Pazon
IGNITIONS WITH THE 7½ YEAR WARRANTY

Boyer Bransden Ignitions
Electrifying Performance

Pazon v Boyer

The Rotor

Mini Series Part 2 www.pazon.com

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Introduction

Isn't Pazon just a Boyer copy?

We are always being compared to Boyer Bransden.

Aren't you just a Boyer copy? people have asked countless times.
So in answer to the question we are writing a series of booklets to give you the chance to decide for yourself, and make an informed choice.

In making that informed choice, we can understand if you are saying to yourself "Isn't Pazon going to be biased towards their own products?"

So why should I bother to read.

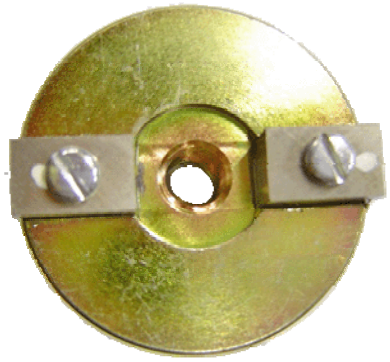
Well here's why.

We are not just going to tell you how wonderful we are when compared to Boyer. We could, but that that would not be playing the game fair. So what we are going to do is do a direct comparison, like for like, so you can decide for yourself, whether we are just a Boyer copy or not.

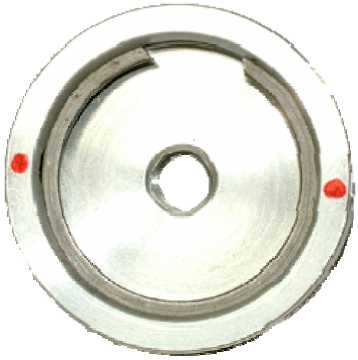
So here goes.
In part 1 we compared the trigger.
In this part we will look at the rotor.

The Rotor

Boyer Mk3 versus Pazon Sure Fire



Boyer-Bransden
Mk3 Rotor



Pazon Ignitions
Sure Fire Rotor

The Material

The Boyer rotor is made from mild steel, which is then electroplated, to protect against corrosion.

What does this mean to you?

Not much, except that if the plating should wear off, or if not all areas are protected, there is the possibility of the part becoming rusty. This is rare, but can happen.

The Material

The Pazon rotor is made from aluminium alloy.

What does this mean to you?

This material is very resistant to corrosion. It is also strong and lightweight.

The physical appearance of the machined material can be more pleasing to the eye, but this is down to personal preference.

Boyer-Bransden
Mk3 Rotor
close-up of a magnet

Magnets

The Boyer rotor uses rectangular permanent magnets, with a central hole for screw fixing to the steel rotor.

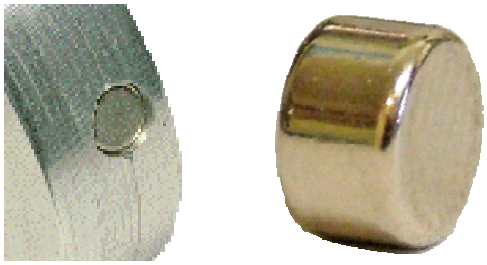
The magnets are formed under pressure by a casting process. The material is hard but brittle, so can chip or crack under stress.

Each magnet will typically hold the weight of the rotor: approximately 46 grams.

What does this mean to you?

The shape of these magnets means that there is a risk of contact between the corners of the magnets and the steel pole pieces on the trigger.

Fully magnetized these magnets do not have a great deal of strength when compared to some other types. This low strength means there is a lower amplitude pulse produced from the trigger. A smaller pulse from the trigger can then affect the ignition system's ability to produce sparks at low engine cranking speeds. In addition, if the magnetism should become reduced over time, the rotor will further lose its effectiveness to trigger the ignition system at low speeds.



Pazon Ignitions
Sure Fire Rotor
close-up of a magnet

Magnets

The Pazon rotor uses very small (5mm diameter x 3mm) disc permanent magnets. They are nickel plated, which not only gives a nice shiny appearance but also protects the magnet against damage and corrosion.

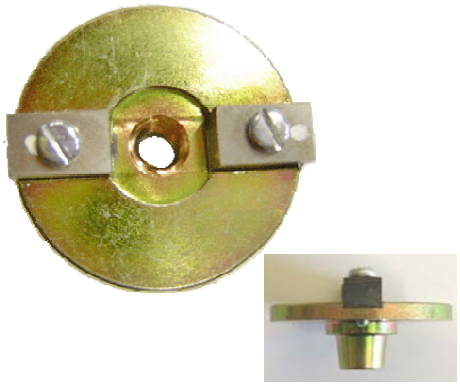
These magnets are very powerful, especially considering their size. Each magnet will typically hold a ferrous weight of over 130 grams.

What does this mean to you?

These magnets have a greater magnetic strength, so induce a greater amplitude pulse from the trigger at low rotor speeds. So easier starting is possible, as triggering occurs at lower engine cranking speeds.

Due to their small size, the magnetism is concentrated in a small area, so allowing for greater accuracy when setting the ignition static timing.

The magnets have a consistent strength, so giving very little variation between rotors.



Boyer-Bransden
Mk3 Rotor
magnet fixings

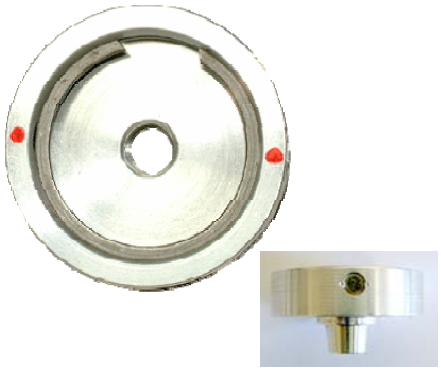
Magnet fixings

The Boyer rotor uses a combination of two methods to secure each of the magnets to the steel rotor: a layer of epoxy resin and a fixing screw. Each magnet sits into a slot. The hole in the magnet is larger than the screw thread to allow clearance. This means that there is some free radial movement of the magnets. Once the screw is tightened and the resin has cured the magnet positions are fixed.

What does this mean to you?

The rotor has no 'end-stops', so the magnets can be set in slightly different positions. This affects the air-gap between the magnets and the trigger pole pieces. With the magnet set more towards the centre, its effective strength is reduced; with it set further out there is an increased risk of contact between the magnet corners and the trigger pole pieces.

Use of screws to secure the magnets means the running position of the rotor is more critical. If the rotor is not fully seated in the taper, the screws can foul the solder joints on the back of the trigger, leading to misfiring of the ignition.



Pazon Ignitions
Sure Fire Rotor
magnet fixings

Magnet fixings

The Pazon rotor also uses a combination of two methods to secure the magnets to the rotor:
a steel snap ring is inserted into the bore, which once fitted will not move; the magnets are inserted into the side holes and secured by folding the metal over.

The snap ring does two things:

1. Sets the magnets at a consistent depth within the rotor, slightly submerged below the surface
2. The steel backing increases the magnetic field strength

What does this mean to you?

The magnets are set at a consistent depth, so giving both a consistent air-gap and effective strength. This means very little variation between rotors, so reliable results are assured.

The magnets are submerged and no screws are used, so there is no possibility of contact and so no damage can occur to either the rotor or the trigger.

The Rotor

Chapter Two

Boyer Micro-Digital/Power versus Pazon Smart Fire

Boyer-Bransden
Micro-Digital/Power Rotor

Does this look familiar?
Well it should...as with the trigger (discussed in part 1 of this series) it's the same rotor that is used in the Boyer Mk3 system.

So for full details on this rotor, refer to Chapter One on page 2.

The drawbacks of using an analogue rotor in a digital system include:

- There is a minimum triggering speed, which varies with magnet strengths and air-gaps
- The output of the trigger varies with speed, and is lower at cranking speeds
- Old technology mixed with new, i.e. analogue trigger mixed with digital micro-processor based ignition

What does this mean to you?

Use of an analogue rotor in a digital system can mean higher starting speeds, lower accuracy with ignition timing and no accurate static timing facility.

Pazon Smart Fire Rotor
(Timing Disc)

The Pazon rotor (also referred to as a timing disc) is made from steel, which is then zinc & colour passivated to protect against corrosion. Unlike the Sure Fire rotor, this cannot be made from aluminium, due to the design of the Smart Fire trigger.

The advantages of this rotor include:

- One piece construction
- No magnets
- The combination of this rotor and the digital trigger (discussed in part 1 of this series) produces a consistent output from the trigger, over a wide range of supply voltages, temperatures and air-gaps
- Unlike the analogue magnets and pickup coils, this design allows triggering at zero speed, so allows ignition firing at any speed required
- The rotor and trigger design are digital, allowing the use of a static timing light

Chapter Three

Conclusion

So in conclusion, is the Pazon a Boyer copy?
Both the Pazon and Boyer rotors do their job, but which one would you choose?

This is the second booklet in a series of five, taking an in-depth look at each of the main components that make up an ignition system.

For more information, visit www.pazon.com

About The Author

Dad was a sparky, working on planes and big brother was into electronics, so I would say it was in the blood.

I can still hear mum saying “Oh no, not again!“. For as long as I can remember, I’ve always taken things apart just to see how they work and put them back together again.

But the computer age was here, and the fascination for software engineering began. So there I was, heading down that career path.

So designing ignitions, following in the family tradition of electronics, who’d have thought it!

The road to classic bike passion

Designing ignitions for classic motor bikes became a passion for me after being employed in several jobs, from software engineer on microcontroller systems to working on radar and communications equipment for the Ministry Of Defence. I landed a job at Boyer Bransden back in 1990 and very quickly ended up involved in the software development on several ignition systems.

Sparks flew at first sight

This is where I met Debbie my wife and business partner, it was sparks at first sight (pardon the pun) where we soon rose to director level, but felt classic bike owners deserved a better product and we could not achieve this at Boyer Bransden. So in 2004 we went out on our own.

Taking the big leap

Taking this leap seemed second nature to us and we've never looked back. Andy now produces ignitions systems on the cutting edge of technology, as bikers deserve the best. These classic bikes are treasures and should be looked upon as such, so keeping them on the road gives us a great sense of achievement.

The big move

This is the next big adventure for Pazon Ignitions, moving from the UK to the other side of the world: New Zealand. This move has allowed us the freedom to follow our dreams, to grow Pazon into the kind of company that every classic bike rider deserves.

Feedback

If you have any feedback or any questions
please email or call Pazon Ignitions.
No matter is too small.
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