



## Weapon Tweak Guide

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### Introduction

The purpose of this document is to explain the usage and effect of the different concepts/variables used to describe a weapon in our game.

### General Weapon Model

FarCry weapons possess one or more **fire modes**, which can be categorized into four types:

#### Instant:

An instant fire weapon fires shots immediately. It is basically a 'ray gun'. For every bullet a ray will be traced and hits will be generated that way (by ray/object intersection). Thus, the bullet trajectory is NOT(!) simulated over time.

#### Projectile:

A projectile fire mode launches an actual projectile when it is fired. This means, an entity will be spawned, so this should not be done at incredibly high fire rates.

#### Melee:

This fire mode uses a cylinder in front of the character firing the weapon to test a 'volume' for hits.

#### EngineerTool:

A special fire mode used only for the wrench. This might be changed in the future.

### Where to Tweak

Tweaking of the weapons should be done in the file **WeaponParams.lua** which can be found in the Programmers SourceSafe under MasterCD\_Programmers/SCRIPTS/Default/Entities/Weapons/. It contains a list of tables.

### What to Tweak

This section will outline the different variables available when tweaking a weapon.

#### Weapon parameters

Variable name	Description
fire_mode_type	The type of the fire mode as outlined above. Possible values: FireMode_Instant, FireMode_Projectile, FireMode_Melee, FireMode_EngineerTool
damage_type	What kind of damage is being caused by this weapon. If you just want the weapon to hurt the player, make this have the value "normal". The wrench also specifies "building" damage. "healing" damage might be added in the future for the MedicTool.
shoot_underwater	This flag specifies whether this fire mode can be used when the player is in the water. If he can shoot underwater, then give this a value of 1, otherwise 0.
min_accuracy	This is the worst accuracy the weapon will ever have. 1 is perfect and 0 is very bad.
max_accuracy	This is the best accuracy the weapon will ever have. 1 is perfect and 0 is very bad.
aim_improvement	This modifier affects the accuracy when the player is aiming a

## Weapon parameters

Variable name	Description
	weapon. This is in the same 'units' as the min/max accuracy.
min_recoil	Controls the minimum (ever) amount of recoil applied to a weapon. Perfectly still would be 0 ... bear in mind, that recoil is also affected by the stance the player is in. If he crouches only 50% recoil is applied and when he is prone only 10%.
max_recoil	Controls the maximum amount of recoil ever applied to the weapon. The longer you shoot the more recoil will increase ... up to this maximum.
aim_recoil_modifier	This variable adjusts the amount of recoil. A value of 0.5 means 50 percent of the original recoil. 0 means no recoil. It is also possible to increase recoil beyond the original value by setting this value higher than 1.
reload_time	The time (in seconds) it takes to reload the weapon.
fire_rate	This variable controls how fast the weapon can fire when the user presses and holds the mouse button.
tap_fire_rate	The fire rate used when the user is just tapping the mouse button rather than holding it.
distance	The maximum distance this weapon can shoot. This is in meters.
damage	Damage caused by a single shot (or melee swipe). Does not apply to projectile weapons, as it is the projectiles explosion which is causing the damage, not the weapon which fired it.
damage_drop_per_meter	The damage done by a shot decreases by distance. This variable controls how fast this happens.
bullet_per_shot	The number of bullets fired with each shot (A shotgun might shoot more than a single bullet, for example).
hud_icon	The small icon displayed in the hud. Values are: "single" for single fire modes, "auto" for automatic fire, "melee" for melee fire, and "rocket" for grenades/rockets.

## Projectiles

As previously mentioned, a weapon with a projectile fire mode actually spawns a projectile entity. This entity is then launched and performs certain game logic on collision. The kind of projectile which will be spawned is specified via the **projectile\_class** field in the fire mode variables. These are not listed in the WeaponParams.lua, but rather in the weapon specific script file (e.g. AG36.lua).

Every projectile has its own script file, which are all located in the Programmers SourceSafe under MasterCD\_Programmers/SCRIPTS/Default/Entities/Weapons/. At the time of this writing these files are:

- AG36Grenade.lua
- MortarShell.lua
- MutantRocket.lua
- OICWGrenade.lua
- Rocket.lua
- StickyExplosives.lua

Each of these files has a small Lua table called **ExplosionParams**. The prominent variables in this table for tweaking the size and amount of damage caused by the explosion on collision are:

### Explosion Parameters

Variable name	Description
damage	The amount of damage at the center of the explosion. This fades out linearly towards the outer radius of the explosion. This means that, if the damage is 20 and the radius is 10, an enemy 9 meters away from the explosion will take 2 points of damage.
rmin	The minimum radius of this explosion.
rmax	Damage radius limit. Entities outside rmax will receive no damage from the explosion.
radius	The radius of the explosion.
DeafnessRadius	The radius in which the deafening effect will occur.
DeafnessTime	The time (in seconds) for which the deafness effect will last. This is relative to the center of the explosion and also fades out towards the DeafnessRadius.

### Grenades

FarCry employs a number of different grenade types (or *throwables* as I like to call them). All the necessary base logic is contained in the file BaseHandGrenade.lua. We have the following throwables:

- FlashbangGrenade.lua
- GlowStick.lua
- HandGrenade.lua
- Rock.lua
- SmokeGrenade.lua

Similar to projectiles the damage of grenades is controlled via an **ExplosionParams** table in the respective script file. The parameters for this are identical to those mentioned in the projectile section of this document.