

RECOIL MECHANICS

Dear Guru,

O.K., I hear your arguments for shooting gas-guns; makes sense to me. So why hasn't some clever manufacturer built a gas-bleed-off system into both barrels of an O/U? I don't mean porting, but some kind of holes that redirect that high pressure gas to do some "busy work" rather than punch my shoulder. I'm tired of hunting for hulls in the grass and holding up my sometimes impatient shooting partners.

Thanks, E.J.

Dear E.J.

I am sure that they would if they could. The problem is that it is not just gas bleed that is reducing recoil. It is the mass of heavy metal parts moving around in the auto that does the trick.

Try as we might, Mr. Newton's law of action and reaction remains inviolable. All 30" 8# shotguns shooting a brand X shell have the same recoil. Pumps, SxS, autos and O/Us are all the same. You get exactly the same recoil from an auto as you do from a pump or O/U given the same barrel length (so velocity is the same), weight and shell.

So why does the auto seem to kick less even when it is kicking just the same? It does that because it spreads the recoil out longer. You get a push, instead of a poke. The fixed breech guns (O/Us, pumps and SxS) deliver the recoil all at once. If you were to put the O/U's recoil equation on a timed curve, the curve would be of short duration and have one single, sharp peak. With the auto the curve would look sort of like a camel's back- with two lower rounded peaks. The time duration of the curve would be much longer too. The areas under both the sharp, peaky O/U recoil curve and the camel two hump curve of the auto would be the same because the recoil total is the same (Newton wins), but the way that recoil is delivered back to you is different.

How does the auto do this? Being real simple (about all that I am capable of), the auto uses gas (modern autos) or recoil (Benelli and A-5s) to start certain mechanical processes such as moving the bolt and its attaching hardware. This basically momentarily stores some of the recoil energy in that moving metal mass. Naturally, you have to get that energy back in the form of recoil (we will not discuss the minute amounts lost to heat and friction), but the payback time is delayed just a moment or two as the gun cycles. You get an initial jolt from the gun going off, but because some of that energy is transferred into the moving parts, it is not as big a jolt as with an O/U (where there is no meaningful transfer of energy to other parts of the gun- you get it all). A moment or two later, as the auto completes its cycle of moving parts, you get the rest of the recoil as the bolt comes fully rearward. Your total is the same, but it has been spread out a bit, so it feels like less.

Why can't you do this with an O/U? You certainly could with some kind of pendulum and spring arrangement. The Edwards Recoil Reducer and several others use this principle. Unfortunately, this adds weight and complexity to the gun so you are right back to where you start. Catch-22.

Some barrel modifications are claimed to reduce felt recoil (again, by lengthening the time of the recoil pulse). I believe that lengthening forcing cones really does help a tiny bit, but I have less faith in porting and my jury is still out on backboring (works on some barrels, not on others, I don't know why). None of these changes reduce recoil as much as adding an extra pound of weight to the gun.

Gas guns can be a pain in the neck. Yes, you do have to pick up your hulls or work out some other supply. It is a shame that Browning's BPS or Ithaca's model 37 (87) bottom eject pump guns could not be adapted to gas mechanisms. You could then clip a little empty "magazine" under the gun and save your hulls.

There are several innovative shell catchers on the market. I once installed one on an 1100 which automatically kept all the singles and the second shot of a double. It was hard to keep clean and only fairly reliable. So far, no one has come up with a really good answer for saving both shells when shooting doubles. Let me know if you do.

Best regards,
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