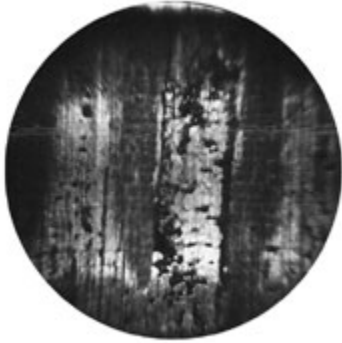


## Borescopes

### Barrel secrets revealed - by SSAA Technical Advisor Brendan Atkinson



It is a well-known fact that accuracy seekers, benchrest shooters in particular, tend to collect all manner of gadgets to check parts of their shooting equipment.

There are measuring tools and gauges, seating depth checkers, concentricity checkers, primer pocket depth checkers, etc, etc. But the most important area, the inside of your barrel, used to be checked solely by peering up the tube from either end and trying to see any problem spots. There is a valuable tool that will actually let you examine the inside of any barrel from .224 upwards, but be prepared...you might not like what you see.

When I was in Phoenix in 1997, I had the opportunity to have a brief look through one of these little gadgets and I was impressed enough to want to do a product review at a later date. When the opportunity came along a few years later, what could I say?

Manufactured by the Gradient Lens Corporation of Rochester, New York, USA, the Hawkeye is a very high quality optical instrument. Not unlike a medical endoscope, it is really a microscope for looking at the inside of things - in this case, barrel bores.

Without becoming too technical, light travels through a precision optical tube down to the surface of the bore and the image is reflected back up to the eyepiece.

The whole unit comes packed in a very sturdy and professional looking foam-filled case.

It must be emphasised that this is a precision instrument and could be easily damaged by ham-fisted use or careless storage. The light source or 'illuminator' looks very similar to a Mini Mag-Lite torch and is screwed into the eyepiece body.

The optical tube is available in three lengths - 7", 12" or 17" - for whatever application you wish to put it to. I chose the 17" version as I wanted to examine rifle barrels. This is a focusing borescope and will give a straight on view with a 40-degree field. I also have a 90-degree adaptor that slides over the top of the original tube and allows examination of the bore from as close as one millimetre. This tube will turn through 360 degrees in any one spot so nothing escapes the eye.

As soon as I assembled the Hawkeye, I had all of my benchrest barrels lined up on the breakfast bar ready for inspection. It is a good idea to have the barrel slanting down at about 45 degrees, as it makes for a more comfortable position. It is also a good idea to give the inside of the barrel a good clean before inspection, so that any blemishes will be able to be identified. Don't go like a bull at a gate with this device because if you bend the tube, the whole thing is ruined. Besides, we want a slow and careful inspection.

Remember my comment about those things you might not want to see? Well, nothing can hide from this thing. The amount of erosion in the throat of a well-used barrel is just amazing. What is even more remarkable is the fact that with the naked eye, even up close with the barrel out of the gun, you cannot see the damage. Yes, folks, it really does look like the surface of a dried up lake bed and the number of cracks in the steel just in front of the chamber is frightening. This is more evident with chrome moly barrels as opposed to stainless. I carefully examined my benchrest barrels and was then able to mark on them how far the erosion had progressed up the barrel. This determines whether a re-chamber is worthwhile or not. It is a good idea to put the scope into the barrel from the muzzle end and check how good the rifling is at that end. It is usually much better than the chamber end but may have more copper fouling.

To obtain a different perspective for this review, I took the Hawkeye up to Para Range in South Australia one Sunday and invited shooters to have a look at their bores. Well...there were a few glum faces afterwards. Some of the chrome moly bores were just awful. Evidence of chipped lands, pitting as a result of leaving ammonia-based solvents in for far too long, manufacturing marks and cleaning rod damage was more than some could bear. Like I said, nothing can hide from the Hawkeye.

One remarkable observation was the damage done to rimfire barrels. Merrill Martin in the USA has written articles about the 'six o'clock damage' done to rimfires. What it is, is this: When you fire a rimfire, there is always a trail of debris down the bore at the bottom or six o'clock position. Have a look at yours sometime. Throughout time and many rounds, the action of the lead bullets passing over this debris damages the barrel. I was handed a stainless match rimfire barrel, out of the action, that had done about 4000 rounds. The bore was perfect for most of its diameter, but I did not have to be told where the six o'clock position was. There was a distinct frosted appearance for the length of the barrel. That barrel is still a good shooter, but it was interesting to be able to view this phenomenon. I checked several other rimfire barrels and the same thing was evident.

Many years ago, ammunition manufacturers used to print the velocities of their loads on the packet and some rather optimistic claims were made. About the time when the shooters could buy their own chronographs, these claims were no longer printed (just as well in some cases).

With the advent of an affordable borescope, I wonder if some of the claims made by manufacturers concerning the smoothness and high quality of their bores might have to be readdressed. I saw some factory barrels that were very ordinary and one in particular that was just appalling - reamer marks and scratches everywhere and, yes, that barrel was noted for fouling up quickly.

About now you may be wondering how you can get your hands on one of these most desirable items. Believe me, after you have had a look through one, you will want to own one.

Test sample supplied by Gradient Lens Corporation, 207 Tremont Street, Rochester NY, USA 14608.

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