

# A dummies guide to FT Physics

Leo Scheepers

## Scopes

### Parallax, Zeroing and Turrets

Disclaimer:

All graphs and figures are purely to demonstrate ideas and are not to be taken as factual values. It is best to gather the data for your specific rifle in order to obtain precision.

FT rules limit rifles to a max of 16J of energy. In this document the pellet caliber, mass and velocity will be set at .177(cal.), 0.544g (mass) and 790f/s (velocity).

I used these settings to calculate my graphs.

AA Field		0.177 Combo					
Calibre	Weight	BC	Muzzle Velocity	Zero Range	Scope Height		
0.177 Inch	0.544 Gram	0.0210 @NTP	240.6 m/s	25.0 m	4.900 cm		
Energy	Clicks/MoA	DotSep (@10x)	Laser Height	Laser Zero	Mag		
15.78 J	8.377	3.438	7.620 cm	22.9 m	32.0 X		
Incline	Range	Start	Kill Zone	BC Tol.	MV Tol.	Wind Speed	Wind Angle
0 °	50 m	10 m	1.000 cm	5.0 %	2.0 %	0 km/h	0 °

### Parallax????

In short, it's a "cheat" to determine the distance to the target. The big wheels you see functions just like the focus wheel on binoculars.

#### How to use it

Pre shoot, one would set out markers at pre measured distances. Use the side wheel/focus to get a clear picture of the target. Say you have focused at the 15m target and it is clear. Mark the side wheel and add the distance 15m to the mark. Do so for the rest of the targets. (10m-50m)

#### FT time

Aiming at the target, adjust the focus until the target is clear. Now read the distance from the side wheel and proceed to dial in your turret or calculate mildots.

### Zeroing????

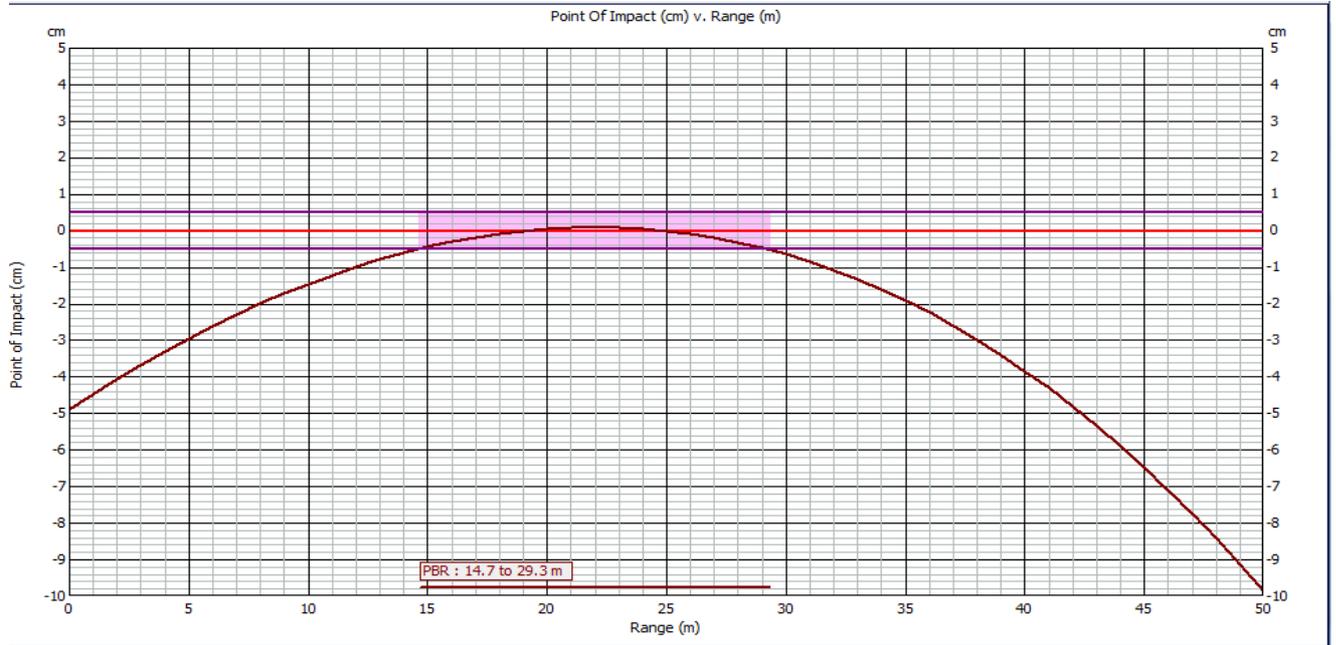
#### At what distance should I Zero?

#### Quick physics

If you drop a pellet at the same as firing a shot in an initial horizontal path, both pellets will impact the earth at the same time.

What happens with the pellet when it leaves the barrel?

Fig. A



The figure shows a representation of flight path, according to distance travel.

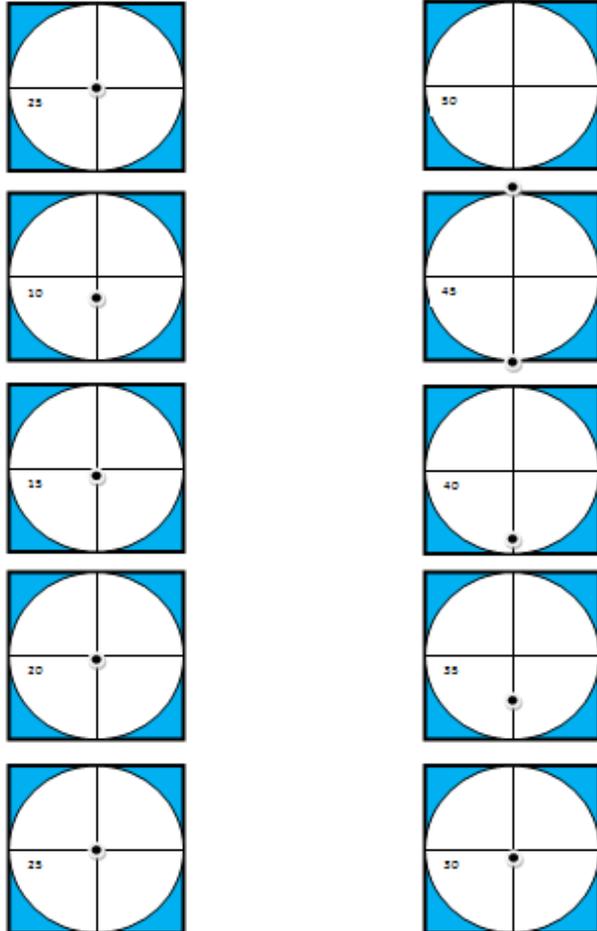
In the figure a plateau on the graph is seen between 19m and 26m. (2mm above and below the red line of sight)

The red line, line of sight, touches on the flight path at 20m and 25m.

This spot at 20m or 25m is the ballistic peak, given the 2mm tolerance. It is best to zero the scope at the ballistic peak. I zeroed at 25m.

Nice, but what does this mean going down range?

Fig. B 1-10



Range (m)	POI (cm)	MoA (MoA)	Clicks (Clicks)
010	-1.455	-4.88	41
012	-0.991	-2.78	23
014	-0.605	-1.46	12
016	-0.301	-0.64	5
018	-0.081	-0.15	1
020	0.054	0.09	-1
022	0.100	0.16	-1
024	0.057	0.08	-1
026	-0.080	-0.10	1
028	-0.312	-0.38	3
030	-0.641	-0.73	6
032	-1.070	-1.14	10
034	-1.602	-1.61	13
036	-2.239	-2.12	18
038	-2.984	-2.68	22
040	-3.839	-3.28	27
042	-4.807	-3.91	33
044	-5.892	-4.58	38
046	-7.095	-5.27	44
048	-8.421	-6.00	50
050	-9.871	-6.75	57

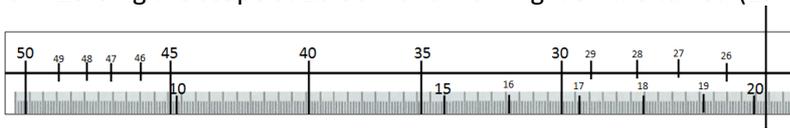
The figures show targets with a cross hair to mark the point of aim and a black dot as where the pellet will impact.

From the figures one can deduce that, when shooting in a horizontal plain, scope zeroed at ballistic peak and in perfect conditions, the pellet will never hit above the point of aim. You will always hit lower.

# Turrets???

## Firstly

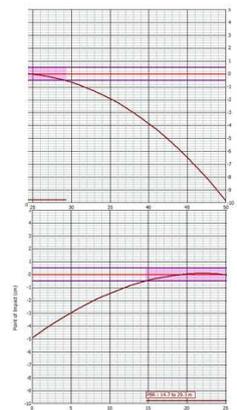
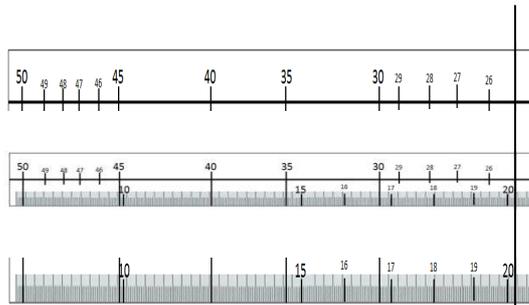
You have popped a turret on your scope. You have zeroed it at 25m and proceeded, like the parallax measurement, to mark all the distances that correspond to your side wheel by shooting targets all the way from 10-50m. Zeroing the scope at 10-50m and marking it on the turret. (19m-26m will be on the same spot)



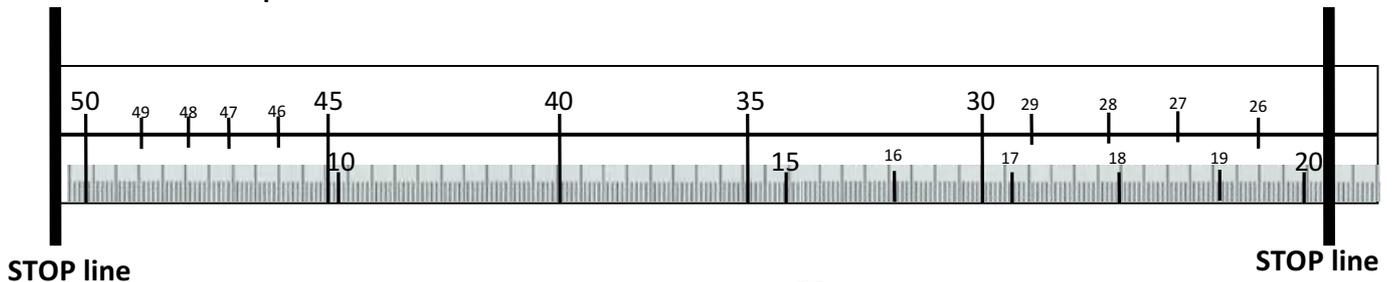
It is not making sense!?

My mark for 10m and 45m is the same. Why?

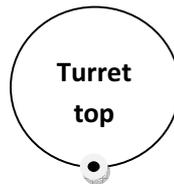
Range (m)	POI (cm)	MoA (MoA)	Clicks (Clicks)
010	-1.455	-4.88	41
012	-0.991	-2.78	23
014	-0.605	-1.46	12
016	-0.301	-0.64	5
018	-0.081	-0.15	1
020	0.054	0.09	-1
022	0.100	0.16	-1
024	0.057	0.08	-1
026	-0.080	-0.10	1
028	-0.312	-0.38	3
030	-0.641	-0.73	6
032	-1.070	-1.14	10
034	-1.602	-1.61	13
036	-2.239	-2.12	18
038	-2.984	-2.68	22
040	-3.839	-3.28	27
042	-4.807	-3.91	33
044	-5.892	-4.58	38
046	-7.095	-5.27	42
048	-8.421	-6.00	50
050	-9.871	-6.75	57



## Basic turret strip



Never cross the stop line when dialing!!!



STOP line