



Your new Custom .22 Rifle

Overall weight:

First of all you should have an idea of what weight of rifle is most suitable for you as having one that is either too light, or too heavy (especially if it's all at the front end) will not allow you to perform at your best. Physical size and strength along with any medical conditions will obviously play a big part in this, as will the types and number of competitions you intend to shoot with it on any given day. Hoping to shoot a 1500, Bianchi, a Grand, a T&P2 and a couple of other matches back to back on the same day with a rifle that weighs the wrong side of 8 or 9lbs or more, would prove to be too much for most of us. Ideally, try to handle as many different rifles of a known weight as you can, to give you an idea of what feels the most 'comfortable' for you. Even using a basic set of kitchen scales down at your club or range to weigh each one, will give you a reasonable idea of what you should be looking for. This will then allow you to break it down roughly into component weights such as stock, action (and trigger unit), barrel and scope so that you can choose each of them accordingly. For example, if you wanted a lightweight rifle of around 5 to 6lbs, trying to combine an Odyssey type stock with a stainless steel 20inch barrel will take you way over this figure before you even think about adding a receiver/bolt/trigger group or putting a scope on it. My new rifle built for me by Rude Fat Dog weighs in at just less than 4¾lbs, giving me a really lightweight rifle to shoot steel plate or 3 gun matches fitted with a red dot scope on it. Even when I fit a massive 30mm tubed 8-32 x 60 Nigtheater scope on top it still weighs in at just less than 7lbs which means I'll be able to shoot plenty matches back to back with it, before getting too tired.

The Stock:

Single sided or Ambidextrous?

It's a pretty simple question really, but one that is often over looked by people when they first set eyes on their must have "ultimate" looking rifle. First of all you need to ask yourself what types of matches you intend to shoot with it, both now and in the future. If you only ever intend to shoot using your strong shoulder for support as in the Precision, Timed & Precision 1 and Multi Target matches or even just general plinking down the local range, then a normal right or left handed stock will suffice. If however you may like to try out some of the 'action' events like the Bianchi, 1500, PP2, 3 gun or Steel type matches, then you are definitely going to need an ambidextrous stock. This type will allow you to shoot from either shoulder, as well as various other positions such as kneeling and sitting (or even prone in some 3 gunners) which are incorporated into many of the disciplines that we now shoot. Bear in mind when choosing a new stock that the weight of some of the fibreglass/composite/rubber stocks including the Bell & Carson Odyssey, Volquartsen VX or the Anschutz target style can easily weigh up to twice or three times as much as a similar laminate version due to the materials used in their construction. They are, however, very well made and may prove ideal for shooters of a larger frame. Those of a smaller build however would do better to avoid them, and go instead for something a little more manageable of the laminated variety.

More often than not unless you are very lucky, some modifications will have to be made to any stock to get it to fit you properly. Sometimes it's as simple as adding an extended butt pad, and other times it means getting out some sand paper or a power file and really going to town. Remember that the finish on most wood/laminate type stocks is usually varnish, lacquer or oil and can be returned to as

good as new with a little bit of time and effort should you ever need to modify it. I have always spent the time and effort making sure my stocks fit me, which in turn has given me improved results on the range. Once you have made a stock fit and work perfectly for you there shouldn't be any reason really to ever get rid of it. If you ever need to upgrade your action or barrel (or both) then why not simply sell the old items in a cheap standard Ruger stock or on their own instead of the whole rifle? One thing to remember though - if you do ever order a new stock is to make sure it will fit your barrel profile i.e. a standard taper or .920" item. Leaving a new stock just as it is because it looks pretty rather than make it fit properly, isn't the way to go if you want to improve your results!

Starting at the front:

The Fore-end – Normal or the 'Cool' look?

Before you decide on this point, you should really spend some time down on the range finding out which type of 'hold' suits you best. Small changes and experimentation by reaching further forwards or bringing your hand further back on the fore-end will give improved accuracy results. Likewise, rotating your wrist slightly, increasing or decreasing the exerted pressure at both ends of the stock, experimenting with different pressures when pulling it into your shoulder and finger placement by the supporting hand will also help contribute to a more stable hold, so take the time to work out what works best, for **You!** Ultimately, you must make sure that the fore-end allows you to attain your optimal reach and grip, whilst shooting from the Standing off hand position. If it is too short, this will force you to move your hand in closer towards your body which will lead to being both uncomfortable and more importantly, less stable than one that fits your shooting stance naturally. Lately I have seen a number of shooters on the line shooting rifles with fore-ends that are way too short forcing them into having to hold onto the barrel in order to gain a more convenient grip. Altering the barrel harmonics by holding the barrel will not help produce good results on the target and purely by their actions I think it's fair to say that their stocks are definitely unsuitable for them.



Made to be shot from a bench, by a 3 fingered alien, or by Gallery Rifle shooters? You decide....!

This then brings us onto the next important point, being the profile of the fore-end. A shape that fits naturally in the palm of the hand will fit better, and is going to need less muscle retention and effort to keep it there which will in turn help to provide a steadier hold. Likewise, staying in safe contact with the stock during position changes and reloads should also prove to be a lot smoother and easier and using a bit of skateboard tape may also help your grip. You will probably find that you actually grip the fore-end at different points when shooting from different positions. Increasing or decreasing the width or shape at the point of contact on your stock to provide a more stable platform or hold, or simply adding a non slip surface like skateboard tape may well prove beneficial for some shooters. Flattening the area towards the rear or the fore-end may provide you with a more stable hold when shooting from the kneeling or sitting position as the rifle tends to just 'rest' on your palm or in the 'v' groove of your arm.

There are a lot of stocks out there both old and new that I have tried and tested, and I consider many of the 'gimmicky' types to be 'questionable' regarding their use in gallery rifle type competitions. Remember that most of these stocks are designed for, and used by people who shoot "off the bench" in the States and are certainly not designed for the type of shooting that we do with them. Anything that is too short, narrow, has sharpish edges or an angular profile that makes it hard for the hand to form around naturally will probably not work in your favour, however fancy it may look so be warned!

Whichever type you decide on, a critical point to ensure is that the barrel is fully floating over its entire length, and that it does not make any contact against the stock. Running a single sheet of thin piece of paper along the gap for testing is not sufficient and several sheets should be used, as wood/laminate types can expand slightly if subjected to wet or damp conditions so use several layers of paper for this test. My stock to barrel clearance is at least 2 to 3mm+ over its entire length.

The Grip type – Sporter or Thumbhole/Pistol grip?

There are many options available but make sure the ergonomics of the grip you choose allow the pad of your index finger to rest naturally on the trigger blade, whilst keeping the finger relatively straight in order to ensure a good trigger release. You may find that a curved sporter grip works better for you whilst some shooters find a thumbhole/pistol grip design aligns their wrist and trigger finger more naturally in relation to the trigger blade.



The pistol grip type stocks are very comfortable and allow a good wrist/finger/trigger alignment

Personally, I find that the Fajen Silhouette/Blaster type stock fits me best, but as it's a single sided stock it means that I have to spend a bit of time re-shaping the

grip and scalloping out the right hand side of the cheek piece in order for me to be able to align my head up properly with the scope to shoot from the weak shoulder. It's not the end of the world though and it guarantees that I end up with a stock that allows me to shoot properly from any shooting position that I'm likely to encounter. Whether you have to convert a single sided thumbhole grip, or reshape, narrow down or bulk out an existing grip, it is fairly straight forwards on most stocks. A bit of effort put in to ensure that you can achieve a positive and correctly aligned hold will pay dividends in your future performance. Again, some well placed skateboard tape can help to improve both grip and control so it's worth thinking about.

The grip areas on some of the more 'fancy' stocks however will require a lot more care to be taken if you try to convert some of them to do a job they really weren't designed to do and removing too much material in some areas may leave the stock vulnerable to damage if handled without due care. My latest stock has had a lot of work done around this area to allow me to shoot with an experimental off hand hold and doesn't have much material in this area, but as I generally take care of my rifles I don't see it as being particularly fragile.



Make it fit!

The Butt and Cheek piece -

The length of the butt should allow you to comfortably reach the grip and fore end together and enable you to consistently bring the rifle up into the aim from both the waist height and 45 ° ready positions. Again, you may well need to alter this area in order to achieve the best fit but there are various extendable butt pads available on the market from simple spacers to fully adjustable 3 way units depending on your needs, or bank balance! The proper height, width, length and profile of the cheek piece needed will also vary greatly from shooter to shooter, but again you can always make what you have fit you somehow. Whether you end up installing an adjustable unit or simply adding or taking material away, you must make sure that the end result allows you to quickly align your head up correctly with the scope when bringing the rifle up into the aim from a 'ready' position. It should also enable you to achieve this when shooting from every shooting position, to ensure good consistency and shot placement on the target. This is especially critical when shooting snap stages, where target acquisition and quickly well aimed shots are near nigh on impossible if you can't adopt the correct head/scope alignment/eye relief quickly and consistently, every time!



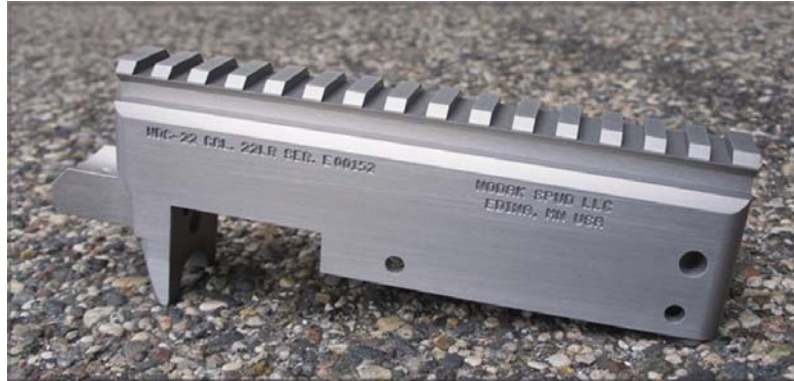
A stock that fits properly will help you reach your potential!



SFCustom adjustable butt plate.

Receivers – Alloy or Stainless?

Going back to the weight consideration should help you with this choice as a stainless version will be around ¾lbs heavier than that of an alloy action, although the cost difference between the two could also be the deciding factor in the end. One advantage of these heavier actions is that some of them are available pre-threaded allowing you to screw fit a stainless barrel into them for a really secure lock up, although this usually means it's a gunsmith job to get them out again so think carefully about this.



Fixed scope rails will make it hard to mount a Bianchi mover base



A removable one will give you more options

They are available in..... Well, silver as you would expect and from a performance point of view function just the same as an alloy version although some would say that they offer a more rigid set up. The various alloy units however come in a multitude of different colours so you can mix and match things to achieve a more individual look for your rifle. I think it's generally accepted that threading these lighter receivers isn't a good idea as they would be quite easy to damage but the normal twin bolt lock up with a V block does the job more than adequately. This system also gives you the option of changing barrels pretty quickly should you decide to use a heavier one for bunny bashing, and a lighter one for competition use etc. The standard Ruger unit doesn't exactly arrive with tighter tolerances like the Volquartsen and Tactical Innovations varieties but I think they do the job just as well although the choice of just black or silver may not appeal to everyone. One could argue that a 'tighter' fit between the receiver and bolt etc will produce more accurate results but this is not upheld by a lot of the testing done in the States where it would seem that the 10/22's built on Ruger receivers are putting in groups that are just as good as that are used with some of the more expensive offerings!

One thing to take into account when choosing a receiver is whether or not it has a scope rail built into it as this can be a good thing, or a not so good thing depending on what you want to put on top of it. If you want to fit a Bianchi mover base then you will have a bit of a problem if your rail is fixed on as part of the machining process. With this in mind, for my rifle I opted for a flat topped Tactical Innovations unit that has a removable rail held on by substantial 5mm allen screws. Since we started using 10/22's I have always drilled and tapped my receivers out to this larger size purely for reliability, as well as the ease of replacements as the standard 'Yankee' ones are pretty hard to get hold in the longer lengths. Some bolts now come as a matched pair with some of the newer receivers and offer a few improvements for functioning or reliability. In the end whichever manufacturer you opt for, getting it correctly head spaced and profiled at the rear would be a good modification to have done. A tight fitting or pinned ejector will improve reliability and a pinned firing pin in a Ruger type bolt will help to avoid any light strikes from occurring. A properly fitting (not just the latest techno whizz model thrown in) extractor fitted should help reduce or eliminate any stove piping issues, and a decent bolt buffer in the back is really all you should need to do to it.

Triggers –

To help you reach your potential, especially in the precision type matches, you should really try a KID unit and then you'll probably end up buying one! Although I've always preferred a single stage trigger it doesn't take long to get used to take up the first stage adjustment on the KID, (especially when a lot of the travel can be taken out) then you are left with a very crisp release which can be fine tuned

down to around 6 to 8 ounces if you like. For a more in depth look at the KID trigger unit please ([click here](#)). These really are the best available on the market at the moment but due to the current exchange rate against the dollar, they unfortunately aren't cheap! From an investment point of view, although my Jewel trigger cost me nearly £200 11 years ago and apart from a spring breakage last year, it is still going strong. That's less than £20 a year for a first class trigger and taking a look at the build quality of the KID unit I see no reason why they should not last at least as long as this, if not longer!



The KID's are top quality but may not suit everyone

There are two other trigger units out there that I have tried, one has the trigger weight pre set whilst the other is made up of 'drop in' components but in my opinion they are really not worth bothering with as they are a lot of money for poor quality. If you can't stretch to buying a KID at the moment, why not ask RFD to slick up your standard Ruger trigger unit for you instead? The result will be a lot better than just fitting one of the 'drop in' kits and cost less money too. The end result with a trigger release around the 2 ½lb mark and along with an ABR should see an

improvement on the range. Another thing to bear in mind regarding your trigger group is that some of the matches we shoot in require you to drop the magazine and lock the action open quickly to move between shooting positions. With this in mind you should have a speed lever magazine release fitted that will enable you to drop the magazine by pushing it forwards, and then allow you to lock the action open by pulling it to the rear along with the bolt. These can be operated very quickly and smoothly and don't cost the earth to buy either.

Barrels – Standard, lightweight or heavy?

The standard Ruger barrels are usually very reliable for functioning and you can put almost any type of ammunition through them and they'll work just fine, which is probably due to the 'generous' sizing of the standard chamber. Typically though, they will group at least a quarter to half inch plus bigger groups at 50m compared to the aftermarket 'match' varieties depending on the ammunition used, which isn't too much of a problem if shooting speed steels or the Bianchi match. Using one of the 'match' barrels however to shoot at the much smaller targets used in the 1500 and other 'precision' type events though will certainly help improve your scores, so it's definitely something to think about. Looking at the aftermarket barrels the first thing to consider should be the weight, especially when building a new rifle. A stainless one can weigh up to 3½lbs on its own compared to around 14oz to a 1lb for one that's made of alloy or carbon fibre. That's a big difference and is in the region of what a large scope would weigh! If you do opt for a stainless one, make sure that you try one out on the range first as the longer ones can really make a rifle very front end heavy making them a pain to shoot with and carry around all day, although the fluted shorter versions are all pretty comfortable to use.



Extremely lightweight alloy barrels with steel match liners come in a wide variety of colours

The conclusion from testing in the States is that there really isn't much to be gained by a 20" plus barrel over a 12 – 16" version accuracy wise so it's really down to what the rifle will be used for, although a heavy stainless version will prove to be better for the Bench rest type competitions. For purely hunting use a 12½" tube would probably be the best choice, whilst the most popular ones out

on the GR circuit seem to be between 16" - 18½" in length. Shilen, Volquartsen and KID are probably the ones to go for if you are after a stainless barrel with Whistle Pig, Volquartsen and Tactical Solutions seeming to be the most popular of the alloy and carbon fibre offerings. Another thing to consider is the type of chambers used which are generally either termed as Match or Bentz type.



The fluted stainless barrels help save a bit of weight unless you want a heavy rifle

The 'match' chambers are cut to allow the round far enough into the chamber so that the bullet is gripped by the rifling, which could mean that any unfired round cannot be ejected. This may cause a problem during some of our matches if a jam or misfire occurs as the rules generally state a maximum number of rounds to be fired from each position or that the rifle must be unloaded with no round in the chamber when moving between shooting positions. With this in mind I always opt for a Bentz chambered barrel as removing a live round is easy and all the test results that I can find shot with our types of rifles indicate that the difference in accuracy between the two types is negligible really. The only other thing left to consider then is the colour of which there many, and finally the price.

Sights – Iron, Red dot or Telescopic?

Most of the competitions that we shoot are 'open' regarding the sights used although there are a few that are restricted to iron sights only, but these are generally in leagues or at the Trafalgar Meeting at Bisley. There are a couple of shooters out there who can shoot very well with 'irons' but it has proved impossible to beat the top guys who are using the variable powered scopes. Red dot sights generally offer a faster target acquisition which is great for speed steels and some of the 3 gun matches, but certainly not for the majority of matches that we shoot. Although it's obviously all down to personal preference, on a multiple target layout you may find that a larger 42mm or 45mm red dot will allow you to see the bigger picture as it were, which will allow you to pick up the individual targets easier compared to a 30mm tube. The 3 or 4 MOA dots are usually the ones that shooters go for as they give a definitive aiming mark as opposed to an 8 or 10moa one that will cover half of the target. Quite a few people have commented to me over the years about not being able to shoot with a telescopic scope using their weak shoulder as their eyesight on that side is very poor. This type of scope whilst not being ideal for the longer range stuff or the rimfire sized targets, can overcome a lot of this problem for many shooters as the sheer size of the rear lens enables you to look through it and focus on the dot using both eyes, regardless of whether you are shooting from a strong or weak shoulder position.



A 42mm objective and 30mm red dot scope

Moving on to the various telescopic type scopes, I think it's fair to say that unless you shoot the majority of the GR matches with one of these fitted on top of your rifle then your success will always remain limited. I experimented with various magnifications and objective sizes over the first couple of years of shooting GR to find what which combination worked best and the two main factors that will enable you to score well is having enough magnification to see the X ring on the 50m targets, along with the largest possible objective lens that you can find. Recent discussions with some friends' who shoot at the top of the ladder as it were, all agreed and used the same principles when choosing the current scopes that they use.

Look down the line on a 1500 or 'shorts' line and you will see that most of the top shooters are using the higher powered 5-20x50, 6.5-20x50 or 6-24x50 scopes. Even at the closest range of 10m you will be able to pick up the middle of the target quickly on either 5 or 6x. If you can't, then the problem has to do with your preparation i.e. stance, head position and presentation and not the scope. At this distance I rarely use a setting of less than 12x whichever calibre I'm shooting. Having an upper limit of 20 or 24x doesn't mean that you ever have to turn it up that far, but it's always available should you ever progress to use it. As well as being able to aim more precisely rather than guessing where the centre of the target is, probably the best thing about using a higher powered scope is being able to see your point of impact on the target. This then allows you to either adjust your aiming point or quickly dial in a couple of clicks should your hits be off centre due to different lighting or wind conditions. With a low powered scope the only time you will get to know about this problem is when you go down to score your target and by then it's too late and the points have gone! I think the only exception to using a higher powered optic would be for shooters who have dedicated Bianchi or Steel plate rifles that are either fitted with a red dot or a lower powered scope in the region of 2-10x56 or 3-12x50. Being able to turn down the power to 2 or 3x combined with a large objective lens makes it much easier to pick up the shorter range targets much more quickly, especially on the plates and the mover as you don't have much time to play with in this type of match.



There's a big difference between these 75mm, 50mm and 24mm scopes!

Many people have told me that the reason they stick with their current scope (mostly in the region of 3-9x 40or50) is that they cannot keep the rifle still on a magnification setting greater than 9 or 12 etc at 50m – but neither can anyone else! Your crosshairs will always be moving on the target whatever standard of shooter you are and it's simply a matter of learning how to release each shot as the reticle moves over the centre of the target. Over the last 3 or 4 months some friends of mine have tried shooting with both my 1500 GRSB & GRCF rifles that were fitted with Edgar Brothers 5-20x50 scopes. After a bit of time on the range gradually increasing the magnification settings and learning

better trigger control, they were certainly all grouping better and getting higher scores on the target. They all now own, or have on order a higher powered scope which should ensure their performance and classification improves to the next level. Using a high magnification scope over the years has certainly helped me to post some good X count scores during my matches.



Locking turrets are great and marking the dial with tape allows perfect zero at all distances

The reason to go for the largest objective size possible is so that you will have a much greater field of view when you bring the rifle up into the aim, at every distance whatever targets you are shooting at. Using a 1-5x20 on full power at certain distances can mean having to scan down the target to check that you are shooting on the correct 2 targets out of the 34 others, during a Multi Target match. On the same setting with a 50mm plus lens you should allow you to see the target numbers whilst on aim, saving you at least a couple of seconds in some cases, and turning the power right up at 50m will give you a much clearer and brighter sight picture as opposed to that given with an equivalent 40 or 42mm item. If you can afford to buy a top quality scope like the Leopold's' or similar then the quality will be improved even more as the power is turned up - they also come with a lifetime warranty! Whether the scope is front or side focussing isn't really an issue but

ideally it should be fitted with target turrets. These will enable you to sight in and mark off on a piece of tape wrapped around it precisely your zero point for every distance at which you will shoot. Simply walk up to the line, dial in the distance, adjust the focus and then load when told to, it's just a routine that you get into and for the people who tell me that they don't do it this way because they'll forget to change the settings each time... you'll only do it once..... I can assure you! Nearly all of the top shooters do this so that they don't have to aim off and can therefore just concentrate on the middle of the target and get on with the job. At the end of the day it may well be worth considering having 2 scopes if you want to shoot a wide variety of disciplines with a particular calibre and invest in a good set of quick release mounts to go with them. They really do hold their zero well provided you fit them properly and could well be the difference between a current compromise and reaching your potential in the varied types of competitions that you compete in. Remember that in order to get the best from any scope it has to be fitted and aligned properly so that every time the rifle is brought up into the aiming position, the eye is consistently at the correct height and the correct distance away in relation to the eye piece, so that a clear and fast target acquisition is attained every time!

Finally, after taking the time and effort to set up your rifles so that they fit and work properly for you, you should finish the job off and make sure that the overall balance is right too! Quite a lot of rifles tend to be front (rather than rear) end heavy but this can easily be corrected by simply adding weight to the appropriate end. To add weight to the front it's usually best to remove some material from the barrel channel towards the front of the fore end and fit some epoxy covered lead or a piece of stainless or mild steel bar. At the rear, you can remove the butt pad and hollow out part of this section then fill with the same materials as the front. Either modification will be discreet and should provide you with a properly balanced rifle that enhances your stability in all of the shooting positions that we shoot from. This in turn will reduce fatigue and should help to improve your performance at the same time.

To summarise everything regarding either your current gallery rifles or those you intend to own in the

near future, make sure that you end up with:

An assembled rifle combination that is of the correct weight and balance.

A Stock that fits you and is contoured to enable you to easily shoot from any of the positions required in the types of competitions in which you intend to shoot.

A trigger set up that enables you to release each shot easily, smoothly and consistently.

A scope that will give you the largest field of view and the magnification power that will allow you see the centre of any target, at every target distance used.

Once these are achieved the rest as they say, is up to you!

I hope that this has been of some help and that it's got you thinking more about what should be achieved before you step up to the line for a competition. Also, watch what other shooters do and never be afraid to ask questions on the range as no-one knows all of the answers, and it's the only way that we will all get to learn more!