An Approach to Reading the Wind and Adjusting Windage

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December 16, 2017

When I started shooting FT, I quickly learned that reading the wind and determining your holdoff was the single most important part of shooting WFTF.

Talking with friends who had been shooting FT for 10-15 years about their system of determining holdoff initially led me to believe that the only way to the middle of the KZ was to shoot a ton and develop a "feel" for where to hold at the varying distances, intensities, and directions of wind. I guess this is known as "Kentucky Windage."

Not wanting to spend years to become reasonably proficient, I set out to find a way to easily figure out where to hold with the least number of intangible values. I wanted to reduce the possibility of guessing errors as much as possible.

<u>What I settled on only requires one estimation...wind velocity in MPH.</u>

Step 1. Learn to estimate the wind.

At first...I really had no idea what a 5 mph wind felt like or looked like. I bought myself a Kestral wind meter and began my journey. I took the Kestral with me most everywhere I went and took random wind readings. Within a month or so of taking wind readings...I was now able to estimate the wind MPH within 1-2 most anytime it was between 0-10 mph.

That level of precision is enough to get you well within the ballpark of the KZ even at the longest distance of 55y. A full size 40mm KZ is 2.75 MOA wide at 55y...which translates to about 3.25 mph wide if you are shooting a 12 fpe gun which drifts .83 MOA per MPH.

Step 2. Do the math,

A little math...1 MOA measures 1.047" at 100y. To figure out what 1 MOA is at any shorter distance, just multiply 1.047 x distance divided by 100. To drastically simplify while retaining most of the accuracy...just move the decimal place 2 positions to the left of the distance you wish to determine.

So 55y becomes .55” per MOA. Its pretty close to the actual number of .576”.

Why use MOA instead of distance?

First of all....most every scope used in FT has a mildot or hash type reticle which has the convenient feature of being your built in measuring device. If you shoot at a consistent magnification value like I do...you will always know about where to hold with just some simple multiplication.

Second...pellet drift in inches squares with distance. If you know how far a pellet will drift in inches at 27 yards with a 5mph crosswind...you can calculate how far it will drift in the same wind at 54y.

Simple...just double the drift, right? Wrong...the distance of drift at 54y would actually be 4 times the drift it was in the same wind at 27y. It’s easy to see now why calculating drift on the fly from a known value is not much fun using inches. Well, you could assemble a chart to keep with you that shows drift in inches per MPH at every needed yard and refer to it as needed...but you still have to have a reference on the target that you can read in inches. Some utilize the KZ as a reference. It can be done if you know the KZ size, but it’s still not nearly as easy as using the dots or hashes on your reticle.

Simply put, MOA scales easily and is readily available in your scope...if you drift .50 MOA at 27y...you will drift 1 MOA at 54y. This happens because the reticle resizes itself at each distance you view and does the hard math for you.

How do you determine your MOA of drift? Well, Chairgun does an admirable job of the process with just a few known values. BC of your projectile and velocity is all you need. Enter these values, and it will produce a chart that displays your MOA drift per MPH. If you want to be a minimalist...you can simply remember the MOA drift per MPH at 10y and do the appropriate multiplication to arrive at your MOA drift per MPH of your desired distance. If MOA drift per MPH is .15 at 10y....its .30 at 20y... its .45 at 30y, etc. I like to make it easy. I have added an extra column on my click chart that simply displays the correct value at each distance. After I range a target and set my clicks on the scope...I look to see what the MOA drift is per MPH at that distance and multiply it by the estimated wind value I have determined. After doing the rough multiplication in my head...i just count over the appropriate amount on my reticle and know that I'm a whole lot closer to where I should be than if I just guessed.

Step 3. Measure the dots or hashes.

Ok....so how do I determine the actual distance of my dots or hashes on my reticle at my desired magnification? That's easy enough. Many reticles will provide that info for you, but you can calculate it with just a tape measure and a little time.

Pick out a yardage that is doable for you...say 20y. At the 20y mark, go stretch out a tape measure and go back and look through your scope and see how many inches that your reticle spans from the two furthest dots or hashes. Count the number of dots, and do the math. My reticle has 5 spaces on each side...so 10 total. My particular scope spanned 4.625" for 10 dots at 20y. If you remember the math from before 1 MOA at 20y is .2094". Here is the formula for that again....1.047 x distance divided by 100. Here is the full calculation. 4.625" spanned divided by .2094" (1 MOA at 20y) which is about 22. That means that my scope reticle spans 22 MOA for 10 dots. Divide 22 by 10 and you get 2.2 MOA per dot. This value will not change as long as you utilize the same magnification. This is easy for me because my Leupold is a fixed 40x. If you have a variable mag scope...you need to pick a mag that you intend to use while shooting and stick with it.

Now that you know your distance in MOA per dot and how to calculate your MOA per MPH...you can holdoff with confidence commensurate with the accuracy of your wind MPH estimation.

Step 4. What about wind angle?

Wait a minute...this whole thing only works with a full value (90 degree) crosswind. True enough. So here is the rudimentary math needed to calculate drift based on wind angle. The actual cross drift percentage will be the sine of the angle. If the wind is coming from a 45 degree angle to you...its the sine of 45..which is .7 ish. So your pellet will experience 70 percent of the drift compared to the same full value cross wind. Half the angle again...and you have 38 percent approximately. The military has simplified this even further to 75% and 50%. Its not exact, but its a whole lot better than a guess.

Tips on Reading the Wind

Here is some supplemental info about wind estimation that you can also use.

0-1 MPH wind imperceptible.

No grass or leaf movement

Mirage runs vertical

1-2 MPH cooling effect may be noticed.

Light movement of grasses.

Only a few leaves on any given tree in motion.

Mirage begins to lean to 12:30.

3 MPH wind pressure can be felt on bare arm.

Grasses obviously in motion.

All leaves on any given tree in light motion.

Mirage leans to 1:00-1:30.

4 MPH wind pressure can be felt on face.

Small twigs bearing leaf clusters begin light motion.

Mirage leans to 1:30-2:00.

5 MPH tips of smaller branches that hold leaf limbs begin motion.

Mirage leans to 2:00-2:15.

6 MPH the trunk branches begin to move. These are the heavy limbs holding the smaller branches.

Mirage leans 2:15-2:30.

7 MPH trunk limbs begin motion.

Softer leaves begin to flip over on windy side of tree.

Mirage leans to 2:30.

8 MPH tree tops in light motion.

Bigger leaves flip over on windy side of tree.

Mirage leans to 2:45.

9 MPH tree tops show obvious movement.

Almost all leaves flip over.

Mirage leans 2:45-3:00 and begins to run.

10 MPH wind pressure felt against the body.

Tree tops show substantial movement.

Mirage runs slowly and parallel to ground.

11 MPH mirage runs quickly along the ground and begins to break up.

12 MPH wind pressure felt easily against the body.

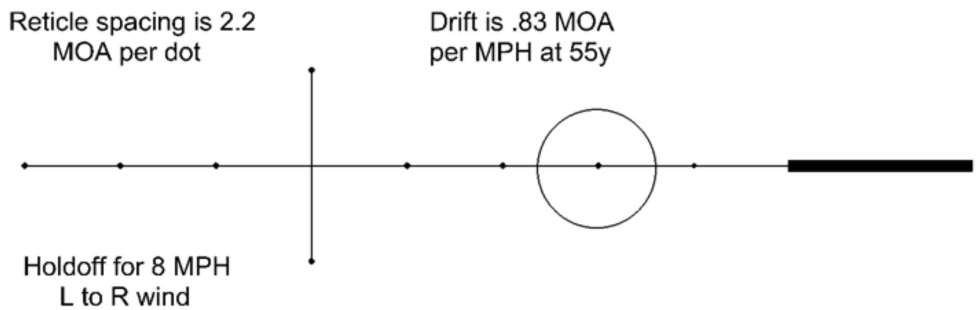
Mirage runs very quickly in sheltered places but is mostly broken up in exposed areas.

12-15 MPH dust is raised.

Another tip…. The target string.

Another helpful tool is the target string. Lifting the target string and sighting down it can give you a lot of info. If you spend some time practicing with the reset string, it can save some steps. The reset string is pressed upon by the wind and does the vector conversion for you. By this I mean that the bow in the string is proportional to the pressure placed upon it in lateral (full value) wind. If the wind is coming at a 45 degree angle, it will displace the string laterally about 30 percent less than the same full value cross wind. Obviously...there are different diameters and weights of string that can affect the outcome of the actual bow...but if you do this often enough you will begin to develop some useful info. The string will also tell you if there is a greater concentration of wind at a certain place or a reverse all together. This will be evident by the string not having a smooth bow. The string can also take on a S shape meaning that there are two conflicting winds. Personally, I try to shoot when the string has a fluid bow if I have a bit of time to wait. Placing your Kestral wind meter half way down your practice area 90 degrees to the shooing direction will give you a mph value to correlate to what you are observing. My Kestral has a bluetooth option that lets me monitor the wind meter real time from my phone.

Here is an example on the following page of the reticle placement for a 8 mph wind using my 2.2 MOA per dot reticle on a 55y full size 40mm KZ.



(Wind Velocity)x(MOA per MPH)=Holdoff in MOA

8 x .83 = 6.64 MOA