

★ ALL ABOUT AIRGUNS ★

NEWSLETTER

ISSUE 01



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If you ever wondered where some of the older rifles like *Gecados* came from, or what happened to the brand, you have to read this.

*** Propulsion and Cocking methods ***

The guys who have been using air rifles for a while would know this, but a lot of "new" guys don't. Well if you are new to airguns, this should help to bring you up to speed.

*** Classics: Diana 60 ***

The first recoilless spring rifle.

*** Velocity and Pellets ***

It seems fantastic that an air rifle can launch a pellet faster than 1,200 feet per second (ft/s). Just because it's possible to launch a pellet faster than 1,200 (ft/s) it doesn't mean that it's the ideal thing to do... In fact, it isn't.

*** New and recommended products ***

Have a look at some of the new stuff on the market.

Diana: something old, something new.

Around 1892, Mayer presented his first air pistol, which showed a great resemblance to a Gaggenu patent taken on the Haviland & Gunn patent design of 1872. Composed chiefly of a single piece of cast iron, it housed its mainspring in the grip and was marked only with the cast letters "MGR". The MGR trademark, representing Mayer & Grammelspacher in Rastatt, apparently was first used with the MG over the R and later was combined, at least in printed materials, with a target and a smiling boy's face.



It is not known exactly when the famous Diana trademark, showing the hunting goddess Diana holding her air rifle aloft while standing on her discarded bow and arrows, was first used.



One of Mayer's many patents were issued in 1901 for a spring-loaded wedge mechanism to serve as a detent lock on barrel-cocking airguns. This mechanism, which has appeared on millions of airguns, is still in common use. Production of a number of models of airguns and toy guns developed rapidly during the 1890 to 1910 period, but, again, wars have destroyed most of the records. The toy guns, shooting corks and suction cup darts, were produced under the trademark "Eureka."

In the "roaring twenties" the demand of military air rifle trainers was replaced by airgun shooting as a new family game and leisure-time sport. The quality and performance of these first Diana "adult air rifles," like the models 25 and 27, was increased. In 1930, a Model 25 was offered for 25 Marks, while the extra high quality LG 58 was available for 90 Marks. A tin of the newly invented "diabolo" pellets sold for 3.40 Marks. Unfortunately, the catalogs of that period did not mention velocities of the airguns and most of the specimens in collections are not capable of their original power, so we don't know the potential of those "adult airguns."

By 1933, the emerging NAZI government had had a bad effect on DIANAWERK. Decreasing sales forced withdrawal from the Leipzig trade fair and export to 28 countries was forbidden for political reasons. By 1936, Rastatt had become a center for housing troops and in 1940 all civilian production was halted when the company was forced to produce gun parts for the Mauser factory in Oberndorf (Dianawerk's military production was marked with the secret code "Ixr"). This military activity resulted in extremely heavy bombing of Rastatt by the British. In 1945, the French occupied the area and DIANAWERK was completely dismantled. As production of air rifles was then subject to a death penalty, the French were glad, to sell, at a donative price (in the spirit of war reparations), all of the company, including its machinery, old parts, and Diana trademark, to London-based Millard Bros. Ltd. With the abbreviated name "Milbro," the operation was moved to Motherwell in Scotland. The first Scottish "Dianas" were produced in 1949.

The Allied Control Council again allowed production of airguns in 1950. By September, the Mayers began production of airguns in their old factory in Rastatt. The loss of their world-famous "Diana" trademark hit them very hard. Within Germany the air rifles were sold as "**Original.**"

To commonwealth countries Diana exported "**Gecado**" models; "**Condor**," "**Firebird**," or "**Original Diana**" was used for Dianawerk guns in England. Many large foreign companies contracted for Diana models, or special variations including different cosmetics and features, under the names of **Winchester, Hy-Score, Beeman, Peerless, Geco, RWS**, etc.



By 1982, despite the advantage of the trademark, Milbro, using Dianawerk's old machinery and materials, had gone out of business. Dianawerk repurchased their trademark in 1984.



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Different Propulsion Methods

Air rifles can be broken into three main categories depending upon the power plant they employ to launch a projectile downrange: CO2, Pneumatic and Spring Piston.

CO2 Powered

CO2 powered air rifles come in many different shapes and sizes, but one thing they all have in common is that CO2 canisters power them all - the most common being the small, 12-gram cartridge (however there are other sizes). The main advantages of CO2 powered guns are that they are easy to use, guns can be crafted in almost any shape/size with few limitations, and no pumping is required. However, CO2 does have its disadvantages. CO2 powered guns are limited in power and are more expensive to shoot on a per shot basis due to the cost of the CO2 canisters. However, the biggest disadvantage for the outdoor shooter/hunter is the fluctuation of CO2 pressure in relation to ambient air temperature. At room temperature, a CO2 canister roughly produces between 900-1000psi, but as the temperature increases or decreases so does the pressure - this change in pressure results in vertical stringing of shots and marginal shot-to-shot accuracy.

Examples: QB78, Daisy 008



Pneumatic

Pneumatic air rifles essentially are any type of air rifle that uses compressed air to propel a pellet. There are two main types of pneumatics: pump-up and pre-charged.

The pump-up varieties are the type most American shooters are familiar with. However, they are not that common in South Africa. Pump-up air rifles compress air with a built-in pumping lever, generally located in or around the forearm section of the gun. Pump-up guns are moderately powerful (and the power can be adjusted by the amount of pumps per shot), and have the advantage of not using costly CO2 cartridges to propel a pellet. The big disadvantage of the pump-up gun is the time and effort needed to charge the gun for each shot.

Examples: Daisy, HW75, HW40



Pre-Charged Pneumatics (PCP)

Pre-charged pneumatics are interesting guns - generally operating similar to pump-up pneumatics, without the hassle of pumping them up after every shot. PCP's use a large air reservoir of highly pressurized air (up to 3,000 psi), which results in dozens of shots before needing to be recharged. Recharging is a simple matter, either with a high-pressure hand pump or a SCUBA tank. These guns have many advantages; they can be extremely powerful (the most powerful air guns made are PCP's), are normally very accurate and most are made of high-quality parts and craftsmanship. The only real downside to most pre-charged air guns is the cost of the gun itself and the initial investment in either a pump or SCUBA tank.

Examples: Air Arms EVO2, HW100TK



Spring Piston

Spring piston airguns are probably the most common air guns. They utilize a strong spring and air piston to propel a pellet down range. The operation is actually very simple; for each shot the spring is retracted, and when fired, the spring pushes the piston forward, propelling a charge of air into the barrel. These types of air rifles are very consistent on a shot-to-shot basis, can be extremely accurate and are often very powerful. While the spring piston is the propulsion method, there are several types of cocking mechanisms (discussed later), such as barrel-cocking, side-cocking and underlever. All methods essentially do the same job, with a different placement of the lever.

Examples barrel-cocking: Norica Marvic Gold, Diana 350 Magnum



Examples side-cocking: Diana Model 54, Diana Model 48B



Examples underlever: Air Arms TX200, Weihrauch HW97KL



Breakbarrel vs. Underlever vs. Sidelever

Breakbarrels - the good points

Breakbarrels are the most common type of spring-piston airgun. They use the barrel as a lever to cock the powerful mainspring. Because the breech is exposed when they break open, they are the easiest of all airguns to load - both rifle and pistol. They can also be lighter weight than the underlever or sidelever guns because they don't need a separate cocking mechanism (though there are plenty of breakbarrels that are very heavy, such as the HW90). When it comes time to take them apart, breakbarrels are simpler mechanisms, so they're easier to repair, though they do vary in complexity by brand and model. And, finally, a breakbarrel is quite easy to clean because of the good access to the barrel.

Breakbarrels - the bad points

Breakbarrels always require the most technique to shoot accurately. They are hold-sensitive, and although this differs by model, I can say universally that all breakbarrels are more difficult to shoot accurately than any sidelever or underlever. On cheap breakbarrels you sometimes get barrel "droop," which means the barrel points downward. Used with open sight, this hardly matters, as both the front and rear sights are mounted on the barrel, but when you scope the gun it becomes a problem. Also, when selecting a scope, you have to be careful that the scope isn't so long that it interferes with the barrel being broken open.

Sidelevers - the good points

Sidelevers have a separate cocking lever on the side of the gun. They have a fixed barrel that many feel is more accurate than a breakbarrel. Sidelevers can also accept longer scopes because the barrel doesn't tip up and get in the way.

Sidelevers - the bad points

They have sliding compression chambers that can amputate fingertips if the sear releases while the gun is being loaded. That is a big problem on some cheap Chinese sidelevers. Diana sidelevers have always had proper safety features, so they're not a danger. And, finally, sidelevers have to include the weight of the extra lever, so they're usually heavier than breakbarrels.

Underlevers - the good points

Underlevers tend to be the easiest of all spring guns to shoot accurately. The TX200 and both the HW77 and HW97 are underlevers with legendary accuracy. Unlike sidelevers, underlevers have no pronounced torque when they shoot. That's because the extra weight of the rifle hangs straight below the barrel as a counterweight. But, underlevers have the same sliding compression chamber with the same safety features as sidelevers, so long scopes are easier to mount.

Underlevers - the bad points

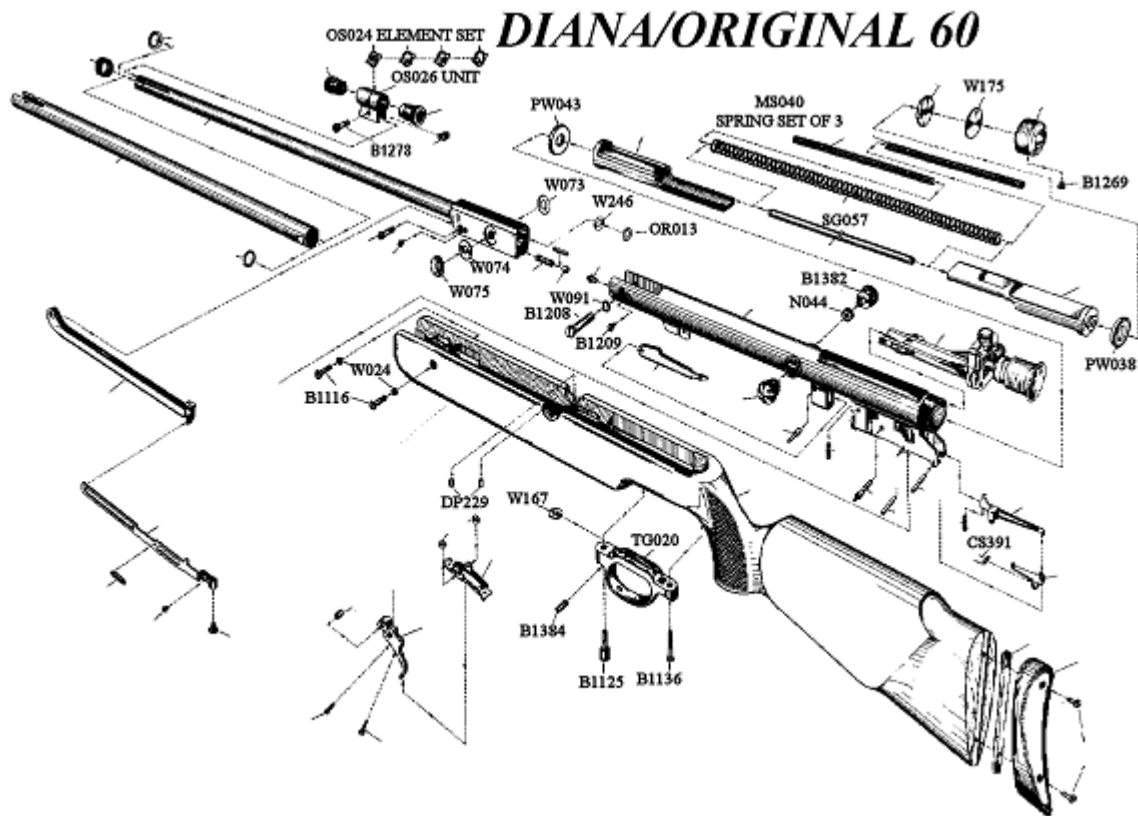
The sliding compression chamber is a safety risk, though a lot of underlevers have the proper safety features to prevent accidents. Some older rifles such as the Chinese B3 are very accident prone. Like sidelevers, underlevers are heavier because of the lever and attaching mechanisms.

A true classic... The Diana Model 60 target rifle.

I recently became the proud owner of one of these beauties. Although the power is lower than I would have expected (500ft/s with 8 grain pellets), I have never been as amazed by any airgun. Well, in all fairness, you don't need more power than that... after all, it was meant to be a 10m target rifle. There is no recoil and the trigger is brilliant. Over 10m, it is as accurate as any PCP rifle



Although DIANAWERK never became a major force in the growing market of match airgun production like Walther and Feinwerkbau, they had a major effect on that market. Kurt Giss, the chief designer in Rastatt, invented the double piston system at the end of 1950s. This design used two pistons, connected and synchronized by a gear rod. The forward piston compressed the air for pellet propulsion. The second piston moved backward and eliminated recoil. The introduction of recoilless airguns caused a revolution in the design of match airguns and established Germany as the leader in this field.



Velocity and Pellets

It seems fantastic that an air rifle can launch a pellet faster than 1,200 feet per second (ft/s), but some powerful rifles can. However, just because it's possible to do it doesn't mean that it's also desirable. In fact, it isn't. To understand why, you must understand how a modern pellet works.

Most top-quality pellets are made with a pinched waist - a so-called wasp waist. The correct term for this design is diabolo. The classic diabolo pellet has a pinched waist and a hollow skirt. The shape of the nose can be round, pointed, flat or anything else. The skirt can be thick or thin - long or short. All these variables affect the flight of the pellet somewhat, but the basic diabolo shape is what affects it the most.

A diabolo pellet is stabilized (prevented from tumbling) by the high air drag on its tail. A hollow skirt plus the pinched waist work together to produce this drag, plus a forward weight bias keeps the nose pointed in the right direction. Where a conventional rifle stabilizes the bullet by spinning it rapidly, a diabolo pellet will even be reasonably accurate in a smoothbore gun. It works exactly like badminton "birdie" and for the same reason - a high-drag skirt. Most modern pellet rifles and pistols are rifled which does cause the pellet to spin on its axis in flight, but the rate of spin is too slow to stabilize the pellet by itself. When the pellet leaves the muzzle it starts slowing down very rapidly.

If the pellet was shot at a speed above the sound barrier, it will also be destabilized by passing through the sonic pressure wave it created. The sound barrier varies, but it usually remains near 1,100 ft/s at sea level on a normal day. When a pellet goes faster than the sound barrier it makes a sharp crack, which is the "breaking" of the barrier. It will be less accurate than if it were shot from the same gun at 900 ft/s or less, where the sound barrier is not a problem. While 900 ft/s is quite a bit below 1,100 ft/s, there is great turbulence whenever the sonic barrier is approached. For this reason, knowledgeable shooters never allow their pellet rifles to shoot much faster than 900 ft/s. If they buy one of the super magnums that do shoot much faster, they use the heaviest pellets they can find to get the muzzle velocity back down.

On the low end of the scale, Olympic target airguns seldom shoot pellets as fast as 600 ft/s, yet they will outshoot almost any other pellet gun at short ranges. The target air pistols are nearly as fast as the target rifles - ranging from 450 ft/s to 580 ft/s. Both target rifles and pistols shoot wadcutter pellets with flat noses that cut perfect holes in target paper. Wadcutters are the least aerodynamic pellets on the market, but since the target guns don't shoot very fast, it doesn't matter.

Most hunters want a rifle that will shoot a large heavy pellet accurately at 750 to 900 ft/s. Most general shooters - the so-called plinkers - want to shoot at 600 to 900 ft/s with a rifle and 350 to 550 ft/s with a pistol. High velocity does not mean high quality or accuracy. In fact, it might mean just the opposite. The diabolo pellet is designed to give the greatest accuracy at speeds well below the sound barrier.

WHAT ABOUT SOLID PELLETS?

Okay - if hollow-tail wasp-waisted pellets aren't accurate above the sound barrier, what about solid lead "pellets?" Several brands of these interesting "pellets" are now available, but do they give the accuracy you require? Another name for these solid pellets is bullets, because that's exactly what they are. So what works for bullets also works for solid pellets.



The lack of a hollow skirt and a wasp waist means this pellet has to spin faster to stabilize in flight. That means it must be shot faster than a normal pellet. So, if you can get your solid pellets out the muzzle at 1,400 ft/s and faster, there may be an advantage. Less than that and you are tossing away accuracy.

Learn from the target shooters and stay well under the sound barrier. If you do shoot solid pellets, remember that they must go faster to stabilize because they don't have the high drag of the hollow tail. The spin imparted by the rifling must stabilize them.

SO, ARE THE SUPERFAST AIR RIFLES BAD?

Not at all! They're great - especially if you need extra power for hunting and long-range shooting. But use them correctly. Match their high power with heavy pellets so you get all the accuracy they have to offer. For example, a 350 Magnum will shoot over 1,100 ft/s in .177 caliber with light pellets. H&N Barracuda that weighs 10.6 grain will both slow the velocity down to somewhere in the 900 – 1000 ft/s region where the rifle can do its best.



CONCLUSION

Airgun quality does not come from velocity. It comes from accuracy, smooth operation, good design and quality control and other factors. Don't allow velocity alone to rule your airgun choices because if you do, you will miss most of what is good about this hobby.

New and recommended products

Turn any rifle and scope combo into a tactical night hunting unit.



This combination clamps to any 1" (25mm) scope tube, illuminating the target with both a Xenon white light and a bright red laser. The kit includes the flashlight, laser, mounts and batteries for both units. Constant on switch as well as pressure sensitive remote switch and cord included for both the laser and flashlight.

Battery Type and Number:

Laser: (3) 1.5 v LR44 button cell

Flashlight: (1) 3v lithium CR123A

Notes:

The Xenon bulb light illuminates up to 30 yards

The summer is almost over...

If you are living in the Western Cape you are bound to spend a lot of time indoors due to the rain that sometimes seem to fall for weeks without end.

It doesn't have to be that way... Get yourself a real military camo poncho. They provide ample body cover for those rainy seasons in South Africa.

They are also ideal to use for hunting when raining or simple just as a rain coat when need to. I have been using them myself and can tell you from own experience that it's well worth it.



Diana just added a few more models to their already very impressive product line.

If you are looking for more power and then some, then the Diana 350 Magnum is right up your alley. It boasts a tremendous 1100 fps velocity in .177 caliber, but unlike the notoriously bad Hatsan 125, the Diana is very accurate and excellent quality.

Up till now, we had to choose between the 350 Magnum, and the 350 Classic.



Diana 350 Magnum

Diana 350 Classic

Well not anymore !!!

The 350 Classic has been transformed into the 350 Panther and the Magnum is now available with a beautiful laminated beech stock.

The all weather, durable finish of the 350 Panther, combined with it's awesome power makes it ideal for hunting. Where as the stunning finish of Magnum L speaks for itself. It is not just a great rifle to shoot, it is a showpiece.



But the best is yet to come...

Diana took the 460 Magnum and 54 Airking, made some changes and came up with this!!!



It is called the Target Hunter. There are 2 models available. The model 470 (top) use the proven under lever mechanism and the model 56 (bottom) use Diana's very successful sidelever. As you can see from these pictures, these rifles look amazing, but apparently they shoot even better. Reportedly, they have almost no recoil and produce close to 19ft/lbs.

Unfortunately, due to the high price tag, it is highly unlikely that we'll see them in South African shops. However, if you must have one, they are available on special order. Contact The Airgun Shop (www.airgunshop.co.za) for more info.

Although it seems like we focused mainly on Diana rifles, it was not intentional. It just so happened that a lot of the interesting articles we came across, as well as the new rifles on the market were all from the same brand. Who knows, maybe we'll get more people to contribute some nice articles so we have a better variety.

So, if you feel like writing an article or review for us, type it up and mail it to us at info@all-about-airguns.co.za.

