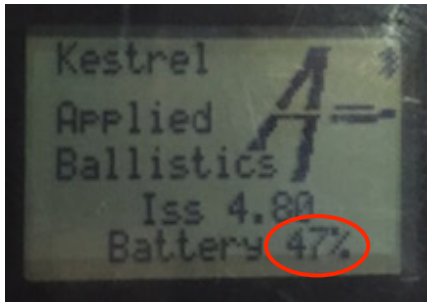
Set up and use of the Kestrel 4500 Applied Ballistics system

Turn on



Note – Battery level defaults to 47% if in battery setting - Alkaline is set but you are using a lithium battery – change in "System"

Defaults into AB mode at turn on

Capture / Delete

Up

Left

Enter

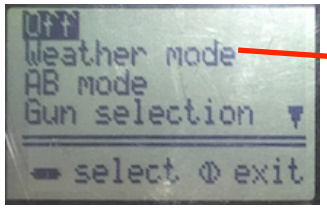
On/Off
Escape/back

Backlight, Space, Double tap Shortcut between WX and AB mode

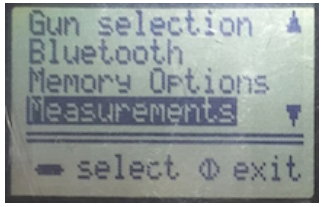
Right

Down

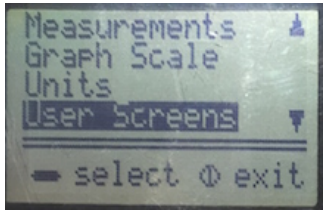
MENU

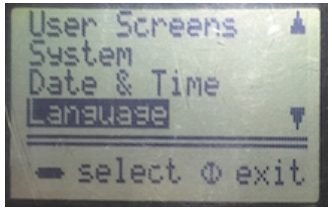


Enter WX mode and scroll to BARO and set Ref altitude to 0 so Baro reads Station Pressure for Density Altitude adjustment

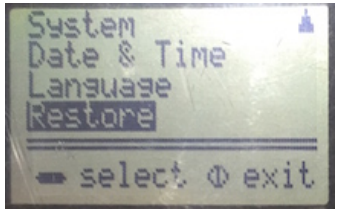


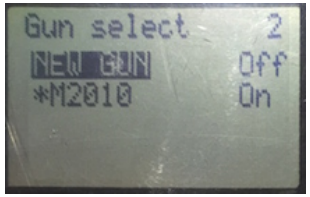
Scroll to Wind SPD and hit escape back to main menu. This ensures each time to go to WX mode Wind SPD is first screen up. **All other Environmental settings will be done in the AB mode Environment screen.**





Go to Gun selection, enter, and build your gun. Turn off guns not in use





Escape and enter AB mode

AB mode

Main operating screen

Elevation based on Range and Environment settings – MILS or MOA based on operator units selection

Windage based on Range and environmental settings – MILS or MOA based on operator units selection

Tgt = Target data – here it displays 25 deg DOF to a 1000m target is 8.81 mils elevation form zero

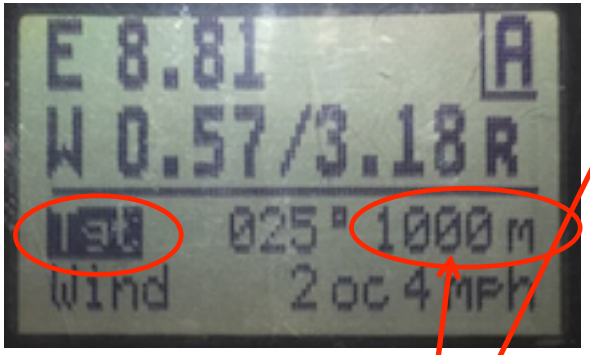
W = Wind 1 (0.57 mils) / Wind 2 (3.18 mils) hold R or right for the 1000m target <u>IF WINDS ARE AS ENTERED IN WIND SETTING</u>

Wind setting – displays wind from 2 o'clock, Wind 1 of 4mph, Wind 2 is under wind settings

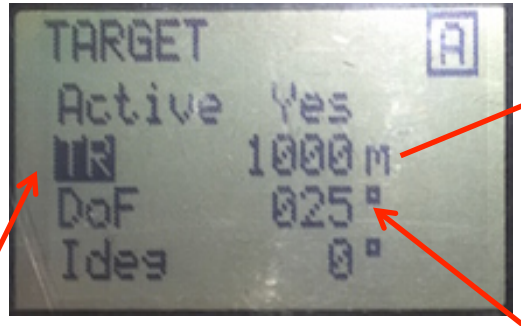
0.57 = hold Right .57 mils on the 1000m target based on a 4mph wind coming from 2 o'clock in reference to the direction of fire of 25 deg.

Target inputs

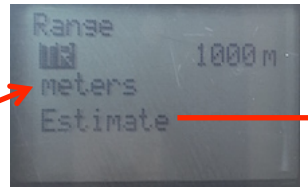
With Tgt is highlighted hit enter to set parameters



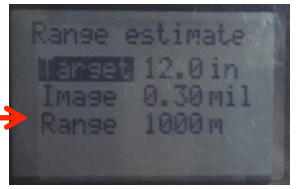
Range can be adjusted using the left and right arrows on this main screen but the range will move slowly as the system is calculating as you adjust. If you adjust range inside the target mode it moves quickly without calculations until you stop.



enter TR to change / convert yards/meters

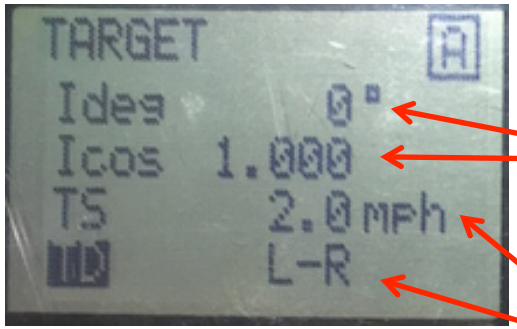


enter Estimate to determine range to target based on target size and measured mils



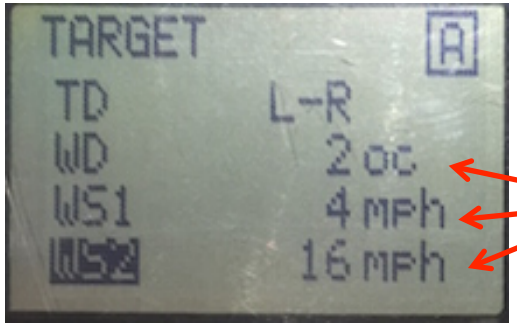
Hit escape – you will be prompted to save range to target range or forget range found using estimate

Set magnetic Azimuth to target – this is for Corriolis calculation



Set up or down angle (Ideg – inclination degrees) to Target – Icos – inclination cosine will populate automatically once you input angle

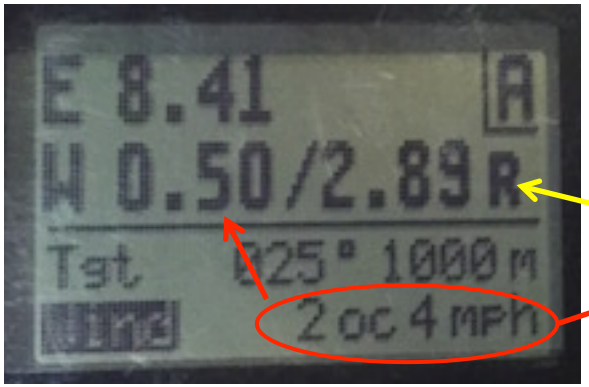
Set target Speed and Direction of travel

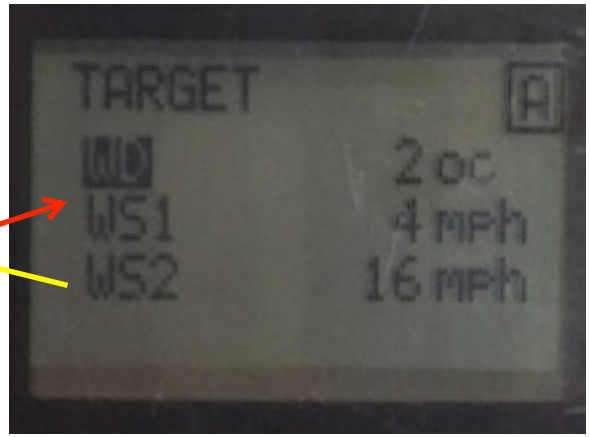


Set “O’clock” wind is coming from. Set desired wind speed 1 and 2 that will be displayed on the main screen in AB mode

Wind inputs

With Wind is highlighted hit enter to set parameters

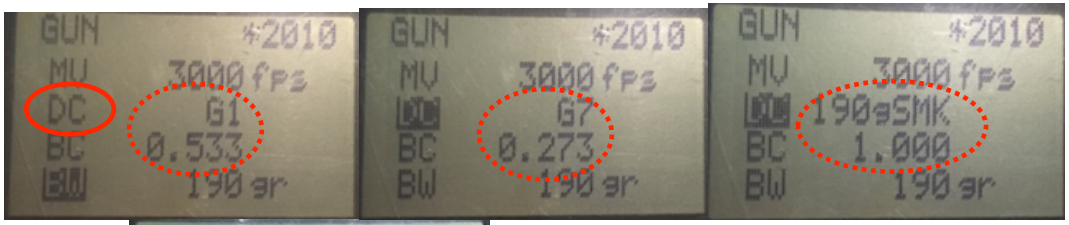




Enter Wind when highlighted and use the arrow keys to change wind data

Set "O'clock" based on where the wind is coming from. Set desired wind speed 1 and 2 that will be displayed on the main screen in AB mode

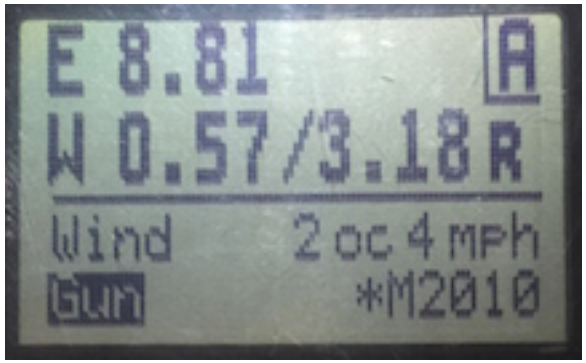
Choose Coefficient – G1, G7, or custom curve
Switching a G1 to G7 converts G1 to G7

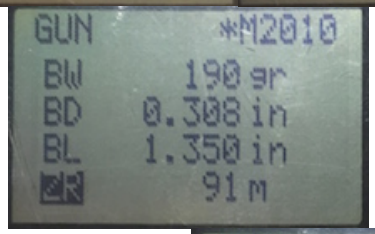


IF you choose a custom curve profile it locks DC, BC, Bullet Weight, Bullet Length

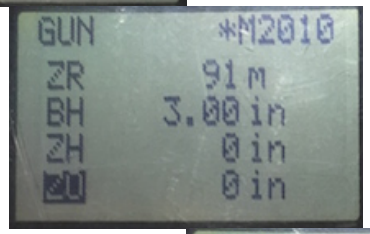
Gun inputs

With Gun highlighted hit enter to set parameters

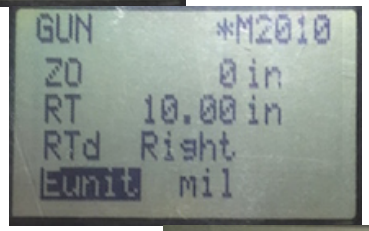




BW = Bullet Weight
BD = Bullet Diameter
BL = Bullet Length
ZR = Zero Range

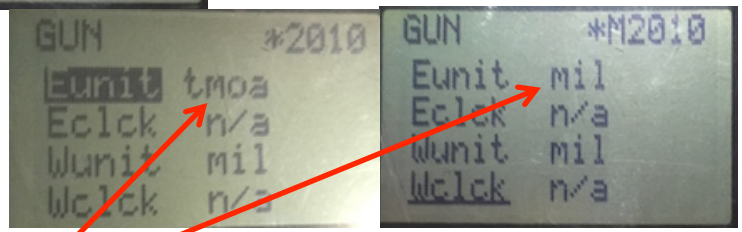


BH = Bore Height – Center of barrel to center of scope
ZH = Zero Height –offset from zero for Sup / alt ammo
ZH = Zero Offset –offset from zero for Sup / alt ammo



RT = Rate of Twist
RTD = Rate of Twist Direction

Us the up and down arrow to Highlight the variable you want, to change use the left and right button to change to the desired data

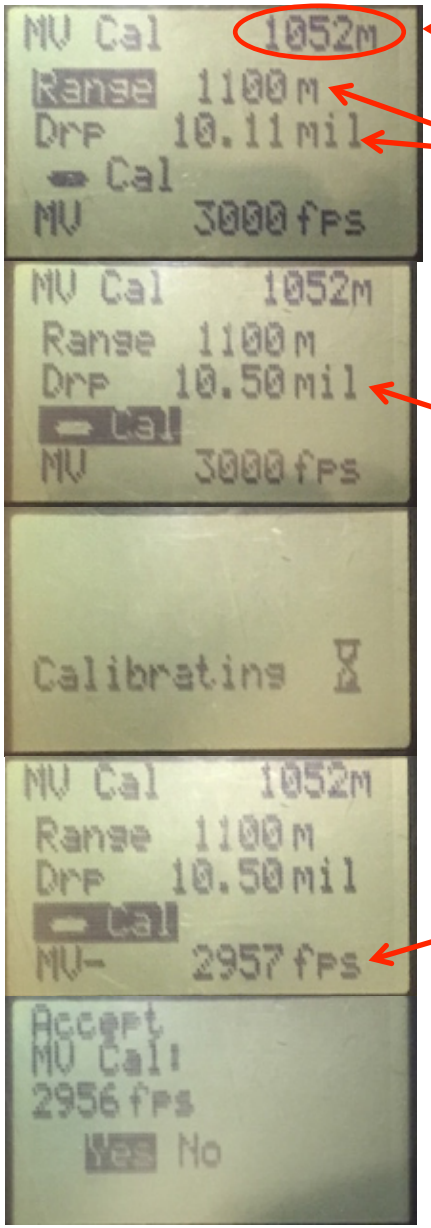


Select unit for Scope/Reticle Elevation and Windage scale
Mil/true moa/shooter moa, clicks

See following page for Truing

Truing the polynomial predictive curve– make your own custom curve

Truing Muzzle velocity Transonic



Transonic threshold for this gun set up – ensure you are at this range or as much as 10% below (950M in this case) trans to true properly

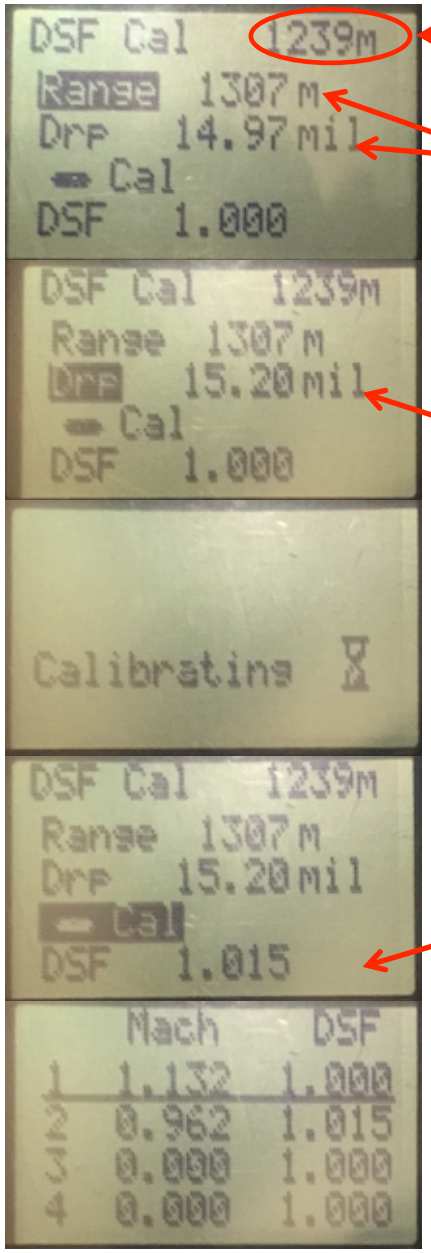
Target Range and Drop predicted based on Settings

Adjust to Actual Drop to hit target – What the bullet did and enter Cal for calibrate

New Muzzle velocity based on actual bullet drop

Accept data and return to AB home screen and it will show the new 10.50 elevation you hit with – system is now true. Confirm data by selecting a target at midrange and ensuring elevation is correct

Truing beyond subsonic



Subsonic threshold for this gun set up – ensure you are at this range and beyond to true Drop Scale Factor properly

Target Range and Drop predicted based on Settings

Adjust to Actual Drop to hit target – What the bullet did and enter Cal for calibrate

New Drop Scale Factor based on actual bullet drop

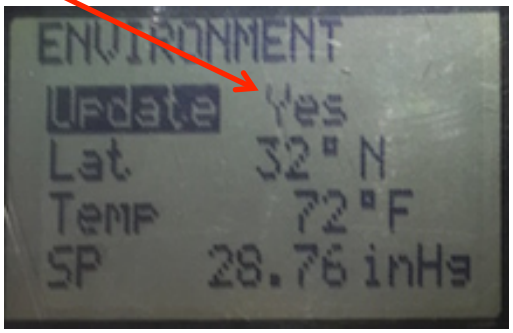
Accept data and the new DSF for that range will be applied to the DSF table – under View DSF

Environment inputs

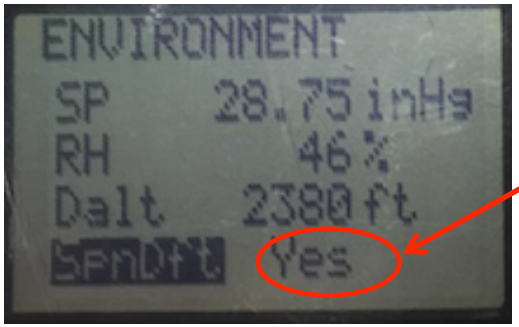
With Environment highlighted hit enter to set parameters

Enter Environment when and use the arrow keys to change data

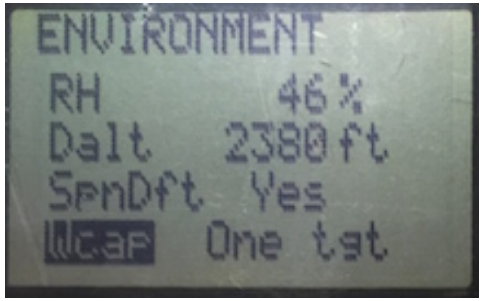
When you select update Yes the Kestrel is reading the environment real-time and will give real-time data to the ballistic engine. To guard against Solar loading, heat or cold syncing providing bad data spin the kestrel at the end of the lanyard to expose sensors to actual air temp and then immediately turn off update. While shooting update as environment changes.



When the Environment is in update No the user can manipulate variables to see affects in different conditions. This is a good tool to answer questions on what environmental affects will do to the shooting solution. Simply change the variables and go back to the AB home screen to see how new variables affecting the shooting solution.



When Spin drift is Yes it automatically calculates in Spin drift. Corriolis, and Aerodynamic jump into the elevation and wind solution. Turn off and these variables are not calculated in to the shooting/ wind solution

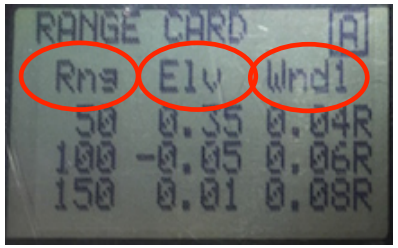


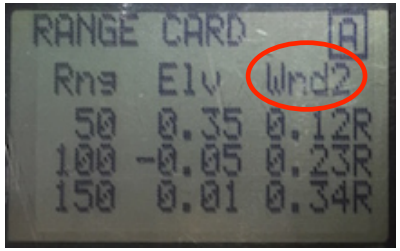
There is no need to enter into the kestrel weather mode for environment information beyond reading wind speeds. All environmental necessities for shooting are located here under environment.

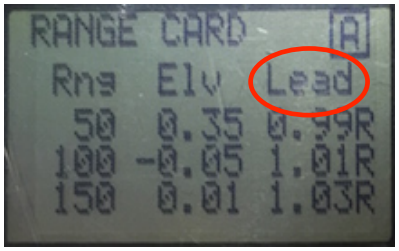
Under ballistics the precise range data can be found to the nearest meter vice in brackets in range card.

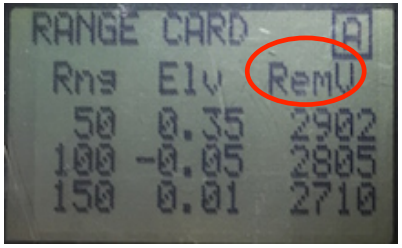
Range Card Function

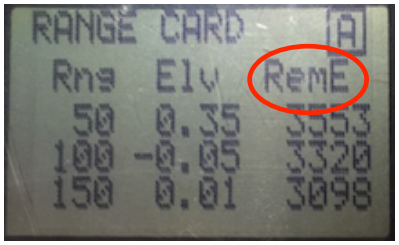
Enter Range Card when highlighted and use the left and right buttons to scroll through – change the last column to the range cards available data

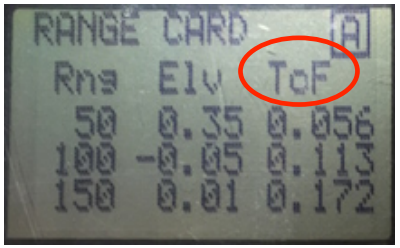


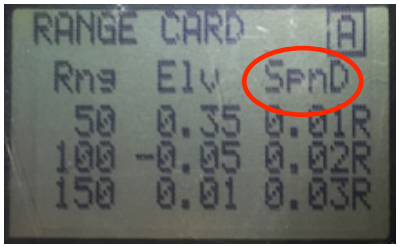






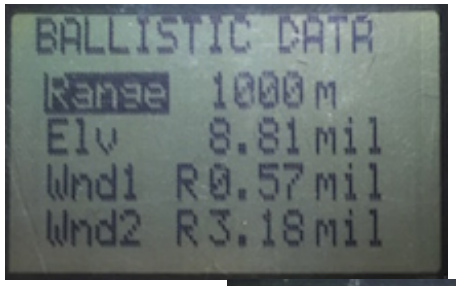


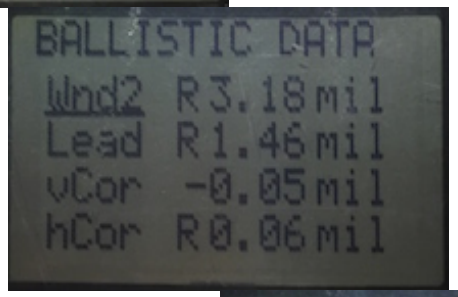


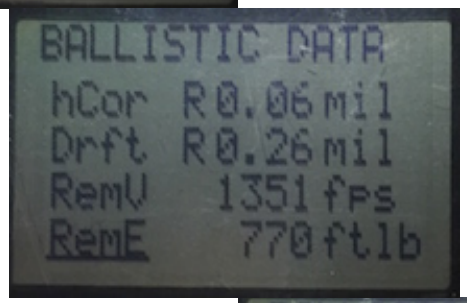


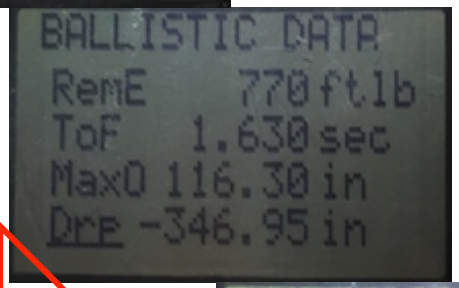
Ballistic Data

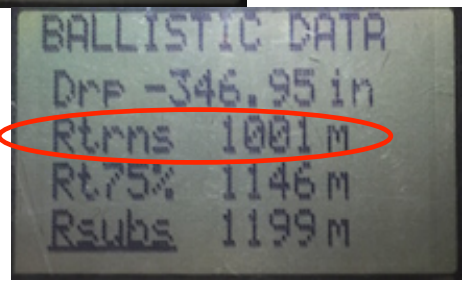
Enter Ballistics when highlighted and use the Up and Down buttons to scroll through ballistic data for the range designated











In ballistics, unlike in range card you get the exact variable for the exact range vice in rang increments

Truing data

True at a range between 1001m to 10% below or 900m in this case

Ensure environment is updated

Normal use

- Turn on
- Do an environmental update – turn on and off to prevent heart or cold loading the device
- Select gun
- Find target at transonic or up to 10% below trans
- Input range to target within 1 m
- Shoot data
- Calibrate MV to true the algorithm
- Calibrate DSF for ranges beyond Subsonic
- Change DOF when shooting over 600m
- Spin drift on – calculates spin, corriolis, aerodynamic jump – turn it off and winds are pure
- When you swap batteries you do not loose your data, but Range, Latitude default to 457m and 38th parallel.
- Once trued simply range target to within 1 m and shoot the data (Ensure to conduct environmental updates as environment changes). For extreme range shots ensure you update foe shot as well as input actual DOF and Latitude