

Breeching Up

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Hello from wet, miserable, rainy Warminster, home of the Infantry, where Salisbury Plain has turned to mud. Ah, yes, breeching up.

I wonder how many of you read the thread on our sister Enfield collectors milsurp site regarding take-off barrels and the problems re-indexing them when used in another rifle afterwards. This is nothing new, not even with NEW barrels, especially 'new' old 40's barrels that were still in the system until a few years ago. And dare I say it, but Savage spare barrels seemed to be the worst offenders.

At our big field and base workshops it wasn't such a problem because we'd usually have a long racks of barrels, both new and almost new that we could use until we'd get one with the correct 'hand-tight' underturn that we could select for final fitting. Oh, yes....., before I forget, we always graded our barrels in quarters of life. If a barrel was in its first quarter of life then it'd be almost as new and so on to a last quarter of life where it was probably shot out. But shot out didn't mean that it was duff or inaccurate either. Anyway, I digress..... But don't get the impression that it was just barrels where the breeching up threads were slightly out of index. It was the rifle bodies too. And if you got a rifle where the breeching up thread was 'late' (that is, commenced even a minute of angle late), then getting a barrel that would underturn was difficult. So I'll take you through what could and would happen.

Sniper rifles were the worst because they were always at a premium and the Command AIA, (the Assistant Inspector of Armaments) would always specify new barrels for these but that was easy to say but sometimes difficult in practice. So where a new barrel couldn't be found with the correct underturn, the breeching-up face of the body would be smoother-off with a smooth file, just a gnats knacker or as you wild antipodeans or colonial savages say, a RCH so that a datum surface was available. Then the best-fit barrel would be fitted until it read the correct underturn THEN a reading would be ascertained as to the thickness of material required to get the correct underturn. Lets say that in our case, it was .028". That's twenty eight thousandths of an inch.

Someone suggested that his gunsmith will insert a .028" steel shim and that's the answer. Others have suggested that it'd be a good idea to gently swage the shoulder of the breeching-up face of the barrel, sufficient to take up the slack. **DO NOT USE THESE METHODS. THEY ARE XXXX POOR ENGINEERING PRACTICE** and verging on the best bubba practice you will ever have the privilege of seeing. Have you digested that?

This is what you do. Knowing that your barrel needs .028" underturn, get yourself a proper breeching up washer made. I'm not going to teach you or your machinist pal

how to suck eggs but if you need .028", then get the breeching washer made .128" THEN machine .100" off the breeching up face of the barrel (no, the breeching UP face, not the BREECH face silly.....). But I'll let you into a secret. At our large Base workshop in Singapore, we were running major overhaul programmes of everything including L1A1 rifles. Then, someone noticed that the tough, hard, readily available and exact diameter required L1A1 breeching up washers were between about .055" and .070" thick. Now, we'd just take the barrel to the little Chinese fitter/turner (he had a big pile of breeching up washers in his tray anyway) and say ".028" please Lim" and he'd mount the barrel and machine away .032" from the breeching up face. You'd walk back to the Armourers shop, past Steve's Magnolia ice-cream van where you'd spend the next half an hour discussing politics or the Viet-nam situation or the new flower arrangement in the church with the rest of the blokes.....Oh, I've gone off at a tangent again..... Anyway, armed with the new barrel with .032" machined off the breeching up face PLUS a new .060" L1A1 breeching up washer you'd know that .060" - .032" was .028" which is JUST the underturn we need to tighten the barrel to make it PERFECT on the flat-plate we used to ensure that it was perfectly tight, upright and square.

Is that simple enough? It might be a tad more thoughtful that a steel shim or a good battering around the barrel flange that won't last twenty minutes but it's how the pro's do it.

There are a few afterthoughts too. I'm telling you this so that when YOU need to do the job, then YOU tell your gunsmith how its done properly. And go and buy a selection of L1A1 breeching up washers now, while they're available. When a badly shot-out/rusty bore No4T Lyman TP rifle was recovered recently, it too overturned by as much as it should have underturned, even with a new barrel. Our main workshops were at their wits end as there were only a few barrels from which to select. So what method do you think THEY utilized? Yep, got it in one. And it shoots as sweetly and accurately as it ever did. And as for us young 20 year old lads discussing politics, Vietnam or Flower arranging in 60's Singapore....., then if they did, I wasn't part of the discussion!

ON THE SQUARE

As a result of a request from forumers, I'm going to tell you how WE, the REME Armourers breeched up No4 and 5 rifles. And while we're at it, this is the principle of how we did L1A1's too.

I must stress that we were all taught the correct method of breeching up but to be honest, and I'm going to be simple now, you were relying on a parallel gauge, one end of which crossed the flat we call the KNOX FORM. And as you are well aware, while it is meant to be a datum surface and therefore accurate, in MOST cases so far as I was aware, it simply wasn't! What I'm going to tell you ignores the relationship of the knox form with this that and the other and relies on good, sound, honest, common sense!

You have all (hopefully) read the previously published article about how we would select a barrel from a large rack of 'em, that gave us about 18 degrees or so of underturn. If it was, say, 25 degrees, then you simply skim a gnats knacker or a RCH from the breeching up face. If it's, say only 10 degrees, then you insert a breeching up washer to suit. Has all that stuff been read and digested?

Someone asked a couple of questions/comments about the breeching up washers after I said that we used the plentiful L1A1 washers. And simply put, the L1A1 washers are a good fit and do the job perfectly. As for the quality, well, simply put, they might not be HARD, as in mechanical engineering terms but they are TOUGH and that's what counts in this application.

When you have breeched up your barrel so that it LOOKS pretty-well square, I want you to select a solid (as in not the fabricated type) foresight protector with straight and undamaged sides and secure it to the foresight block band. When the screw is tightened up, this foresight protector should grip the block band each side. In other words, even when the screw is loosened a tad, you should not be able to rotate the protector....., not even a little bit. It must slide and sit on the foresight block band tightly.

Now you probably won't have a hundred or so foresight protectors to try before you get one that's perfect. You won't need that many, and most probably, the first or second you try will do. If you can't find one, then just make sure that before you tighten yours up, then it is sat EXACTLY equidistant/centrally astride the block band. Do you understand this. It is important.

As a matter of interest, we had an exact protector that was painted BFA yellow (that's Blank Firing Adaptor paint colour.....) that stayed with the breeching up kit together with an extended screw with an allen-key end for ease of use but I digress.....

Now, you insert a 4" long or so .144" diameter or 9 SWG (Standard Wire Gauge) ground steel bar, through the backsight axis pin hole and rest this across two matched vee blocks that are sat on a surface plate at a height that allows the rifle to lay parallel to the surface plate or something else that is 36" or so long and absolutely FLAT. We had a sheet of plate glass that did the job as well as anything. Now, allow the foresight protectors to touch the glass. Now, gently rock the barrel and the body between the axis pin and the protectors. It SHOULD sit absolutely square, supported between the axis of the backsight axis pin and the square of the foresight protectors.

If it's not EXACTLY square and rock free, then just tighten or undo the barrel a further gnats knacker until it is 'no-rock' perfect. And that is it! If we were 2nd Class Craftsmen, we'd ask a 1st class Armourer to sign off the work but to be honest, after a couple of times, it was like riding a bike

Now you have a backsight and a foresight that are both exactly upright and square to each other, regardless of what the parallel gauge or alignment lines say....., and

that's really all that's needed. Oh yes, and don't talk to me about alignment bars/lines either. If you have ever breeched up Thompson guns or SA80 rifles, then you soon learn to ignore them and do it properly. If you have any fears that the extractor slot might not align with the extractor then forget it because there is ample width to cater for it.

The same idea applied to L1A1 rifles except this time, the vee block was positioned inside the body, resting on the machined inner surface. Same with No5 rifles too but this time, because we couldn't be sure that the splayed foresight protector 'ears' were both splayed exactly, then a simple square was cramped to the parallel part of the upright that really needs no further explanation.

Now here's something that you didn't know or thought about. If you have a rifle that won't zero until the foresight it well over to the left or right, and I've seen plenty of then too....., now is the time to consider whether the barrel is slightly over or under breeched. Just a slight amount will upset the balance of the foresight block.....