch above the center of red diamond #2. The actual measurement is .060" above the center of red diamond #2.
9. If the fired rounds grouping center impact left or right of the center of red diamond #2 and you had the vertical cross hairs in perfect alignment with the vertical lines on the target, your scope's reticle may not be square within your scope. If your scopes reticle is not square with elevation turrets when you dial up for elevation, the easiest way to correct this is to put a scope level on your scope and have the scope level parallel with your elevation turrets and not the scope reticle. This may make the reticle in your scope look canted when you look through it; however, the level on your scope is the asset you should be making sure is level every time you press the trigger for a shot. You can perform calculations using the adjustment correction calculation to correct this impact shift if you want to use the cross hairs on the level plain; or if the reticle's cant angle is so great that you can definitively see it, contact the manufacture to have the reticle re-aligned. However, the scope level is the easiest trick to fix this situation.

If your fired rounds grouping impact lower or higher than the center of red diamond #2, you will have to use the adjustment correction calculation to your ballistic shooting solution to correctly calculate how much elevation you must dial in to have the round impact where you are aiming. This adjustment correction calculation is listed at the end of these instructions.

#### **Step 4 – Windage verification**

1. With the 17 1/4 MOA or 5 mil's of elevation still dialed in, dial 8 1/2 MOA or 8 5/8 MOA (if you have 1/8 MOA turrets) or 2.5 mil's right windage/bullet impact right into your windage turret. Align your scope's cross hairs vertically again and aim at the center of red diamond #1. Fire 5 shots while holding the rifle square with the target. Your fired rounds should impact in the center of red diamond #3. If your fired rounds grouping impact left or right of the center of red diamond #3, or more/less than the amount of windage distance you dialed in, you will have to use the adjustment correction calculation to correctly calculate how much windage you must dial in to have the round impact where you are aiming, as your windage turret dials are not traveling the distance they should. This adjustment correction calculation is listed at the end of these instructions.
2. With the 17 1/4 MOA or 5 mil's elevation still dialed in, dial 17 1/4 MOA or 5 mil's left windage/bullet impact left into your windage turret. Align your scope's cross hairs vertically again and aim at the center of red diamond #1. Fire 5 shots while holding the rifle square with the target. Your fired rounds should impact in the center of red diamond #4. If your fired rounds grouping impact left or right of the center of red diamond #4, or more/less than the amount of windage distance you dialed in, you will have to use the adjustment correction calculation to correctly calculate how much windage you must dial in to have the round impact where you are aiming, as your windage turret dials are not traveling the distance they should. This adjustment correction calculation is listed at the end of these instructions.

#### **Step 5 – Turret tracking**

1. With the 17 1/4 MOA or 5 mil's elevation still dialed in, dial 8 1/2 MOA or 8 5/8 MOA (if you have 1/8 MOA turrets) or 2.5 mil's right windage/bullet impact right into your windage turret and dial 8 1/2 MOA or 8 5/8 MOA (if you have 1/8 MOA turrets) or 2.5 mil's negative elevation/bullet impact down. At this point, your windage should be the same as it was when your

rifle was at its 100 yard zero. Align your scope's cross hairs vertically again and aim at the center of red diamond #1. Fire 5 rounds while holding the rifle square with the target. Your fired rounds should impact in the center of red diamond #5. If the fired round's grouping does not impact in the center of red diamond, repeat the shots and see if they shifted to the center of the red diamond #5. If your shots will not center in red diamond #5, your scope adjustments are not tracking correctly, repeat the elevation/windage and turret tracking process and see if you end up with the same result. IF you can not find a repeatable result, you may have a reticle that is loose within the scope and will need to be repaired.

2. Return your elevation adjustment back to your 100 yard zero. You should only have to dial down elevation  $8 \frac{1}{2}$  MOA or  $8 \frac{5}{8}$  MOA (if you have  $\frac{1}{8}$  MOA turrets) or 2.5 mil's.

## **Step 6 – Mil-dot / mil mark Verification**

1. With your rifle back at the 100 yard zero, align your scope's horizontal cross hairs along the centers of the bottom row of diamonds. Place the 1<sup>st</sup> mil-dot or 1<sup>st</sup> mil hash mark that is on the left side of the center of the cross hairs in the center of red diamond #1 and aim using this mil-dot or hash mark. Fire 5 rounds, repeating this same aiming point. You should not be looking at the center of the cross hairs while you fire this string of fire. You should only be using the mil-dot or hash mark as an aiming point in the center of red diamond #1 and keeping the horizontal cross hair aligned with the center of row of red diamonds. The center of your fired rounds grouping should impact in the center of red diamond #6.
2. Align your scope's horizontal cross hairs along the centers of the bottom row of diamonds. Place the 2<sup>nd</sup> mil-dot or 2<sup>nd</sup> mil hash mark that is on the left side of the center of the cross hairs in the center of red diamond #1 and aim using this mil-dot or hash mark. Fire 5 rounds, repeating this same aiming point. You should not be looking at the center of the cross hairs while you fire this string of fire. You should only be aiming the mil-dot or hash mark in the center of red diamond #1 and keeping the horizontal cross

- hair aligned with the center of row of red diamonds. The center of your fired rounds grouping should impact in the center of red diamond #7.
3. Align your scope's horizontal cross hairs along the centers of the bottom row of diamonds. Place the 1<sup>st</sup> mil-dot or 1<sup>st</sup> mil hash mark that is on the right side of the center of the cross hairs in the center of red diamond #1 and aim using this mil-dot or hash mark. Fire 5 rounds, repeating this same aiming point. You should not be looking at the center of the cross hairs while you fire this string of fire. You should only be aiming the mil-dot or hash mark in the center of red diamond #1 and keeping the horizontal cross hair aligned with the center of row of red diamonds. The center of your fired rounds grouping should impact in the center of red diamond #8.
  4. Align your scope's horizontal cross hairs along the centers of the bottom row of diamonds. Place the 2<sup>nd</sup> mil-dot or 2<sup>nd</sup> mil hash mark that is on the right side of the center of the cross hairs in the center of red diamond #1 and aim using this mil-dot or hash mark. Fire 5 rounds, repeating this same aiming point. You should not be looking at the center of the cross hairs while you fire this string of fire. You should only be aiming the mil-dot or hash mark in the center of red diamond #1 and keeping the horizontal cross hair aligned with the center of row of red diamonds. The center of your fired rounds grouping should impact in the center of red diamond #8.
  5. If you find that your shots are not in the centers of the bottom row of red diamonds, make sure your horizontal cross hair was in alignment of the centers of these red diamonds and your scopes power setting was correct, so 1 mil should equal 1 mil when looking through the scope. If your horizontal cross hair was in line with the red diamonds, you might find that your scope is canted on your rifle and not mounted correctly or you might find that the center of your mil marks are not exactly 1 mil apart. If you find that the hash marks or mil-dots are not exactly 1 mil apart, you will be able to use the adjustment correction calculation to see where each 1 mil distance lands is along the horizontal cross hair.

**Adjustment correction calculation:**

(distance dialed into scope) divided by (actual distance traveled on target test) = X

Then

(X) times (adjustment given by ballistics software or shooting solution) = correct elevation or windage adjustment

**Correction calculation example:**

17 1/4 MOA or 5 mil's dial adjustment = 18 inches

Actual distance rounds impact traveled on target test= 18 1/2 inches

Ballistic program shooting solution suggested adjustment = 34 MOA

18 inches divided by 18.5 inches = .9729 adjustment correction factor

.9729 times 34 MOA = 33 MOA