**Changelog:**

*v2.3.3 (May 22th 2025)*

**-** Removed redundant code, causing Modular Hard Mode-specific weapons to not function at all in game

*v2.3.2 (May 22th 2025)*

- Rebalanced ammunition barter pricing:

+ Generally increased prices for intermediate cartridge, lowered price for 12-gauge buckshot

- Added stagger effect for weapons:

+ Depending on weapon class, now they will have varying stagger effect on NPCS

- Updated for Modular Hard Mode 2.0.8T

- AKM-74U/AKM-74S: Increased barter pricing

- M26 underbarrel shotgun: Added support for other 12-gauge ammo types

- Mark I: Buffed ADS speed

- 5.45mm PP/PPBS: Decreased recoil modifier

- 9x18 PMM: Increased recoil modifier

- Updated all shotguns’ UI damage stats

*v2.3.1 (May 16th 2025)*

- Combatant: Fixed a bug where weapon deals zero damage

- AKM-74S: Slightly increased vertical recoil

- AKM-74U: Reduced vertical/horizontal recoil

- Reverted ArmorDifferenceCoef changes back to vanilla

- For Patch 1.4: removed CoreVariables tweaks, as it’s no longer needed

*v2.3 for patch 1.3.2 (May 15th 2025)*

Modular Hard Mode support:

* Added compatibility with the Modular Hard Mode overhaul, including pre-configured load order
* Merged and rebalanced Ani\_HVX's new weapons and ammo types, including:
  + Damage/penetration values
  + Ammunition types
  + Recoil characteristics
  + ADS/reload speed for worn weapons
  + Dispersion values

Reworked weapon damage system:

* Implemented full emulation of damage and armor penetration fall-off up to 500m
* 5.45/5.56mm firearms: Rebalanced with lowered damage/penetration differences between weapons
* Various ammunition type balancing changes across the board

Weapon accuracy changes:

* Greatly increased ADS (Aim Down Sights) accuracy for all weapon types
* Reworked hip-fire accuracy with more consistent stats across all weapons

NPC combat changes:

* Greatly increased accuracy for vanilla NPC weapons, at all ranges

Weapon-specific changes:

* Fora-221: Tweaked recoil model, greatly reduced starting horizontal recoil
* AKM-74S: Tweaked recoil model, greatly reduced horizontal recoil
* AR416: Lowered base weight to 2.9 kg
* Clusterfuck: 7.62x51mm conversion with new stats, sounds, and recoil mode
* TOZ/Saiga/Ram-2: Slightly buffed damage and penetration
* Sawn-off/TOZ: Slightly buffed ADS and adjusted spread
* Texas: Slightly buffed damage and recoil
* Buket-S2: Greatly reduced initial horizontal recoil
* PTM: Buffed durability
* Skif's PTM: Lowered durability to standard weapon wear rates
* Rhino: Slightly buffed damage and penetration

Miscellanous technical stuff:

* Armor coefficient difference values: Increased to 2.2 from 2
* Updated GeneralNPCObjPrototypes.pak file for Patch 1.3.2
* Updated CoreVariables UI (and miscellaneous) tweaks for Patch 1.3.2

*v2.1.2* *+ v2.2.2* *(March 23th 2025)*

- Fixed a bug where the Merc (unique VSS) would have missing world model

*v2.1.1* *+ v2.2.1* *(March 19th 2025)*

- Merged miscellanous changes from the 1.3 patch

- Increased headshot damage multiplier from 3x -> 4x

- Removed custom magazine for the Gambit/Krivenko, now uses vanilla magazine behaviour in order to avoid compatibility issues. If you have issues with your Gambit in game, try respawning through console

- for v2.1.1: new file naming structure

*v2.2-beta (March 7th 2025)*

**Weapon Damage Changes:**- Reworked weapon range:  
+ Full emulation of damage and armor piercing fall off: weapons will have an initial range in which damage/penetration is dealt in full, but after that damage/AP starts to fall off  
+ So far this only covers in-game handguns, support for all weapon types will be added in a future update

**Mod Loading Changes:**

**- New refurl loading method -** most of the files in the Main .pak are now converted into refurl, for better compability with large overhaul mods

+ Things might go wrong, so inform me if anything doesn’t add up

+ Due to a limitation of the refurl loading method, WeaponGeneralSetupPrototypes.cfg will still use .cfg override to maintain compatibility with Oxide's eXpanded Armory

- New file naming structure

+ If you’re updating from previous Better Ballistics version, please go to your ~mods folder and delete the old Better Ballistics .pak files to avoid conflict issues

- Removed UpgradePrototypes.cfg tweaks temporarily

*v2.1 (February 15th 2025)*

**Weapon Handling Changes:**

**-** ADS speed:

+ New ADS speed for all weapon types in game

+ In general, ADS speed is reduced by an average of 10 – 35% depending on the weapon type, for a more diversified weapon experience in game

- Reworked pistol recoil: lowered vertical recoil, increased recoil delay/return for a more natural animation

- AS Lavina: Tweaked recoil model, reduced horizontal recoil

- Viper-5: Greatly reduced horizontal recoil

- Buket: Increased horizontal recoil

**Caliber Conversions:**

- Spitfire: Converted to 7.62x39mm, complete with new stats and sound effects

**Miscellanous Changes:**

- Merged various bugfix changes from the 1.2 update

- Removed CoreVariable.cfg tweaks temporarily, this will come back in a future update. **If you’re updating from previous Better Ballistics version, please go to your ~mods folder and delete the old Better Ballistics .pak files to avoid conflict issues.**

*v2.0.1 (January 21st 2025)*

**Weapon Handling Changes:**

- Tweaked recoil for various assault rifles

+ AKM-74/AKM-74U/Dnipro: Lowered recoil

+ AR416: Slightly lowered recoil, to maintain parity with the G37’s short-stroke gas system

+ Fora-228: Lowered recoil to reduce initial pattern kick

+ G37: Increased recoil, to maintain parity with the AR416’s short-stroke gas system

*v2.0 (January 17th 2025)*

*If you’re updating from previous Better Ballistics version, please go to your ~mods folder and delete the old Better Ballistics .pak files to avoid conflict issues. Old files include: BetterBallistics\_HoC.pak, BetterBallistics\_HoC\_BotWeap.pak, and BetterBallistics\_HoC\_GambitPatch.pak (if applicable)*

**Weapon Damage Changes:**

- Complete damage rework for most weapon/ammo types

+ Base damage for all weapon types (except shotguns) reduced by 10 - 20%

- NPC weapon damage adjustment

+ 9x39: Slightly reduced damage by ~10%

- Ammo types stat rework

+ New damage/penetration stats for all ammo types. AP will give buffs to a weapon’s penetration capabilities depending on the caliber, and HP increases raw damage while also slightly decreasing penetration compared to default ammo

+ Ammo types now also modify weapon recoil. AP/HP will have more recoil while match-grade rounds will give you less recoil

- Body part damage multiplayer adjustment

+ Headshot damage multiplier reduced from 6x -> 4x  
+ Nerf limb damage multiplier reduced from 0.7x -> 0.5x

- Rebalanced various weapon’s penetration upgrades, to better suit the new weapon stats

- Reworked caliber change upgrade stats for Fora-228 and Dnipro

**Weapon Balancing Changes:**- Bullet trajectory/drop rework

+ Bullet drop is now defined by cartridge and weapon types using actual realistic values, as opposed to arbitrary values like in vanilla

+ Huge credit to @inf\_solov for allowing me (and other modders) to borrow their data

- Weapon recoil rework

+ New recoil configuration for SMGs and assault rifles. SMGs will now have less recoil than most rifles, and different ARs have varied recoil model – early game carbines will have more vertical recoil than full-length assault rifles, for example

+ Pistols are now using a alternative recoil model in game, and will have actual muzzle flip when firing as opposed to vanilla behaviour

- Nerfed ammo unload from NPC’s weapons

+ Ammo unload feature from NPC’s weapons is now halved compared to vanilla: 1 – 10 rounds to 1 – 5

+ Lowered ammo unload for some boss’ unique weapons

- Misc weapon changes

+ M860 Cracker: Slightly increased fire rate  
+ Mark I EMR: Corrected fire rate to real-life values, and increased durability by 25%

+ Clusterfuck: Nerfed damage/penetration, compensated with increased durability (40% compared to vanilla)

+ Shakh’s Mate: Reverted damage/penetration to vanilla MP5 values, increased durability by 20% as compensation

**Other Tweaks:**  
- New "zzzz" file naming structure, for better compatibility with other mods.  
- CoreVariable UI tweaks, contained into a separate .pak:

+ RoF UI values rework: now the RoF bar will actually show the difference in fire rate between different automatic weapons  
+ Removed last round damage buff from in game weapons

- Many of the tweaks are now separated into their own .pak file, to maintain better compatibility with other mods  
+ zzzz\_BetterBallistics\_HoC\_BotWeap.pak contains NPCWeaponSetupPrototypes.cfg and includes bot’s weapon damage

+ zzzz\_BetterBallistics\_HoC\_BodyHitboxTweaks contains GeneralNPCObjPrototypes.cfg and has changes for NPC’s body part damage

+ zzzz\_BetterBallistics\_HoC\_CoreVariableTweaks contains CoreVariables.cfg and modifies inventory weapon card rework, as well as last round in magazine damage modifier

*v1.4.2 (January 2nd 2025)*

- Fixed GSC bug, where NPCs equipped with the TOZ-34 would erroneously use a dispersion model meant for assault rifles - bots should no longer snipe you from 100m away with a shotgun

*v1.4.1 (December 21st 2024)*

- Reduced Damage: Fixed Gauss rifle damage, now properly uses base game’s damage stat

*v1.4 (December 20th 2024)*

**Magazine Capacity Corrections**

* USP .45: Extended magazine attachment now uses the correct capacity (17 rounds) from its real-life HKParts counterpart
* USP 9mm (Gambit): Corrected magazine capacity (15 rounds)
  + This might cause issues with Gambits that havae already been spawned in your savegame, a reversal patch on Nexus is provided for this
* PKM:
  + Readjusted magazine capacity, for now the capacity for standard/extended/tank mags is changed to 50/75/100 rounds
  + So far I cannot find the real-life equivalent for the standard/extended magazine box in game, do let me know if there’s any information about these

**Weapon Balancing Changes:**

* MAC-10: Slightly reduced damage and penetration
* Fort/Malyuk: Slightly reduced damage and penetration
* Bizon/Zubr: Fire rate increased to 725 RPM, to match that of the actual 9x19 Bizon
* Obrez and TOZ-34: Increased damage beyond weapon’s effective range
* 9x39 rebalanced:
  + Slightly reduced damage for all automatic rifles (on Regular version)
  + OTs-14/Grom: Removed excessive bullet drop
  + Rhino: Reduced initial damage, slightly increased damage beyond effective range

**Unique Weapon Changes:**

* Rat Killer:
  + Corrected magazine capacity, now using a 64-round mag
  + Fire rate set to 675 RPM, to match that of the actual 9x18 Bizon
  + Adjusted damage/penetration for consistency with other 9x18 weapons
* Clusterfuck: Durability increased by 33%
* Spitfire:
  + Rebalanced damage/penetration
* S-15:
  + Adjusted fire rate
  + Faster ADS speed
* Adjusted damage/penetration for various other unique weapons in game

*v1.3 (December 6th 2024)*

**- Muzzle velocity rework** for most ammo types

- **Bullet drop rework** for semi-auto rifles. This is a rough attempt at fixing bullet drop for sniper rifles, proper bullet drop rework for all weapon types will come in future updates

- **New, realistic magazine capacity:** This mod is now merged with Proper Realistic Magazine Capacities to enable a more realistic magazine capacity for various weapons in game. Credits to whynexusmodswhy1231 for the mod

- 12 gauge, 7.62x51/7.62x54 in Reduced Damage: Nerfed damage so that they balance out properly with other ammo types. *This tweak will also affect NPC’s weapons*

- APB: Fixed a bug that resulted in firemode being stuck, now this weapon will have a burst and full-auto mode to avoid conflicts with existing saves.

***If you have the APB equipped or in your inventory, make sure to switch its firemode to full-auto before installing this update, to avoid getting the firemode stuck after installing the update. Saving beforehand is also recommended.***

- Various weapon stat fixes/tweaks

*v1.2 (December 3rd 2024)*

- **Reworked damage dropoff values** for all weapon types, and to both player and NPCs. Bots will be *a lot* deadlier now at longer combat ranges - good luck!

- **New, realistic fire rate values** for automatic weapons

- **PKM rework:** now uses 7.62x54mmR, complete with new damage/penetration stats

- MAC-10 : Added semi-auto firing mode

- USP 9mm: Added proper stats

- Lynx (SVD unique): Added proper stats

- Various unique weapon stat tweaks/fixes

- 5.45x39mm/5.56x45mm/7.62x39mm: Penetration nerf, in compliance with the reworked damage dropoff values

- 7.62x51mm/7.62x54mmR: Damage/penetration nerf

- 9x39mm: Damage/penetration nerf

*v1.1.1 (November 28th 2024)*

- APB: Firing mode (finally) properly enabled now

- M1A: Un-nerfed damage and penetration

- Reworked various weapon stats for both mod versions (again)

- Reworked some stats for NPC weapons

*v1.1 (November 27th 2024)*

**- NPC Update:** Bots’ weapons will now share the same damage and penetration as Skif’s. Beware of bandit ambushes!

**- APB:** Added proper fire mode, now the APB will feature the correct full-and-semi-auto firing modes. No toggle animations however, since the APB never got a proper firing mode implementation

- Reworked various weapon stats for both mod versions

- Added damage buffs to unique shotguns, notably the Texan and Predator. I highly recommend getting either of these for the optimal shotgun experience…

- Added a very slight durability drain for Skif’s PM, mostly for immersion purposes (Skif’s PM has an infinite durability by default)

*v1.0.1 (November 24th 2024)*

- Added optional Reduced Damage version, that lowers automatic and marksman/sniper rifle’s damage by 25 – 37.5%

- Removed dependencies on ammunition stats file, to better maintain compatibility with other mods

- PKM: Slight damage buff

*v1.0 (November 23rd 2024)*

- Initial release