Remington Special Sporting .410 update

Well it s been a year since the 1100 first arrived for the long-term test and things have certainly been interesting!

As far as live game is concerned the main quarry have been rabbits and pigeons with the extra third shot coming in very handy for bolting rabbits especially. I have acquired a limited supply of copper plated US#6 shot and have worked up a serious load with it for ground game. The superior patterns produced by this stuff, really makes the extra effort of loading it worthwhile. If you look back at my earlier Tshot article, the advantages of copper plated (or nickel plated shot for that matter) are at their most prominent with the heavily loaded .410 magnum shell.

Unfortunately, by necessity, the shot column of the magnum shell is unfeasibly long for the best patterns at anything like 12 gauge velocities of 1200 1250 fps @ 3 feet (which is about 1300-1350 muzzle velocity for the UK shooters). With both higher pressures and this level of velocity, the patterns will be simply blown to hell . Even when using very hard magnum grade shot with 5-6% antimony content, the velocity and pressure must be kept down to 1100-1135fps @ 3feet, to ensure a reasonable pattern.

So why does this plated shot (and also incidentally Tshot), work so well?
First of all it must be appreciated that distorted pellets due to the long shot column and extended down barrel pressures are not going to be prevented by a thin metallic plating or encapsulation of different material. With a little thought this cannot possibly be the case, but what it does do is prevent the sticking together of the pellets due to the pressure of acceleration. This is known as cold welding, or pressure welding, but whatever its name, the results are the same: vacant patches in the pattern with tight clusters or clumps of pellets showing themselves on the pattern plate.

So if we follow the same advice re our pressures and velocities but also include plated shot, the quality of the patterns produced with it are quite extraordinary!
The down side (if indeed it can be called that); is that plated shot tends to throw a lighter charge weight than standard lead shot from a given bar or bushing. This does not mean that there are fewer pellets in the load, but that their individual density is a little lower than standard grade lead shot.
With US#6 shot this is of no consequence at typical .410 ranges, as it is the pattern that fails every time with US#6 pellets, way before pellet energy becomes an issue.
The best choke tubes for this type of load so far have been either Light Modified or Modified; Full choke just damages way too many pellets at the muzzle constriction with shot of this diameter (2.79mm), even when it is the correct maximum of 20thou constriction.
I have some UK#6 copper plated shot on its way also, so it will be interesting to see what can be achieved with this for wing shooting and possibly serious sporting clay targets!
There will be more on this interesting subject next time.

The pigeon shooting has been a bit like the curate s egg this season good in parts. The main problem with my local patch has been the crops, with oil seed rape being replaced by winter wheat, which until things progress and some of the crops are laid down by the wind, will stay fairly quiet.
However that said, good shooting has been had on other ground, mostly over rape and one memorable occasion just after the peas had been drilled, with a remarkable feeding frenzy taking place almost oblivious to the fact that a couple of guys were doing their best to discourage their activities!

Reliable ammunition for self-loading .410 shotguns.
It must be appreciated that all self-loading firearms are totally dependent on their ammunition quality for reliable functioning of their mechanisms. 12 20gauge shotguns of this action type, generally do not have many problems in this regard, so long as the pressures and or velocities of the factory loaded, or indeed reloaded ammunition is within acceptable parameters. The 28gauge can occasionally prove a little tricky

with some case types when reloading, but it is the .410gauge that raises the bar significantly with regards to ammunition performance, and case construction quality requirements.

The most reliable functioning heavier factory loaded shells so far tested from the cycling point of view have been the Fiocchi 19.5 gram, Mirage 19.5gram, Federal 11/16oz, Remington 11/16oz and Winchester 11/16oz. Other loads can and do work OK, but these tend to be the ones that use the Fiocchi compressed paper base wad case, which generally has a red plastic 76mm tube.
EG Polywad and the Estate brand loads both use the Fiocchi 76mm (3inch) case with paper base wad.

Extraction and ejection problems with some Factory loads depending on case & load types.
The US made cases are designed to cope with the extra duty placed upon them by the extractor claw of both self-loaders and pumps. Sadly this is not the case with a few other European types of case, with a plastic base wad. The worst offenders are heavily loaded 76mm full-length cases with plastic base wads, a rolled crimp, short type cup wads, a higher velocity than usual and top end pressures, that are both higher at the breech and more sustained down the barrel.

The problems stem from the inability of the case components to remain in one assembled piece after firing. In fairness to the case manufacturers, it is mostly the necessarily generous dimensions of the chamber of these type of guns that causes most of the trouble. The higher the pressures and velocity of these loads, the greater will be the incidence of this problem. The plastic tube generally remains in the chamber, with the base wad and metal head together with the primer ejecting normally. The grip of the case head onto the tube is considerably reduced by the greater expansion into the larger opening of the self-loading chamber.
Additionally the residual pressure in the bore tends to be at a higher level than ideal when the action tries to eject the shell, which has expanded fully and is still gripping the end of the chamber by the cone rather more than necessary.
This might be cured by bleeding off more of the gas used to cycle the action by purchasing a spare gas piston ring and modifying it, much in the manner of a 4cycle piston ring until a larger ring gap and reliable functioning has been achieved. However, this part would have to be removed and the standard component replaced so as to regain proper functioning with other types of satisfactory ammunition.
I will investigate the possibility of obtaining another part and will report back on the results after the modifications.
Another possibility that might help along side this method, is the spraying of all factory loads of this type with PTFE spray and allowing it to dry before use. This would probably alleviate the rather over zealous adhesion of the end of the plastic tube to the chamber walls at the point of ejection.

The slightly shorter 73mm cases (generally either Cheddite or Fiocchi) as used by Eley, Gamebore & Express, do not suffer as readily with the sticking of the case mouth in the end of the chamber, but mostly due to the powders used and load velocity and pressure levels not all types of these shells offered from each manufacturer will cycle the action. Generally the loads that use the slow burning ball powder such as Vectan SP3 will have sufficient pressure at the gas port location to operate the action. The special reduced velocity sub sonic 9/16oz (16gram) loads, with faster burning powders, generally will not do so.
With 2.5inch shells, again it is the 1/2oz loads that utilize slow burning powders in the SP3/ H110/2400/H-4227 range that cycle the action reliably.

Reloaded shells:
Firstly all US shell types and Fiocchi paper base wad cases will cycle reliably when resized and reloaded with normal loads.
However, the incidence of problematic ejection and extraction with satisfactorily cycling factory loaded cases when reloaded after their first firing, has indeed been perplexing.
The main example of these problems to date has been with the extremely popular (in the UK at least) dark green Fiocchi cases. Clearly as these loads make up the vast majority of empties available for practical reloading with a six star crimp, a load that will cycle reliably with these cases is very desirable.

They have a plastic base wad in most cases, but occasionally they will be found to have a one-piece type plastic tube construction (not however the compression formed type) with the metal head forced over it, followed by the insertion of the primer.

Again, we have to work up a load that retains sufficient pressure as the shot charge passes the gas port to operate the action satisfactorily, has sufficient velocity to ensure adequate pellet energy downrange, and will allow the case to remain intact to allow reliable extraction and ejection.

Improving the robustness of the shell casing: with a MEC 6000 Junior reloading machine.
The first consideration is the resizing of the case. As the chamber of the 1100 is more generous in its dimensions than the average over and under shotgun, there are a number of avenues that can pave the way to improved cycling reliability.

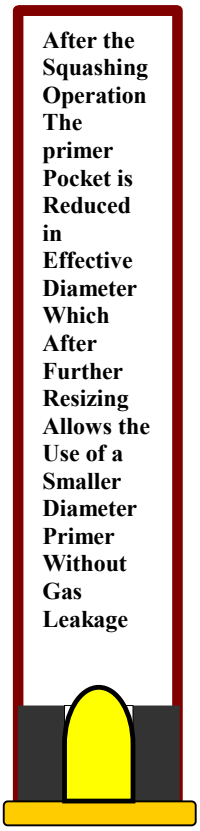
Fitting slightly smaller diameter primers to a once fired shell casing:
The old trick of placing the shell in the repriming station without a new primer in place, and applying pressure to the base wad works well. It squashes the base wad and closes up the available space for the primer. After a little practice the required amount of pressure on the base wad to reduce the primer pocket sufficiently will become second nature.

Repr-iming Die Tube Squa-shes the Base Wad Redu-cing the Prim-er Pock-et Size.

Care must be taken not to overdo this operation, but if this has gone too far, in most instances, the primer pocket can be opened up again safely by using a fired primer of the new type to be loaded. Place the fired primer in the repriming station and fit into the modified casing; this may require some pressure if the squashing operation has been over zealous. The fired primer can then be removed by a further operation of the resizing station.
This is all that is required when using an over and under or side by side type of shotgun to retain the smaller type of primer.

A good example of this width incompatibility is the once fired Fiocchi case fitted as standard with the Fiocchi F615 or 616 primer, which tend to be a little larger in diameter than most other primers*. If the reloaded wishes to fit a Cheddite 209 (CX2000/CX50etc) type with the slightly smaller diameter the previous method is recommended to prevent high pressure gas leakage when fired.

*The UEE G primer has the largest diameter of all in regular use, and shell casings factory fitted with these types will have to be treated with this method to allow sufficient purchase of the new smaller diameter primers.



After the Squashing Operation The primer Pocket is Reduced in Effective Diameter Which After Further Resizing Allows the Use of a Smaller Diameter Primer Without Gas Leakage

NB This special treatment of hulls to reduce the primer pocket size is essential when using a self- loader or pump action .410 to prevent possible displacement of the smaller sized primer after firing.

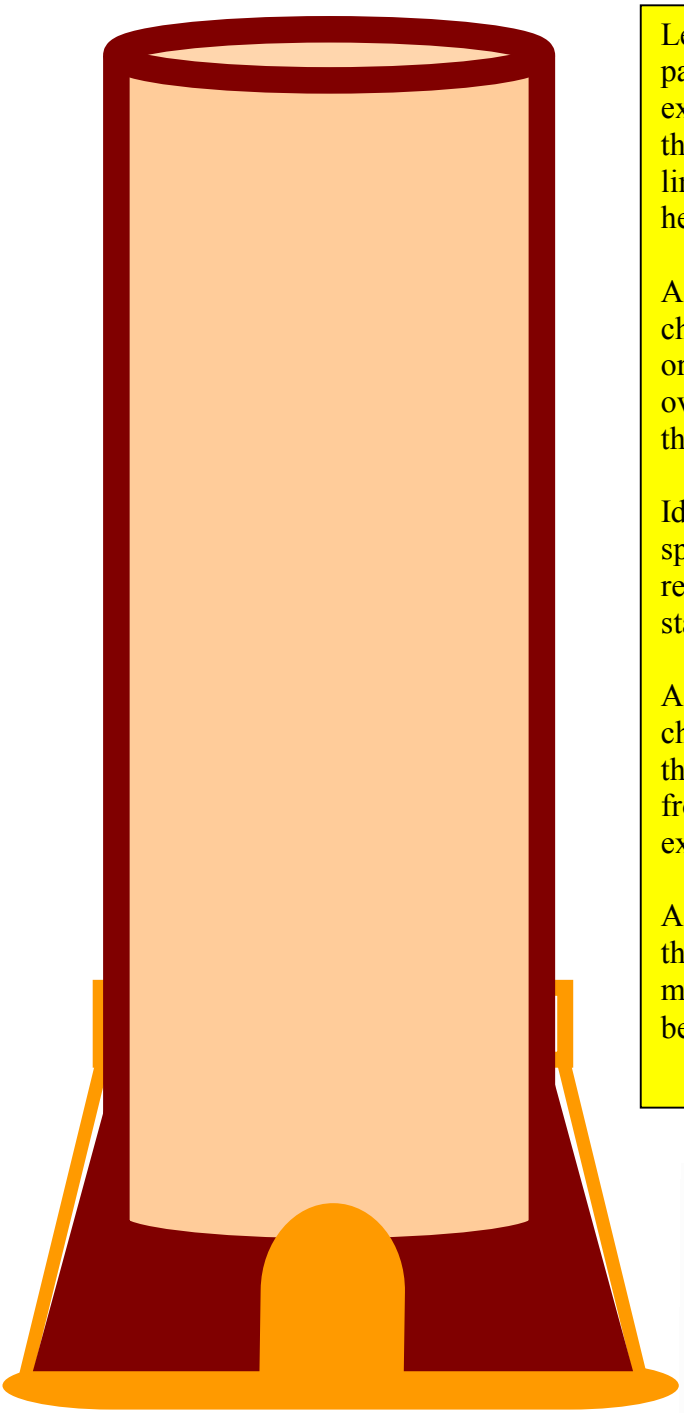
If the reloaded shells are to be used in a conventional gun such as a Stack barrel (over and under) or Double (side by side), it is important to run the reduced primer pocket shell casing through the resizer again, after the controlled squashing of the base wad, to make sure that any slight bulges of the metal head etc that might prevent smooth chambering of the finished shell have been ironed out.

Special treatment for European shell casings for use only in the self-loading or pump .410.
As the chamber of these gun types is tapered to allow reliable entry of the new shell being loaded, the once fired hull need not be resized in the same manner as for other gun types.

Generally the metal head will have expanded to very nearly fill the chamber dimensions after ejection.

With this in mind, and realizing that it will again attempt to expand to this size after another firing, the game plan is to leave this expanded diameter as much as possible as it is, and using the operation described for reducing the primer pocket at the repriming station, make sure that the plastic (or paper) base wad fills the increased internal diameter of the enlarged metal head as well as possible.

In addition to this operation, carefully adjust the resizing ring so that only about the top fifth or less, of the metal head is reduced in diameter*.
This will then show a visible step and taper down to the casing rim.
*If needs be, a spare oversized resizing ring appropriately opened up, will further help to retain an enlarged diameter at this point.



Left: An exaggerated image of the partially resized metal head with the expanded tapered section better fitting the rear of the chamber so as to greatly limit the further expansion of the case head into the chamber when fired

All cases can be checked for fit in the chamber before filling with components, or a tapered die can be produced that fits over the casing down to the rim that has the same taper as the actual chamber.

Ideally this could be produced as a special part that screws into the main resizing die, taking the place of the standard MEC item.

A case resized in this way will always chamber reliably and will greatly resist the forces that pull the metal case head from the plastic tube as its diameter is expanded into the tapered metal head

Alternatively the loaded case can be run through a tapered sizer produced in the manner described after the crimp has been applied as a separate operation