

RECOIL: O/U VS GAS

Dear Technoid,

I'm just getting back in to shooting after too many years from being away. Your site looks excellent!!!

Can you give me some figures about what the difference in felt recoil is between a gas gun like a Beretta 391 and a Beretta 682 o/u in 12 gage using the same shells?

Thanks,
Bill

Dear Bill,

Nope. No can do. The formula for free recoil involves only the weight and speed of the payload, the weight of the gun and a constant for the velocity of gas. It does not have a time factor, and that's what separates the gas gun from the O/U.

The gas gun and the O/U have exactly the same "free recoil" (calculated recoil) if they use the same shell and if the guns weigh the same. But there's another kind of recoil than free recoil. For lack of a better word, I'll call it "felt recoil". Free recoil is a formula deal. Felt recoil is subjective pain, not math.

Let's say that your gun (any gun) weighs 8# and that you are shooting a 1200 fps 3 dram 1-1/8 oz load. Winchester ballisticians Ed Lowry's free recoil formula calculates that combination as delivering 20.4 ft/lbs of energy. Gas or O/U, it's the same.

But that's not what you feel. An O/U, especially one with a hard butt plate, gives you all of that 20.4 ft/lb of recoil in one painful lump. All at once. Fast. If you graphed it, the time line and force would look sort of like a traffic cone or witch's hat.

The gas gun, on the other hand, spreads the same amount of recoil over a longer time period. The shell goes off just the same and starts the gun going back just the same, but the heavy bolt and forend iron of the gas gun don't start to move back when the other parts of the gun do. They bide their time. Then when they finally do start to move back, they are delayed even more by the mainspring. The gas gun's recoil is thus in sort of two pulses. Gun first, then the internal bits. These pulses take a lot longer than the jab from the O/U does. If you graphed the gas gun's recoil it would look sort of like a Bactrian camel's pair of humps. Well, sort of. And the time line of the recoil would be much longer. The areas under the curves are the same for both guns because the recoil is the same, but the shape of the curves are really different.

So, basically, the gas gun has the same recoil, but it spreads it out over a longer time period. You get a push instead of a poke.

Can you measure this and get some numbers. I guess so, but I've never seen a force-over-time recoil formula. I'm sure that there is one but, wallowing in ignorance as I do, I'm unaware of it.

Someone must be measuring it somehow. Here's a blurb from Cabela's about the Hi-Viz Xcoil recoil pad: " HiViz XCoil™ Recoil Pad

“When compared in laboratory tests to four of the best-selling pads on the market, the XCoil proved to be 30% more effective in reducing felt recoil than the next closest competitor." I wonder where they got that 30%? And this one from Browning about their Cynergy, "The long travel Inflex Recoil Pad system reduces felt recoil as much as 25%..." Of course, this isn't the usual advertising twaddle of Cleaner! Whiter! Brighter! These are real, hard numbers. I just don't have a clue where they got them. They certainly aren't telling.

Yes, there is a difference between the felt recoil of a gas gun and an O/U, but I don't know how you measure it exactly. It must be a closely guarded secret of various ad departments.

Best regards,

Bruce Buck
Shotgun Report's Technoid