

## CHOKE DESIGNATION AND PERFORMANCE

Dear Bruce (or Mr. Technoid if you prefer),

The current choke methodology has me baffled. Using an inexpensive little choke checker, both my father's Belgian A-5 12 ga. and mine have "modified" (\*\*) barrels that show halfway between the modified and full choke lines on the little choke checker.

My Citori Lightning with modified Invector Plus tubes screwed in, checks about half-way between improved cylinder and cylinder- MORE than a full choke size off! I thought, reading your comments, only the standard Invector's were that far off . . .

Looking at page 24 of Browning's 1995 catalog, they state that the inside diameter of a back-bored (over-bored to me) barrel is .744" + or - .055". You mean to tell me that the difference on a given barrel to another "identical" barrel could be up to .110" !!! OFF OVER A TENTH OF AN INCH? This blows my mind, in this age of CNC and precision machining. Conduit holds a tighter tolerance than shotgun barrels?

Better patterns? Less "felt recoil"? All this from a company that seems oblivious to the benefits of long forcing cones? Bruce, perhaps you can tell me what in the world is going on here? On a related note, any idea of the choke constriction length in a non-tubed barrel?

And I was puzzled why my old A-5 modified smokes birds more thoroughly from the 14 yd. line than my Citori with the "full" choke tube installed. Now, I'm just puzzled!

This has got to be an appropriate area of discussion for he who is "never in doubt."

Thoroughly in doubt,

Randy

Dear Randy,

Of course choke is an appropriate area for discussion by the Technoid. Pull on your boots first though. You never know how high it gets.

You have a lot of questions and, since I have not yet finished my book containing all the answers in the universe, I will try to touch on them quickly.

Choke is the PERFORMANCE that a certain constriction gives with a certain shell. It isn't really a fixed number as we commonly believe.

Example: Say you have a barrel that shoots a 60% pattern into a 30" circle at 40 yards with a certain shell. That barrel would be producing a Modified pattern and you might correctly say that the barrel has a modified choke.

Taking exactly the same barrel, but using a different shell, and you might produce a 50% pattern. That is Improved Cylinder performance and you would be quite correct in saying that the barrel had an improved cylinder choke.

In these two instances, the barrel has remained the same (assume a fixed choke), but the shell has changed the performance. Thus your barrel with the same fixed choke, has TWO chokes. Correctly defined, CHOKE IS PERFORMANCE, not any particular constriction.

Naturally, manufacturers have little control over which shell you stuff into your gun so they have to have a more convenient way to describe chokes. For the sake of convenience they do this by assuming that chokes with certain amounts of constriction will produce patterns of certain percentages. They are roughly correct in this, but most definitely not spot on to any degree.

In the American market, manufacturers "generally" use the following constrictions of choke over bore diameter:

Cylinder Bore = .000"  
Skeet 1 = .005"  
Improved Cylinder = .010"  
Skeet 2 (Light Modified) = .015"  
Modified = .020"  
Improved Modified = .025-.030"  
Full = .030-.035"

Every manufacturer does not follow this convention exactly, nor do the Europeans, but it gives you the general idea of what they are trying to do. As noted above, just because you have a choke that measures a certain amount, that is no guarantee that it will produce the stipulated pattern.

The little key fob choke checker you used does not take into account different bore sizes. It is probably based on an average bore size of .725" (pretty standard, although the 12 gauge bore is technically .729"). When it meets an "overbore" barrel of .740+" it throws everything off. Remember, choke is the DIFFERENCE between bore diameter and choke diameter as the manufacturers see it. With modern overboring, bore diameters are not as consistent as they used to be.

Does overboring give better patterns or less recoil? I never felt that it really helped much. I believe that it is more of a marketing ploy. The Japanese Brownings come "backbored", but the premium Belgian Brownings guns have standard bores. Both are sold by the same company. Beretta does not back bore, but they do lengthen forcing cones, which Browning does not. I believe that Beretta is on the right track here in that lengthened cones, in my experience, do slightly reduce recoil and pellet deformation.

By the way, the 1996 Browning catalog, page 22, attempts to clear up the "conduit" situation you refer to. It must have been a misprint in 1995. This year Browning claims tolerances of .741" + or - .003". I have owned a whole ton of Belgian Brownings and FNs with fixed chokes and have

noted barrel variances from gun to gun of a whole lot more than + or - .003". Then again, barrel I.D. is not nearly so important in fixed choke guns if you think about it.

The fact that your solid choke A-5 patterns tighter than your screw choked Citori could stem from many things. Many people feel that screw chokes do not deliver the pattern quality that solid chokes have. In some guns this is certainly true. Often manufacturing tolerances in the skirt area of screw chokes are pretty sloppy and leave a large relief in that area. Properly fit, custom made screw chokes can pattern very well indeed. Mass produced screw chokes are likely to pattern more poorly than mass produced solid chokes, all things being equal. There is just more room for error in making the screw chokes, especially in that skirt relief area. Then again, with screw chokes you can always change chokes around until you get what you want. There are plenty of aftermarket vendors.

Regards,  
Bruce Buck  
Shotgun Report's Technoid