

## Building a Heavy Calibre Hunting Rifle

*(I wrote this piece for Australian Hunter magazine in 2004 to provide my advice on how an Australian hunter could put together a reliable, heavy caliber, big bore bolt action rifle. Whilst the main stream manufacturers have improved their offerings over the succeeding years “off the shelf” Dangerous Game rifles still carry a premium price and still lack the attention to detail necessary to ensure trouble free operation.)*



***The culmination of a memorable hunt, a great trophy buffalo taken with a fine, hand made, heavy rifle.***

Whilst there are numerous options available for hunters wishing to purchase a light to medium caliber rifle (.222 to .375), the choices are much more limited in heavy calibers (.400 and above). A review of the offerings shows the major manufacturers, Ruger, Remington, Sako / Tikka and Winchester only offer a few chamberings in their standard offerings. To compound the problem most of the rifles offered do not have, what I would consider, appropriate or quality iron sights. None of them feature tuned actions, a necessity for totally reliable and fast reloading when confronted by dangerous game.

To bring these “standard” rifles up to scratch in terms of reliability will require an investment in the region of \$400 to have the action tuned and magazine correctly spaced. The stock may not need reworking for your individual fit, but if it does you could be up for anything from \$150 for minor alterations and refinishing to \$800 for a new stock.

In general to get a standard factory heavy rifle fitting well, working perfectly and suitably scoped you can expect to pay from \$1,500 to \$2,200 on top of the \$2,000 plus “off the shelf” price for the cheapest offerings. For those prepared to wait you can order “custom shop” rifles from several major USA makers but these are far too expensive for the average shooter and the standard of work on USA factory custom rifles falls far short of what can be obtained from many of specialist artisans. You can also purchase some fancy brand European Express bolt action rifles such as the German Hyem, a quality rifle, for \$9,000. Of course you will still need to have the stock attended to and mount a suitable scope.

Indeed I once had a hunter arrive from the USA with his brand new, US\$5,000, “Custom Shop’ Winchester in 458Win. It sported iron sights with a standing sight for 50 yards and folding leaves for 100 and 200 yards. On sighting it in we found that the iron sights were shooting approximately 10cm low at 50 meters! (4 inches @ 50 yards) The folding leaf for 100 yards was close to the mark. However, in the course of hunting, folding leaf sights are prone to doing just that, folding, when rifles are pulled out of bags, brushed against trees or clothing etc.

The distraction of constantly checking his sights resulted in him forgetting to chamber a round when he was presented with a running shot on a scrub bull.

A far more cost effective and satisfying way of obtaining a functional and reliable heavy rifle is to set about commissioning the building of your own.

The two key decisions you will have to make concern the choice of cartridge and the choice of action. Once these have been decided you are ready to enlist the services of a gunsmith and finally a stock maker.

### **Cartridge Selection**

You can spend days and weeks tantalizing yourself with comparisons of the possible cartridge options and if you choose to read the opinions of legendary African hunters or USA writing scribes you will be able to extend this process into months before finalizing your selection. Engage a few hunting friends in the discussion and this will also serve to stimulate debate.

If you are an experienced reloader your choice of cartridge can be considered limited only by what regular and custom dies there are available.

In Australia, with the ready availability of Bertram Brass and Woodleigh bullets in addition to various American offerings, the list encompasses almost all the possibilities you can think of beginning with the .416 Remington through to the 500 Jeffery.

However there are some simple criteria that you can employ to shorten this process.

Unless you want to devise your own wildcat the choice of factory ammunition covers the following cartridges in ascending order of calibre. 416 Remington, 416 Rigby, 416 Weatherby, 404 Jeffery, 458 Winchester, 458 Lott, 460 Weatherby and 500 Jeffery. (Along with new Hornady offerings.)

If you are prepared to load your own and most of us do as the cost of some of these cartridges is prohibitive, you can add the 505 Gibbs.

This still leaves you about 10 choices to agonize over. However the next step in our selection process, the choice of action, will narrow this considerably.

### **Action Selection**

If you have read any firearms and hunting literature dealing with dangerous game you will have come across the "controlled feed" verses "push feed" argument on countless occasions. Those scribes in love with "pre 64" Winchesters, 98 Mauser or Winchester's current controlled feed actions are prone to criticize push feed actions. The most common criticism seems to be that they cannot be operated reliably, as the cartridge is not controlled by the bolt especially when the firearm is upside down. This must rank as one of the greatest gun myths of all time.

Although I cannot think of an occasion when one would want to operate the bolt upside down I can attest to the fact that all of my Sako and Remington actioned rifles will operate and chamber cartridges 100% reliably whilst they are held upside down as the cartridge is held in place until it well inside the chamber.

Indeed I have seen more feeding problems from poorly made copies of the Mauser 98 than any American push feed action.

If you can get your hands on a good Mauser 98 action for a fair price there is no reason not to use it. However any quality action, my preferences in this size are Sako and Remington, will do the job.

The 416 Rigby, 416 and 460 Weatherby, 505 Gibbs and 500 Jeffery all require a magnum action to accommodate their oversized cases.

*(The 500 Jeffery will fit a standard Mauser 98 action but it is too large for other standard actions.)*

Given this there are no suitable actions capable of housing these cartridges on standard rifles.

There are RH magnum actions around that will accommodate them but left handers can forget this option unless you are willing to spend up big time.

The Bruno / CZ magnum action is the cheapest available that will do the trick and you can probably pick up a used Bruno in 458 for around \$1000. However you can choose to spend from \$3000 to \$10,000 on some of the fancy specialist RH and LH magnum actions from overseas.

If you choose a large magnum action you will not be bothering to chamber it for those cartridges that will readily fit a standard action. This narrows your choice to the four cartridges above.

Of these I find, from field experience, that Weatherby offerings burn a lot of powder, make a lot of noise and do not seem to kill any better than the British offerings. In any case, if you are a Weatherby fan, you will probably choose to buy a Weatherby rifle.

If you want a versatile rig for both close quarters and long range then the 416 Rigby is fine. If you are looking for the ultimate close range stopper then you cannot go past the 500 Jeffery.

In contrast the 416 Rem, 404 Jeffery, 458 Win and 458 Lott can all be readily housed in a standard Remington or Sako L61 long action or indeed in any action capable of handling a 375H&H. I am a great fan of the Sako L series action, when reworked it is certainly the fastest and smoothest action I have used. You can pick up a used Sako or Remington rifle with long action for around \$1000.

If you want to use the cheapest available factory ammunition, the 416 Remington is the logical choice for your heavy rifle project. It has the required velocity, trajectory, momentum and sectional density with 400 grain bullets to humanely dispatch any animal out to 100 meters. It shades the 458 Win in all departments except surface area.

If you are prepared to spend a bit more on ammo or reload then the 404 and 458 Lott are better choices. The 404 sits between the 416 and 458 in caliber (.423) and has the advantages of greater case capacity and no belt. This allows it to feed more reliably and to be driven considerably faster, with far greater energy and momentum compared to the 416 Rem and 458 Win. Should the user feel the need, it can also be loaded with the 350 grain or 347 grain bullets on offer from Woodleigh to make an excellent long range rifle for Sambar and large African plains game.

The 458 Lott is an excellent cartridge for closer ranges, if Winchester had introduced it instead of their shortened 458 it would probably be the only heavy cartridge available!

It cannot be driven as fast as the 404 but it has the advantage of greater surface area and possesses ample penetration on all animals.



*The venerable 375H&H shown alongside, 404Jeffery and 458 Win, both of which can be comfortably housed in a 375 action.*

*In contrast the 416 Weatherby, 500 Jeffery and 505 Gibbs all require the longer action and bigger bolt found on specialist, "Magnum" actions.*

### **Gunsmithing**

Once you have selected a cartridge and purchased a rifle with a suitable action, the next step will require the services of a specialist gunsmith. Choose one who has had considerable experience with putting together heavy rifles. Rolf Bachnick of Safari Arms and Bob de Vries of Kudu Services are two that spring to mind in Victoria. At this stage you will need to make a choice **of barrel profile and length** for your rifle.

If you can tolerate heavy recoil, intend to shoot the rifle scoped and to carry it for long periods, a lighter profile can be selected.

If you wish to mitigate recoil and will shoot with open sights, a heavier profile might be more appropriate. In total I have found an all up weight of around 3.5 to 4.5KG (8 to 10lbs) is the best compromise between portability and recoil.

Any heavier and you will begin to notice the weight in the field and if it is any lighter most shooters will find the recoil unpleasant.

A replacement barrel will set you back around \$400, before sights are fitted!

Heavy rifles need open sights, not because you have to use them (I prefer a scope set on 1 X power on my bolt action rifles) but because you may have to use them!

Your iron sights should be of sturdy construction with the shallow v style of British express sights, these are the quickest for your eye to acquire and align. They should also be fitted to the rifle as far forward as possible. Talk to your gunsmith and discuss placement, I recommend at least 40cm to 50cm from your eye and this will equate to around 15cm to 20cm down the barrel from the front of the action. The front bead should also be a minimum of 2mm in diameter.

There are two reasons for this.

Firstly, the further from your eye the rear sight is and the larger the front bead, the quicker the sights can be aligned.

Secondly we all get older and need the additional eye relief. You can also go to the expense of having a second or third folding leaf should you wish, they look impressive, but I think this is just a useless embellishment. I have never used the 2<sup>nd</sup> leaf on any of my rifles in 30 years.

Good iron sights will set you back up from \$300 to \$500, but should your scope destroy itself through recoil or by a physical blow, you will need them.

Just last week the scope on a 30.06 of an English hunter in camp decided to destroy its internals. The 30.06 is a pussy cat in the recoil department compared to a 416.

A good scope, such as a Leupold 1.5 x 5 Vari X III and mounts will set you back around \$900. There is simply no point in trying to save money on a scope and mounts on a heavy rifle.

There are several excellent European brands that retail for \$1200 upwards and there is the American Leupold. I have not found a scope that compares to the Leupold with respect to reliability and, **more importantly, eye relief**. If there is someone out there who can supply a better scope for the money please feel free to mail one to me and I will be happy to field test it.

Mounts are just as important and in this respect the Sako action with its dovetail machined into the action provides the strongest and most rigid base for scope mounts available.



***Two Sako L61 Bolts, on the left a standard Belted H&H on the right a 404 Jeffery, the difference in rim size is just 7 thousandths of an inch.***

This brings us back to the action. Money spent having the action smoothed and tuned will be well spent. The addition of a quality trigger with crisp let off might also be warranted. The magazine and action will certainly need to be reworked to suit the selected cartridge.

Particular attention should also be paid to the amount of free play in the magazine box. This needs to be kept to a minimum with heavy recoiling cartridges in order to minimize deformation and chance of the bullets being driven back into their cartridges. Expect to pay up to \$500 for this work.

Finally there is the magazine floor plate – it needs to remain locked under heavy recoil!

You have probably all read stories of cartridges being dumped. I have seen it happen in the field on no less than 5 client's rifles over 20 years!

Whilst your gunsmith can fit a stronger spring to the latch you must still shoot the firearm with full and half full magazine repeatedly before taking it into the field after dangerous game. Indeed you should fire a number of groups commencing with a full magazine and running the cartridges through for successive shots once you have sighted it in - that is what is going to happen in the field.

To have all the components blued or reblued will set you back another \$400 or so. Alternatively you can opt to have them nickel plated or a variety of other finishes if you prefer a non traditional look for about the same price.



***Magazines need careful attention in heavy rifles. Notice the excessive free play in the standard .338 magazine on the right compared to the reworked 404 box with spacer installed to reduce cartridge free play to a minimum.***

### **Stockwork**

By this stage you will be ready to have the barreled action stocked. The key issue here is to ensure that your action is securely bedded and bolted to the stock in order to ensure it cannot move under recoil.

If you purchased a standard rifle to secure your action the stock may be able to be modified and an additional cross bolt or two installed to lock the whole unit or you may need a new stock.

I would generally recommend the expense of having a stock made by a reputable stock maker such as a Jeoff Slee of Baccus Marsh, Victoria.

If you do not already know what stock measurements suit you the key here is to take the time to visit the stock maker so that he can appraise your measurements and determine the appropriate fit.

A heavy rifle should not be stocked with fancy walnut except perhaps towards the rear of the butt, good straight grained wood, particularly through the grip and around the action is required.

You might choose to have a synthetic stock fitted but I prefer wood, it makes less noise if knocked, it seems to be more flexible under recoil, it feels much more user friendly and it looks a million dollars better.

The old stories of wood warping in the wet and with changes of temperature have never happened to me but I am prepared to believe that there are places on this globe where it never stops raining and no one could hunt effectively before the advent of plastic.

Fortunately there is no game in such places that requires a .400 calibre rifle to stop so you can indulge yourself in real walnut for your heavy rifle. In any event if it happens to be shooting 2 cm to the right at 50 meters there is no buffalo or elephant on earth that is going to notice, for that matter few rabbits will either.



***The Sako L61 action above has been reworked and restocked to 404 Jeffery. To harness the forces of recoil two cross bolts have been installed in the new stock. In contrast the Remington 700 in 30.06 below has one cross bolt which is more than sufficient for cartridges of this power.***

In summary your heavy rifle project will set you back between \$3000 (iron sighted) and (\$4000 scoped). For this money you get a new rifle, completely finished to your specifications, with an action that will never jam or let you down.

When you consider a new Sako in 30.06 with a quality scope and mounts costs around \$2,500, "one size fits all" You can readily appreciate the value for money you receive when you access the services and skills of Australia's gun trade artisans.

*Happy hunting!*

Barry Jones

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