

A photograph of two men standing on a snowy mountain peak. The man on the left is wearing a black jacket and dark pants, and the man on the right is wearing a black long-sleeved shirt and dark pants. They are surrounded by snow and climbing equipment, including ropes and carabiners. The background shows a vast, snow-covered mountain range under a clear blue sky.

FROM THE GUNSMITH'S BENCH Custom Rifle Pillar Bedding

New Zealand hunting conditions demand good rifle bedding. Rain, snow, ice and heat, we have it all.

Photo James Pearse.



Custom pillars are made and fitted to action



Stock is drilled on special jig for pillar clearance



Checking for correct alignment.



Stock and metalwork prepped for bedding, tape on recoil lug front face and sides, release agent applied. We don't want a permanent 'glue-in'!

While the subject of epoxy bedding methods for rifles has been well covered in various publications over the years, there are still a lot of misconceptions out there around this subject. This article is not meant to be a 'How To' or 'DIY Guide', but it will hopefully provide some insight into what pillar bedding is and why it is done on so many rifles.

The rifle in the feature has a laminated hardwood stock by Boyds and the barrelled action is a factory standard Remington 700. Other stock options could be walnut, hardwoods (usually birch or maple) or fibreglass. It is usually not feasible to pillar bed plastic stocks, though some can be basic glass-bedded with a degree of success, depending on the stock design and bedding technique employed. Plastic stocks are usually inferior to the other options in my opinion.

The term 'glass-bedding' is a loose reference to the old industry standard of fibreglass resin liquid. More modern options such as Acragel, Devcon and others are more popular in the gun trade now.

The inletted under-surfaces of a rifle action must be mated as closely as humanly possible to the stock so that when the action screws are tightened down there should be no unwanted bending or torsional stress exerted on the action. Before the advent of fibreglass bedding it was a matter of pride for custom stockers to be able to inlet an action to a near 100% perfect contact using chisels, scrapers, and careful hand-fitting. Initially there was resistance (as there often is) to these new-fangled techniques, but over time virtually all gunsmiths or stock makers now use some form of glass bedding for their custom stocking or accuracy improvement work.

Factory guns have caught onto the benefits of glass bedding for rifles and shotguns, the main ones being reduced hand-fitting time and less chance of stocks cracking under recoil.



Metalwork bought down into place, secured very lightly with surgical tubing, checked for correct alignment and then allowed to set overnight. Bedding of pillars must be done at the same time as the rest of the action for a perfect fit. Attempting to do a bedding job in two or three stages is a recipe for complications.

Unfortunately some of these bedding attempts are limited to a bit of hot-glue-poo around the recoil lug area before the stock is screwed onto the action at the assembly line. In some cases the stocks are glass bedded with a 'dummy action' – which can often be slightly dimensionally different to the actual action that is finally fitted to the stock. In a production scenario, it is rare for a true custom bedding job to be performed.

As mentioned in my initial article in the Nov/Dec 2011 issue, a lot of factory rifle actions are slightly warped due to heat treating and machining. This can vary a lot from action to action, even with the same make and model. The outside surface of many factory actions is often not concentric with its central axis and not perfectly straight either. This usually renders most of the 'machined bedding block' stocks redundant. If you don't at least 'skim-bed' these, then the



Allow to set. Magazine box must have clearance and should never be pinched tight. Barrel completed free floated on this model (sported barrel), and set at 'half depth' in the stock.



Metalwork cleaned down, excess compound trimmed off and stock tidied up. Bottom of pillars milled down to correct final height.



Underside completed. Edges de-burred and final check over for correct fit and finish.



Action screws removed and metalwork carefully withdrawn from stock. Note no air pockets and a clean professional looking finish. The right release agent will assist greatly in achieving this. Top edge of compound can be stained to match walnut stocks if desired, and any exposed wood sealed. On fibreglass stocks the non-action-contact areas may need to be painted.



Pillars are drilled out with purpose-made piloted drill – this is to ensure adequate action screw shaft clearance. Shown are drills for 6mm or 1/4" pillar holes for action screw shaft clearance (action screws much not act as a 'recoil lug').

The inletted under-surfaces of a rifle action must be mated as closely as humanly possible to the stock so that when the action screws are tightened down there should be no unwanted bending or torsional stress exerted on the action

action can be stressed when tightening down the action screws and pulling it into line with the bedding block. But we can discuss these matters further at a later date.

Basically, the whole purpose of doing a custom bedding job is to ensure a stress-free, perfectly mated fit of the action to the stock. Bear in mind though that once performed that bedding job will be perfect for that particular action/stock combination only. If you decide to fit another action into the same stock, you will probably have to completely re-bed it to be assured of 100% correct fit and function.

The incorporation of metal 'pillars' into the stock is mainly used on wooden stocks in order to prevent unwanted crushing or compression of the stock's inletted areas. It is also a good idea to use them on laminated or fibreglass type stocks as well. Once compromised, a compressed bedding job can cause an action to be stressed. A stressed action may interfere with consistent locking lug engagement and cause erratic grouping or 'fliers', as well as possible stressing of the scope-mounting set-up as well. On some custom actions (or a trued factory action with very close fitting bolt shaft sleeves), a stressed or poorly bedded action may even cause the bolt to bind when the action screws are tightened.

The main reason for epoxy bedding of rifle stocks is to help in eliminating one potential source of accuracy problems from the equation. It must be kept in mind that a custom bedding job will NOT fix the following problems, which may or may not also exist:

- Poor barrel-receiver threaded joint/lockup.
- Machining errors or other action problems.
- A bad barrel.
- Poor load development, components, or ammo selection.
- Shooter or scope errors.

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