CASES AND CRIMPS

ADVICE FROM TOM CERETTO

I HAVE BEEN WRITING RELOADING COLUMNS FOR FIFTEEN YEARS AND IN ALL THAT TIME I HAVE NEVER BEEN ASKED ABOUT CRIMPS. I DON'T KNOW WHY, BECAUSE CRIMP DEPTH IS VERY IMPORTANT AND CAN INFLUENCE BALLISTICS SIGNIFICANTLY.

THE CRIMPS ON THE TWO SHELLS ON THE LEFT ARE TOO SHALLOW AND WILL NOT PERFORM UP TO SPECIFICATIONS. THE CENTER SHELL IS WITHIN SPECS AND ABOUT 0.060" DEEP. THE TWO ON THE RIGHT WILL RAISE PRESSURES BEYOND (SAAMI) SPECS AND DEFORM SHOT.

Fortunately, several years ago, Hodgdon Powder Company did some research on crimp depth and its influence on ballistics in their hard cover Shotgun Data Manual edited by Ron Reiber, Production Manager at Hodgdon. It includes articles by Tom Roster, Nick Sisley and the late Don Zutz – three of the best in the business.

The Hodgdon Ballistic Laboratory conducted pressure tests at varying crimp depths in order to show what happens with a control load. Most powder companies and shotgun shell manufacturers use a standard crimp depth of 0.055" when conducting pressure tests of loads – that's just shy of 1/16 of an inch. Hodgdon's test load was assembled as follows:

CASE: 12 ga. Winchester AA
PRIMER: Winchester 209
POWDER: 20.0 gr. Hodgdon Clays
WAD: Winchester WAA12SL
SHOT: 7/8 oz. lead
The result of the test was as follows:

CRIMP DEPTH	VELOCITY	PRESSURE
0.030"	1,308 fps	9,300 psi
0.050"	1,329 fps	10,500 psi
0.070"	1,351 fps	11,900 psi
0.090"	1,363 fps	13,100 psi

The first two loads on the left in the photo above are safe to use, but might not live up to your expectations. The two on the right would both exceed the Sporting Arms and Ammunition Manufacturers' Institute Inc. (SAAMI) guidelines for safety of 11,500 average pressure. Shooting them consistently would turn your automatic shotgun to junk and shoot your over and under loose much before its time. In either case, the life of your shotgun would be shortened considerably. The load in the center of the photo above has a proper crimp of 0.055" and would perform adequately in any type of shotgun.

Other problems that can be caused by high pressure are poor patterns due to excessive shot deformation, even though you might be using high quality high antimony hard shot. When I measure crimp depth, I use an electronic digital vernier caliper or a small machinists scale. Try to keep the depth of your crimps between 0.050" and 0.060" and you will get the performance you want out of your reload.

Imported Shells

A question I do get asked a lot concerns reloading import shells. Most if not all import shells are loaded in Reifenhauser style cases. Reifenhauser cases are not molded in one piece, but are made with a plastic tube into which a base wad, either plastic or paper, is inserted into the case in a separate operation and capped with a metal base. While most imported shotgun shells are manufactured to a high standard and perform very well, they are not manufactured with reloading in mind. There really is no big shotgun shell reloading culture in the rest of the world – it is by and large an American culture. This does not mean you cannot load imported shells that have published data for them, it just means there is not a lot of data available for import cases other than Fiocchi and Cheddite plastic cases. I load Fiocchi cases on occasion myself, and outside of a shorter reloading life because of the thin Reifenhauser tube used when they are manufactured, they reload fine and perform very adequately.

What bothers me is when people say they reload all import cases the same because they all look the same. What these folk don't realize is that base wads in import hulls vary in thickness and that can have a significant effect on the ballistics of shotgun shells. A shell manufactured with a low base wad may be manufactured that way because the manufacturer uses a mild primer and wants the primer flash hole near or directly up against the powder charge for maximum effect. If a high strength primer is used in that shell by a reloader, it will have an effect on the ballistics of that case. Conversely, a shell with a thicker base wad may be originally manufactured with a high strength primer, and a mild primer might not ignite the powder properly and inhibit a complete and efficient powder burn. That's why you see base wad thickness referred to in some reloading guides. You cannot judge the thickness of the base wad by looking down into the shell.

If you want to load top quality loads you must pay attention to powder company reloading guidelines. Stick to recipes powder companies publish and recommend. Every switch you make in components has an effect on ballistics – and that can have bad result on your score sheet. ■

NOTE THE DIFFERENCE IN BASE WAD THICKNESS IN THESE THREE SHELLS. THE PRIMER IN THE FIOCCHI ON THE LEFT IS FLUSH WITH THE WAD. THE KEMEN IN THE CENTER PROTRUDES SLIGHTLY ABOVE THE BASE WAD AS DOES THE PRIMER IN THE FEDERAL ON THE RIGHT WITH A PAPER BASE WAD. ALL WILL LOAD DIFFERENTLY AND SHOULD NOT BE LOADED THE SAME.