The G3 Rifle

By Charlie Haley

Somewhat more controversial in this part of the world than its highly regarded sibling, the FN-FAL rifle, the G-3 was a parallel development with its roots in the German small arms industry of 1945.

A new rifle, the SG 45, was under development but never completed in that turbulent final year of World War II. After the end of the war, the designer completed his work in Spain in the form of the CETME rifle. The Germans had a long look at the CETME, decided they liked what they saw and the design came back home to Germany. It was worked over by Heckler & Koch and adopted as the G-3 in 1959 (incidentally ousting the FAL, which was in service with the Germans at the time).

The FN rifle was standard issue in the then Rhodesian armed forces, but the G-3 started to appear in 1976 as a substitute standard rifle. Facing sanctions and an arms embargo, the G-3 was cheaper and easier to obtain. Troops used to the finely made FN found it hard to get used to, as the G-3 was of very "tinny" appearance and was not as robust. Butts broke, fore-ends rattled and some were chronic jammers. Paradoxically, others swore by the G-3, finding it accurate and reliable. A friend of mine, who had access to virtually any rifle he liked, used a G-3 by choice. A German pen-pal of mine had used the G-3 during his national service in the Bundeswehr, and stated that he had never heard of a G-3 breaking a butt, let alone anything else. What was one to think?? The mystery cleared up somewhat when I had occasion to examine a Heckler & Koch HK 91 rifle, the West German made semi-auto civilian legal version of the G-3. This was a different beast. The finish was smoother, the plastic butt and fore-end were far more robust, and the action of the working parts was generally more positive. The G-3's in this part of the world are mainly of Portuguese origin, where they are made under licence, and were obtained (naturally) via Mozambique. They are not quite the same as the German product. Nonetheless, the G-3's which performed so well for their aforementioned owners were Portuguese rifles, so a blanket condemnation is definitely out of line. Most performed just fine, but some individual specimens gave trouble and tarnished the image of the rest.

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Interestingly enough, those who spoke highly of the G-3 all obtained theirs new, and took the time to thoroughly clean out the packing grease, smooth and polish the working parts and generally look after them. Furthermore, the bolt mechanism of the G-3 is considerably more difficult to strip and assemble for cleaning and lubrication than the FN bolt, hence it is not done so often. Add this to the fact that the G-3 operating system deposits a lot of fouling on and around the bolt and we see a pattern emerging. The G-3 is a generally reliable design, but is vulnerable to long term abuse and neglect. German or Portuguese, the G-3 is a homely looking critter compared to the FN. It takes advantage of modern manufacturing techniques, with many stampings and spot welds, hence the re-cycled tin can appearance. The method of operation is also quite different, as it operates not by gas but by recoil. The bolt locks into the receiver by means of two roller bearing locking lugs, a system pioneered by the fearsome German MG 42 machine gun. As the bolt moves forwards,

these locking rollers move out into corresponding recesses behind the chamber. Upon firing, recoil tries to move the bolt rearwards, but before it can do so the roller bearings must first be forced back inwards. This happens under tremendous mechanical disadvantage, causing sufficient delay to allow the pressure to drop before the bolt fully opens. This system can best be described as a sort of "delayed blowback" rather than a true locked breech. With this system, initial bolt movement can be quite violent, and to overcome this the chamber is fluted. Gas flows down the flutes and "floats" the fired case out on a cushion of gas, which eliminates stuck cases and extractors ripping chunks of rim off. All this ensures that the empty cases are ejected virtually into the next province, and (if you ever find them again) are of seriously grungy appearance, fluted and streaked with powder residue. Amazingly, cases fired from G-3 rifles are readily re-loadable, but don't expect gasps of admiration from anyone as to the appearance of your reloads! That which resembles a gas tube above the barrel merely houses the bolt carrier extension and cocking handle mechanism.

All in all, just what are the pros and cons of this strange beast, the G-3? Well, for one thing it is significantly shorter and thus handier than an FN (specifically, 1025mm as opposed to 1090mm). It is, however, slightly heavier. That the FN rifle was significantly more reliable than the specimens of G-3 found in this part of the world I have established to my complete satisfaction, but would add that the story does not end there. Judicious tuning of the G-3 can make it a wonderfully reliable rifle, and a spot of cleaning and correct lubrication will help considerably as well. I have test fired a great number of G-3's (of varying stages of dilapidation), and have found them prone to two equally exasperating stoppages. The one occurs when loading a new magazine, and when releasing the bolt the working parts fail to lock positively. Sometimes, re-cocking will rectify, but I found that, if a suitably hard floor surface was available, rapping the muzzle upon such surface would bounce the bolt forwards and into battery. (Do NOT try this stunt in the bush on soft soil, as the muzzle will clog with dirt!). The second stoppage occurs when, upon firing, the bolt would only partially come to the rear and stick. Now it was time to unlatch the cocking handle, find some suitable flat edge or corner, brace cocking handle upon said corner and push hard on the rifle. Opening the breech by hand

The G3 bolt disassembled.

The G3 working parts. Note the roller locking lugs.

pressure on the cocking handle alone when such a stoppage happens requires the hand and finger strength of a gorilla. Such misbehaviour normally results from a lack of maintenance, however, and it is amazing the dirt and crud a G-3 will tolerate before pulling such stunts. Nonetheless, the G-3 is one modern battle rifle which, in my opinion, could have benefited from a bolt forward assist mechanism of some sort.

One particular virtue of the G-3 was its accuracy. The sights certainly helped in this - the "circle within a circle" picture of the rear peep coupled with the circular foresight protector certainly aided in the acquisition of a rapid but precise sight picture. I will admit to never coming completely to terms with the close range "V" sight on the rear drum (finding that the resultant sight picture was more of an insinuation rather than a precise picture), but the G-3 was certainly capable of accurate shooting. "Aha!" I hear you cry, "Then why wasn't (and isn't) the G-3 used in service rifle competition? All we see are FN's, and if the G-3 is so all-fired accurate, how come no-one uses it?" A good question, and the answer lies in the sights. The FN foresight is finely adjustable for elevation, whereas the only elevation controls on the G-3 are the coarse adjustments on the rear sight in 100 metre gradients. This makes the FN much more suitable for fine target work,

but is no condemnation of the G-3 sighting system as a more than adequate practical field sight. The plastic stocking system of the G-3 comes as a shock to the traditionalist. The small of the butt is a particularly weak area, and any attempt to launch rifle grenades with the butt braced on the ground will undoubtedly result in a prematurely foreshortened rifle. Nonetheless, a modicum of care and attention will ensure that all remains intact. I have also seen fore-ends braced by the addition of asbestos cloth between it and the barrel. This is a good idea, as not only is the annoying rattle stopped but the hand is also protected from heat. The barrel radiates a fair amount of warmth after a few rounds rapid fire!

Field stripping for maintenance is fairly straight-forward, aside from the aforementioned bolt. Even this is mainly a question of technique, so please take heed, as it is important for proper cleaning! Firstly, as always, remove the magazine and check that the rifle is unloaded. Remove the two pins securing the butt to the receiver. The two holes in the butt behind the sling swivel are there for you to put the pins into so you don't lose them. Pull the butt off the receiver. Pull the cocking handle back and remove the working parts. This is all extremely simple and straight-forward. Now comes the fun part. Grab the bolt, and twist it a quarter turn anti-clockwise (as you are looking at the bolt face). It will then spring free, followed by the firing pin, the firing pin spring and the locking piece. All these parts can now be cleaned and lubricated, as they will be found to be liberally coated with carbon gunk after firing. Now it comes time to re-assemble the bolt, which is the reason most people don't disassemble it in the first place. It is not enough to simply trot out the familiar cop-out "Re-assemble in reverse order". A couple of tips are in order. Firstly, it will be noted that a sprung loaded arm is interfering with the replacement of the bolt. Secondly, it will immediately become apparent that this spring is EXTREMELY powerful! However, note well that, thirdly, this sprung loaded arm is accessible from the side of the bolt carrier, and can in fact be pushed inwards with a bit of effort. Now, here is the technique to adopt - while relieving the spring pressure with the thumb of one hand, simultaneously push the bolt in with the thumb of the other hand, but ***Not Too Far*** - the bolt mustn't go all the way to the rear. Now the bolt must be rotated a quarter turn clockwise (told you the spring was strong, didn't I?). A further tip - relieving the spring pressure helps (so does a third hand or a vice at this stage). Yet another handy tip - you will note a slot on the underside of the bolt. This is good for inserting a flat object for added leverage. Lacking a large screwdriver, a $2 coin will do (assuming you are sufficiently affluent). Your last and final tip - have a list of favourite expletives and swear words handy, and become familiar with them! If you have managed to assemble the bolt, and find that the locking lugs are sticking out and won't go back in ... why, you have assembled it incorrectly, with the bolt too far to the rear. Disassemble and try again. (See Last and Final handy tip). Don't despair - the more you do it, the easier it becomes, and this step is VITAL for proper cleaning and thus reliability. One further "must do" when cleaning is to ensure the chamber and the roller locking recesses are clean. Remember, the nature of the G-3's cycling deposits a fair quantity of carbon gunge right in the chamber, so scrub it well!

When loading, it is advisable to first pull the bolt to the rear and lock the cocking handle upwards into the recess provided, THEN insert the magazine. The magazine locking on the G-3 is not hugely positive, and this step helps ensure the magazine is fully home. Strike the cocking handle a downward blow to free it, and rely on spring pressure to chamber the round. Any attempt to guide the bolt forwards by hand will almost guarantee an insufficiently chambered round, and thus a jam. Speaking of magazines, there are two types available. The aluminium, waffle patterned magazine is actually regarded as being disposable in military circles. The steel magazines are far more robust, but do not despair - the aluminium jobs are quite capable of firing a great many rounds, as long as they are not abused. Also, be aware that the G-3 does not lock the working parts to the rear after the last round has been fired, and any rearwards bolt locking is a purely manual operation. This is not a condemnation of the G-3 either, but was done in compliance to some obscure NATO recommendation.

The despised open-v short range sight, disliked by the author.

The G3 case (right) compared to a normal fired case. Note the flutes and "smoked-up" appearance.

The correct zeroing of the G-3 also requires some explanation. If one desires to raise or lower the point of impact at any particular sight setting, look inside the rear sight drum. You will notice two horizontally opposed slots, each containing a sprung loaded tab. Using a suitable pair of needle nosed pliers to squeeze in these tabs, the rear drum is now free to be rotated up or down to raise or lower the point of impact respectively. Windage is controlled by the small Phillips screw on the right side of the sight assembly. First loosen the large locking screw to the rear of the sight drum, then make the necessary adjustments. Tighten the lock screw once the correct adjustments have been made. All in all, the sighting system is more than adequate for practical field use. It only comes short compared to the FN rifle when fine adjustments are needed for long range target use. Although fast fading from the international military scene, the G-3 has made a local impact with recent sales of surplus military hardware. My advice to those fortunate enough to own one is to become familiar with it, understand its idiosyncrasies, keep it clean and well maintained and, as with any firearm, use it safely and responsibly. You will then discover what an accurate, hard hitting rifle it is that you have.