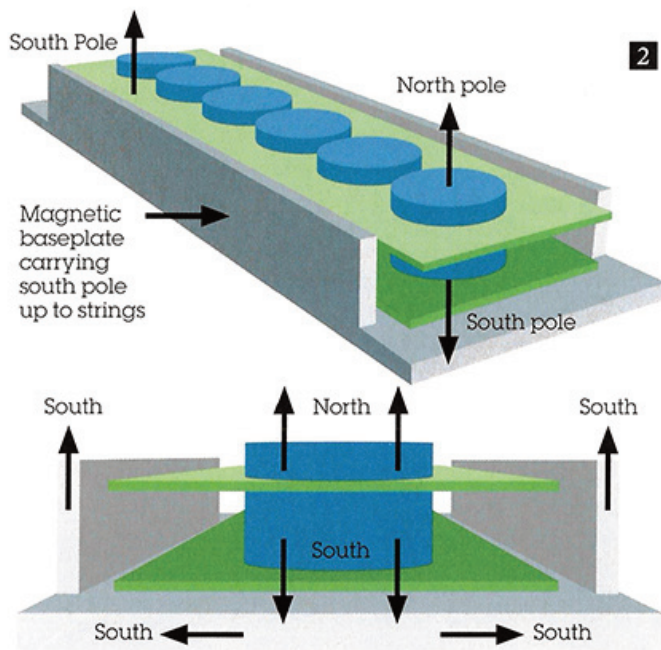
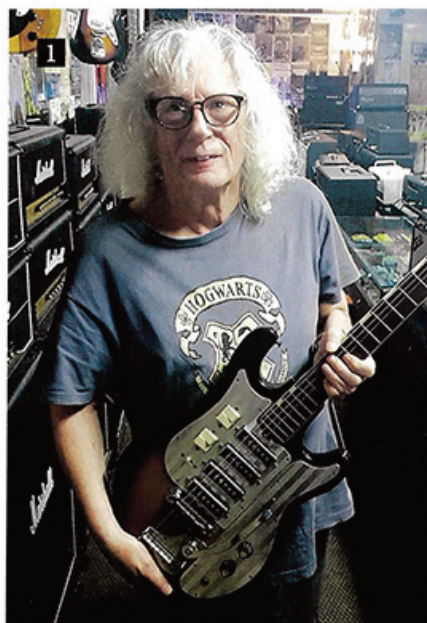


Forgotten Gems

Our obsession with PAF humbuckers and Fender single coils means many pickup designs from the 50s and 60s have long been lost

Words Dave Burrluck



1. Alan Entwistle is the designer and pickup expert behind the Rapier brand, and a veteran of the guitar industry
2. These two schematics shows the 'folding field' concept of the Saffire 6's Astrosonic single coils. Alan Entwistle explains: "The central magnet (blue cylinder) has its north pole facing the strings, while its south pole rests on the steel magnetic baseplate. The south magnetic field is then carried around the baseplate to its edges (which are also the pickup's locating lugs). This whole north-south field then surrounds and saturates the pickup's coil (not pictured) – thus we have a 'folding field'"

While the Rapier 22's mini-humbuckers are a pretty standard humbucking design, designer Alan Entwistle shares some additional info with us: "Each coil uses a steel blade polepiece and a ceramic bar magnet, and they're wound with 44 AWG wire." Meanwhile, the Saffire's Astrosonic single coils are "based on the earliest version of the Burns Tri-Sonic pickup, which would have been around 1959/1960," says Alan.

"They used six Alnico magnets – they called them 'Alcamax' but it's the same difference – but it was a nightmare to produce," he adds. "I think [Burns] went on making them for a few years and then when they went on to produce models such as the short-scale Jazz Guitar [which was in production from 1962 to '65] they thought, 'Let's make a simpler version.' This was the bar magnet version, which was always considered as a 'lesser' product. In actual fact, that was the one Brian May used [on the Red Special] and that was it – end of story!"

"These types of pickups utilise what I call a 'folding field' concept. The cylindrical magnets are mounted on a magnetic baseplate so that one polarity is facing the

strings directly, while its opposite polarity is in direct contact with the baseplate, which, being magnetic, then carries the field completely around the coils. It also ends up sensing the strings, but to a lesser degree than the Alnico polepiece head. That's why you have a pickup that is slightly out of phase with itself, and that's how you get that somewhat nasal, singing quality

"The pickup is slightly out of phase with itself [so] you get a nasal, singing quality" Alan Entwistle

from this type of pickup. Many people tend to think that the Tri-Sonic sound comes from its bobbin-less construction, but this is really somewhat erroneous because such a coil is not quite as efficient as a bobbin-wound coil. The magnetic baseplate is the really crucial factor here.

"Burns did not invent the 'folding field' concept," Alan continues. "It is evident on some 'dog-ear' P-90s and also some

Supro and Framus pickups from the 1950s. It's even present on the earliest Watkins Rapiers from around 1958, but these have a really unusual magnetic system. The keeper plate on the Fender Jaguar pickup is a similar idea, but it has a large hole in the base of the keeper to reduce the magnetic effect a little more – [the magnets] don't actually sit on the plate. Perhaps they tried it as a straight plate and thought it sounded a little too nasal. I don't know. It's an excellent pickup either way.

"A lot of people have suggested that some of these earlier pickup designs were a kind of accident, but I don't think so. I mean, why was the Burns pickup called a Tri-Sonic? I'm not sure these people have received enough credit."

Today, of course, these 'antique' designs have to be made in Eastern Asia to achieve the price point. "It's a factory I use up in North Eastern China, near Qingdao," says Alan. "It's a fairly small factory actually, but, honestly, I've tried many of the main pickup companies and these were the only ones who keep to the specs I give them. That even includes the amount of waxing [potting] I do. Unless I'm doing a high-output pickup, I don't use a vacuum wax



3. Rapier's first solidbody, which was released in 2022, focuses on the original three-pickup Watkins Rapier 33 from the early 60s

4. The Saffire 6 and 12 are the first of the new repros to feature these Astrosonic single coils as opposed to the Entwhistle EWR64 mini-humbuckers of the 33 and 22 models



process; I use a higher viscosity wax that is slightly microphonic. A pickup is only as good as the specs you give to them."

Alan notes that the original Sapphire models never had Burns Tri-Sonics on them: "They had a pickup that was similar to the [original] Rapier 33's but was internally different. I just thought something 'Tri-Sonic-ish' would work and look really right."

The initial Sapphire models didn't use Alan's ATN-5 design, either, which dates back to the mid-80s. Alan explains: "Basically, the ATN is a Varitone, but the specs are different. There's a coil in there that measures about 3kohms and there's a steel slug through that. The rotary switch is mounted direct to a board, and it's a series of resistors and capacitors – the resistors are mainly there to prevent it going 'click' as you change positions.

"The first position [fully clockwise] is a bypass," he continues. "It's quite subtle but does become more dramatic if you back off your volume control slightly. So if you select bridge and middle, and move the ATN back [anti-clockwise] one or two positions, it begins to sound like an electro-acoustic and can get very jangly – it really suits the 12-string Saffire, too!" **G**