

# tacomHQ Charlie Tarac

## Operator's Manual Version D

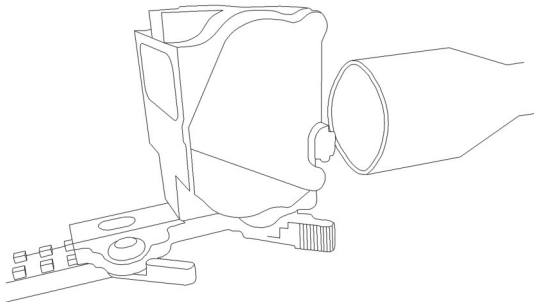
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### **Installation**

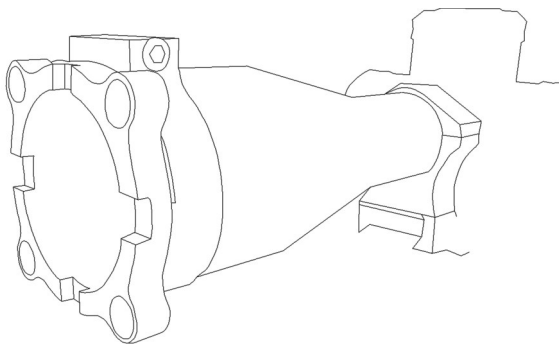
Rail Mount – To attach your Charlie Tarac to your picatinny rail, first rotate the mounting arm(s) 90 degrees into the open position. Fit the unit in a picatinny slot. Rotate the arm(s) back into the close position. See Fig. 1

Fig. 1



Scope Mount – To attach your Charlie Tarac to your scope (some models are exclusively rail mount), first screw the adapter onto your scope the same as a sun shade (this step may require you to remove your scope depending on your bore height). When it stops rotating, do NOT tighten. Rotate the adapter CCW until it is vertical (by eye). Use a level to square the Charlie to the scope and rifle and tighten the cross screw to 30in lbs (same as scope ring tension screws). Mount the Charlie magnetically and double check vertical alignment on a distant vertical object and adjust accordingly. Insert both rear locking screws and finger-tighten. See Fig. 2

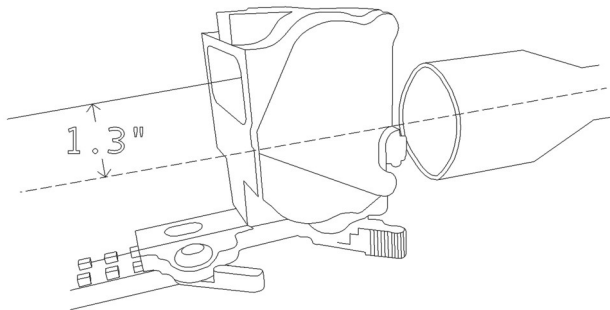
Fig. 2




## Truing

**IMPORTANT:** Each Charlie Tarac is preset to a true MIL or MOA value using an Autocollimator that will be accurate to within two arc minutes. A slight offset will occur due to the distance between the bore's center line and the Charlie Tarac's optical center line. This offset will be about 1.3 inches above your scope center-line at 100yds. This offset is more pronounced at closer ranges. If you are closer than 200yds, for your sight in, you will need to account for the scope offset too. Of course, as range increases the ratio to your offset will continue to move toward zero. See Fig. 3

Fig. 3




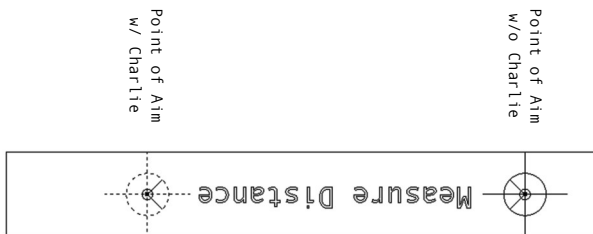
Method 1 – To true your Charlie Tarac at the range, shoot at a tall vertical board (or target) at a known point at a known range (use a range finder for an absolute) without the Charlie. Then attach the Charlie and shoot at the same known point on your target. Your point of impact will be 10's of inches or feet from the original shot so be aware of your backstop. Measure the distance between the two shots and calculate the MIL or MOA. This should match a ballistic calculator. (If the reticle is capable, you can also measure the reticle and compare to the MIL or MOA shift.) See Fig. 4

Fig. 4 (rotate Manual  90°)



Method 2 – To true your Charlie Tarac without firing any rounds, look at a target (through your scope) without the Charlie and have a comrade mark your point of aim on the target. Attach the Charlie and mark your new point of aim. Measure the distance between the two points and calculate your MIL or MOA (true not shooters). See Fig. 5

Fig. 5 (rotate Manual  90°)

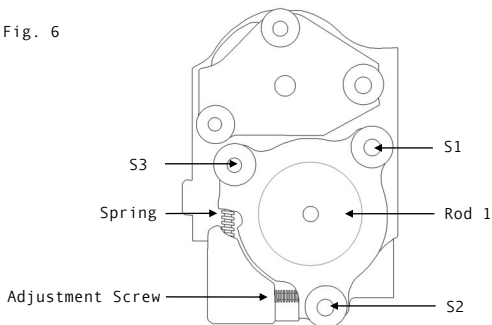


## Unit Adjustment

Micro – A fixed unit that cannot be adjusted

Macro – Features an elevation mechanism (right side of the Charlie) consist of Rod 1; three #10 locking screws S1, S2, and S3; a spring that loads Rod 1 tight against an adjusting screw; and an adjusting screw that tilts Rod 1. See Fig. 6

Fig. 6



To adjust your Macro Charlie Tarac, loosen S1-S3 screws just beyond finger-felt tension, but DO NOT REMOVE. Rotate Rod 1 (your elevation) 0.5 MIL/2 MOA short of your target by turning the Adjustment screw. (Turning the Adjustment screw CW increase the shift. Turning the Adjustment screw CCW will decrease the shift. See Fig. 7.) Load S1-S3 screws with 10in lbs and rework the adjusting screw closer to your final adjustment value. Repeat with 20in lbs (you will notice applying torque to S1-S3 screws will bring the left to right windage into its correct position.) Fully tighten S1-S3 screws with 55-60in lbs. Lastly, load the Adjustment screw with 4in lbs.

Fig. 7



Turning Adjustment Screw  
Clockwise (CW)  
increases elevation shift



Turning Adjustment Screw  
Counter Clockwise (CCW)  
decreases elevation shift

**IMPORTANT:** Always load the S1-S3 screws and Adjustment screw by turning CW as you near your final adjustment value. We recommend moving only partial MIL/MOA increments because releasing the Adjustment screw takes stress out of the system so check your value after each adjustment. One complete turn of the 10-32 Adjustment screw achieves about 60 MILs of elevation shift. That equates to 2 MILs of elevation per 0.001" of movement or 1 MIL per six degrees of rotation.

MK8 – Turn dial

### **Elevation Adjustment**

Method 1 – To adjust the elevation of your Charlie Tarac using a ruler, bed your rifle, so the Charlie can be added to your scope or rifle without your platform moving. While looking at a tall vertical target that is at least 100" tall (like a tall board), mark your point of aim. Attach the Charlie and adjust the unit until it matches a specific MIL or MOA shift. Practice will guarantee your first shot to be within field of view. See Fig. 8a, 8b, and 8c

Fig. 8a (Rifle w/o Charlie)

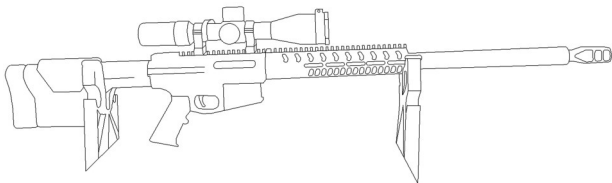


Fig. 8b (Rifle w/ Charlie)

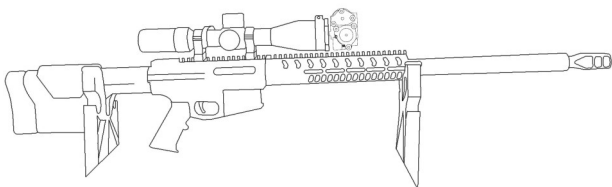

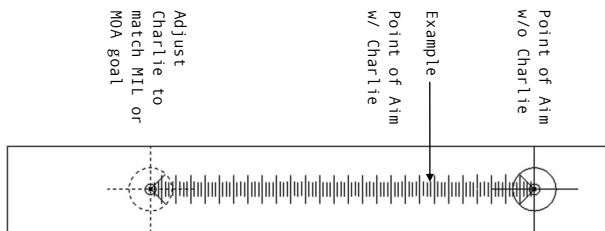


Fig. 8c "Ruler" (rotate Manual  90°)



If you set your system between 30-50yds, we recommend leaving your unit 1 MIL short to compensate for the distance between the bore's center line and the Charlie Tarac's optical center line. For 100yds, we recommend 0.5 MILs short. Greater the

range greater the accuracy (because as range increases the ratio to your offset will continue to move towards zero). See Fig. 9. This method can be enhanced and or modified with the use of a laser bore sight. Set the sight in the bore, establishing its center, mark as viewed through a scope, and add the Charlie Tarac. Check the vertical movement and calculate the MIL or MOA value over the known distance.

Fig. 9 (For reference ONLY as actual results may vary. Adjust for error using scope reticle.)

Range (yds)	Offset Charlie Elevation Adjustment
30-50	1 MIL / 3.4 MOA
50-75	.75 MIL / 2.6 MOA
75-125	.5 MIL / 1.7 MOA
125+	0 MIL / 0 MOA

Method 2 – To adjust the elevation of your Charlie Tarac using your reticle, bed your rifle so the Charlie can be added to your scope or rifle without your platform moving. First use your scope's reticle to observe the distance between Point 1 (scope center) and Point 2 (x MIL/MOA below Point 1). See Fig. 10a. Attach the Charlie and adjust the unit until Point 2 is at scope center. See Fig. 10b

As you adjust the Charlie (turning the Adjustment screw CW), the cross hairs will move down from your initial point of aim in order to create a larger MIL or MOA value. The term "down" refers to your point of view through the scope. As the cross hair moves down your target (for example 20 MIL below your base zero target), you will have to raise the muzzle in order

to reacquire your initial point of aim. This rise creates the ballistic shift. Practice will guarantee your first shot will be within field of view.

Fig. 10a (Scope image w/o Charlie)

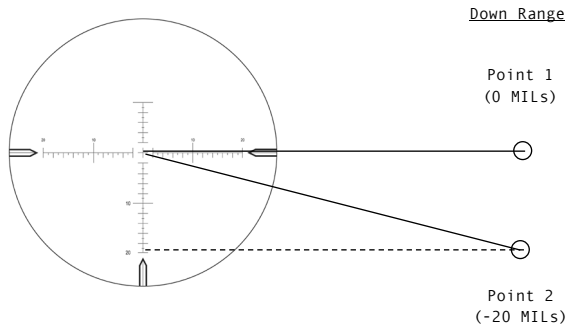
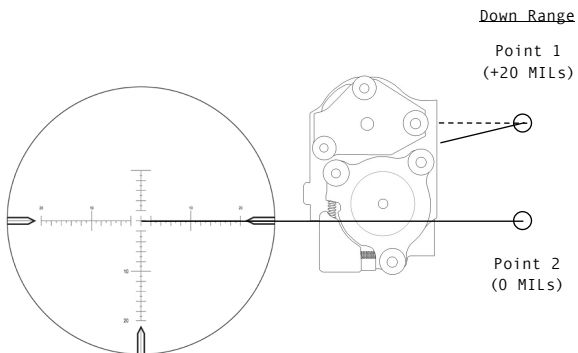


Fig. 10b (Scope image w/ Charlie set at 20 MILs)



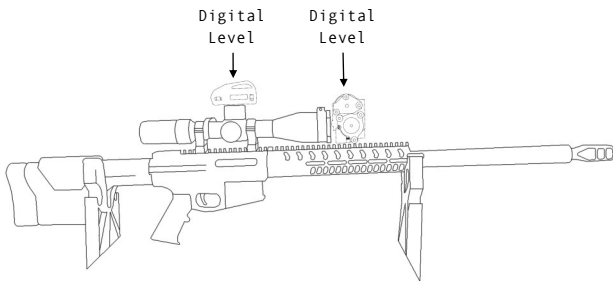


If you set your system between 30-50yds, we recommend leaving your unit 1 MIL short to compensate for the distance between the bore's center line and the Charlie Tarac's optical center line. For 100yds, we recommend 0.5 MILs short. Greater the range greater the accuracy (because as range increases the ratio to your offset will continue to move towards zero). See Fig. 9. All adjustments should be made with the scope set at its zero position, but you can integrate the reticle into your initial set up.

Method 3 – To adjust the elevation of your Charlie using a digital level, bed your rifle and set the scope and rifle at its zero looking at a distant target. Measure the angle of the platform. Tilt the muzzle up to your new angle (your initial angle plus your calculated angle). Adjust the Charlie until your distant target is centered within your cross hairs, and lock in place. Practice will guarantee your first shot will be within field of view. See Fig. 11

For utmost precision, we recommend you use a level that measures 0.01 degrees (+/- 2 MOA) of tilt. This is the fastest and most reliable method of adjustment.

Fig. 11



### Accuracy

Scopes are not the same manufacture to manufacture, especially as they reach their extremes; therefore, results may vary.

A project manager from a large scope company noted scopes are expected to perform within a percentage of perfect (variations are induced according to parallax adjustment). For example, if a scope is expected to perform within 2% across its range, 2% of 1,000yds is 20yds. Shooters will obtain unique values according to magnification, parallax, and range.

### **Cleaning & Maintenance**

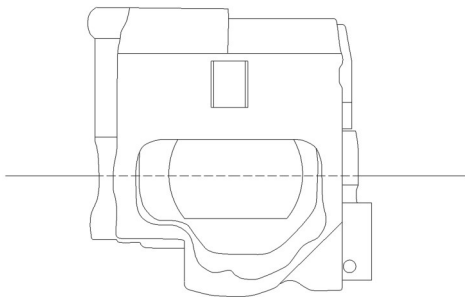
The Charlie is designed to be rinsed in a bucket of soapy water. It's mirrors are more scratch resistant than most high-end scopes. They have a mil spec coating that resists scratch, salt, fog, and chemicals. Maintain the mirrors the same as you would your scope.

### **Unit Zero**

Method 1 – To zero your Charlie without using your scope, detach your unit from your scope or rifle. Look through the unit (from the scope side) at a distant target, preferably >100yds. Choose a long, horizontal line that is long enough to see both inside and outside the Charlie (such a roof). Adjust Rod 1 until the horizontal line seen in the Charlie is in line with the horizontal line outside the Charlie. See Fig.12

While this may seem crude, the human eye is very capable of discerning fine angles. Practice will guarantee single digit minutes of angle deviation from target.

Fig. 12



Method 2 – To zero your Charlie using your scope, bed your rifle so the Charlie can be added to your scope or rifle without your platform moving. Looking at a distant target, preferably >100yds, attach and detach the Charlie until its zero is in line with your scope zero. See Fig. 13a and 13b

Greater the distance better the result.

Fig. 13a

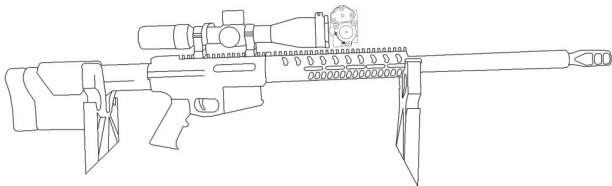
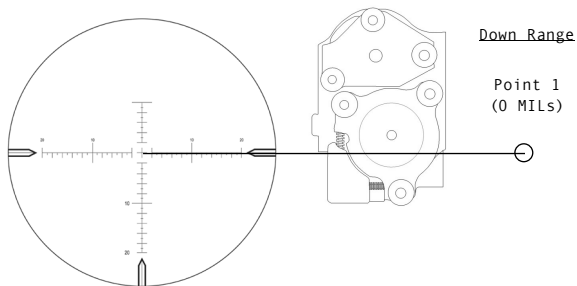


Fig. 13b



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