

Ripley Rifles Pioneers and Innovators

The true History of how the Pneumatic Rifle was born.

It was 1959, my father Joe Wilkins built a workshop located in Pinxton, Derbyshire.

A maintenance fitter by trade, working for the National Coal Board.

Being a countryman at heart, Joe was frequently to be found out hunting, generally with his air rifle, a Webley MkIII. However anything that fired some sort of projectile, catapults, crossbows, longbows etc. could be found at some time in his hands.

As 1968 arrived Joe bought a Benjamin pump up rifle from a gun shop in Carlton Hill, Nottingham, Joe was very impressed with the Benjamin rifle. In his opinion the only recognisable downside was having to pump up the rifle for every shot. Joe's engineering talent recognised a challenge, what's better than having the cylinder pre-charged with air which negated the issue of pumping the rifle to pressurise the cylinder for each and every shot.

Thinking laterally he thought about the issue for a while. Joe sourced a length of hydraulic tubing of 1 inch inside diameter and 1/8th inch wall thickness, with a Safe Working Pressure (SWP) of 6000 lbs per square inch (413 BAR). This was the first prototype tube used, although laughably some sources are to this day suggesting that scaffold tubing was utilised.

Now the issue Joe encountered was how to pressurise the hydraulic tube (cylinder) to the required pressure. Starting with the stirrup pump of his own design, and after a lot of hard work pumping the achieved pressure was a modest 1200 lbs per square inch (psi) or 83 BAR.

It was at this time that I helped my father develop a two stage pump utilising a double action push pull arrangement with a four foot lever. The first stage was 1½ inch diameter progressing down to ¾ inch diameter second stage. This was still very hard work (as are today's hand pumps used for air rifle cylinder filling, probably more efficient than our prototype) but we managed a credible 4000 psi (275 BAR).

We recognised that this method while effective, it was hard work. During discussions we hit upon the idea of utilising a fridge compressor for the first stage 1½ inch piston developing 500 psi (34 BAR). Eventually after further experimentation just the ¾ inch stage was used reducing the load on the compressor and successfully achieved 6000 psi (413 BAR).

Having proved the concept with the test bed prototype hydraulic tube was an elegant achievable, reproducible and viable solution to the storage of compressed air for our PCP air rifle we continued to develop and upgrade our storage device.

Safety being paramount we explored alternative tubing in order to increase the safety factor, high pressure stainless steel tube was found that fulfilled our requirements, this was sourced and purchased, as this also would enhance the aesthetics of any further finished product. This tube was screw cut at both ends to facilitate assembly of devices inside the tube and a repeatable method of sealing what now would become our rifle cylinder.

Now we had a viable solution for compressed air storage we turned to other issues. There was now further pioneering and investigative research work needed to develop and produce an efficient way of releasing air in a repeatable, stable way from our now perfected cylinder.

Experimenting with various types of engineering plastics (these were plastics that had proved effective hopper liners at the Coal Board) for the inlet and exhaust valves, initially all types of plastics failed at high pressure. This was proving difficult to solve with the polymer choices available to us.

Around this time my father was involved in testing new materials from the Coal Board and a new type of polymer was giving good results in their applications. This material was Polypropylene.

We experimented with this material and had great results, machined into valve parts it withstood 6000psi, the exhaust valve utilised machined polypropylene encapsulated in a stainless steel head. This design is still used in many companies rifles today!

To further satisfy our quest for safety I hydrostatically tested a stainless steel cylinder as detailed above to 5 ½ tonnes per square inch (12320psi or 849bar).

These pressures are not approached in today's air rifles.

In those development years from 1968 to 1970 my father and I were at the forefront of cutting edge designs for PCP air rifles, indeed at that time other gun companies were still using spring technology in their latest products!

Joe Wilkins, my father, was well versed in high pressure vessels, he was a service engineer dealing with compressors running at 20,000psi (1360bar) that were used in coal excavation, this method was in preference to explosives.

In 1970 my father and I built a complete stainless steel air rifle with a 27 inch barrel, true pioneering work at the edge of PCP air rifle technology, this rifle achieved 150 shots per cylinder fill.

Continuing to develop our innovative technology, in 1971 Joe manufactured a 30 shot repeating air rifle that was christened and still recognised today as a major leap forward in technology, the PREDATOR was born.

Using the above detailed technology Joe built many stainless steel pistols and rifles.

In 1976 we were approached by a prospective customer named Donald Lounds, subsequently Donald purchased from us one rifle and one pistol. Shortly after Donald Lounds invited us to his farm near Ashbourne for a day's shooting. Maybe at the time or shortly after Donald asked if I could design a tranquiliser gun using our proven technology.

In response to this challenge I developed a dart with a small internal cylinder that could convey the required tranquiliser drug to its target. This worked perfectly and was a complete success. Darts at that time used an explosive charge as a propellant, this was expensive and not without contamination. Following on Donald commissioned me to build a dart air gun which I did and was again successful.

Donald Lounds and I patented this design.

The MOD approached me at this time to design an air gun to propel small explosive missiles, much like a small hand held mortar. Another successful project.

We are now at 1977 and we set up a company, we used a pre-registered company name, that company was Daystate.

In 1978 due to personal circumstances and the need for considerable investment to get the company up and running for production we parted company with Donald and Daystate. Our designs

were utilised by Daystate and modified for mass production and assembly.

My father Joe continued to manufacture bespoke air rifles for a broad spectrum of customers until his illness in 1996. Joe sadly passed away in 2001 at the age of 75.

On my move to Ripley, Derbyshire in 1985 I built a workshop and commenced manufacturing air rifles, concentrating initially on PCP Field Target Rifles progressively Ar3, Ar4, Ar5 and Ar5s. These rifles won the World Championships 6 times, 3 consecutively.

Requests came in for a multi shot rifle for hunting, a self indexing nine shot rifle was developed, the XL9, and proved an instant success.

Ripley Rifles continues to this day, a British company producing handmade bespoke, PCP air rifles, made to order. The outstanding design covers many PCP air rifle scenarios both target and hunting. Our customers can base their specific requirements on our technology and tailor to their needs, barrel length, cylinder length, finish, stock, silenced or air stripper can all be accommodated to customers wishes.

Many current air rifle brand names have assembly lines of bought out parts sourced around the globe.

Ripley Rifles are handmade, built in house in the UK, to exacting standards at a price point that is competitive to mass produced products.