

No 1 in the London Guitar Academy series 'Ten famous guitarists from London'

Brian May

by Terry Relph-Knight

Brian Harold May (born 19/07/47 in Hampton, Middlesex) is one of the most famous guitarists in the world, having played with the massively successful band "Queen" for the majority of his career. He is of particular interest to guitarists because he has gained this success with a distinctive sound forged from a small number of clearly identifiable components, two of which are home made.

These components are: the Red Special guitar, a booster unit (originally a Dallas RangeMaster), the Deacy amplifier, the VOX AC30 guitar amplifier and two delay pedals.

The Red Special

May has played the 'Red Special' guitar https://en.wikipedia.org/wiki/Red_Special also known as the 'fireplace' (the oak for the neck came from an old fireplace surround) or the 'old lady', almost exclusively for his entire career. He built the guitar, with the help of his father, over the span of two years starting in 1963, out of scraps of wood and odd bits of metal junk and says the guitar cost him about eight pounds to build. Today this particular home made guitar might be worth over half a million. An official version of the Red Special, the BMG Special, is available from Brian May Guitars <http://shop.brianmayguitars.co.uk/> for £649 as well as an authentic copy, the BMG Super for £2,950.



Brian May Guitar

The BMG Special shown with included gig bag. Image: Brian May Guitars

What makes the Red Special, special, is May's use of Burns Tri-Sonic pickups, along with a comprehensive switching system with a phase reversal slide switch for each pickup. Because of the 24 fret neck the three pickups are mounted quite close together, which also has an effect on the sound. A second slide switch on each pickup allows each pickup to be turned on or off, so all possible combinations are catered for. While most guitars using single coil pickups are parallel wired, May chose to wire the three pickups so any selection of two or three pickups connects them in series rather than in parallel. Series wiring produces a higher output. The Red Special makes all the arguments about 'tone wood' seem rather silly. The neck and fretboard are made from oak, not generally known as a guitar wood and the body is made from oak and block board with a thin mahogany skin back and front. The body is a semi hollow design as May wanted to be able to obtain controlled feedback, so there are air chambers concealed inside the body. Danelectro guitars use a similar construction of a light wood frame with a thin front and back skin.

There has been so much interest in this unique instrument over the years that there is even a book written exclusively about the guitar: Brian May's Red Special by Simon Bradley and Brian May <http://www.amazon.co.uk/Brian-Mays-Special-Simon-Bradley/dp/1780972768>.

Burns Tri-Sonic pickups

The Burns-Weill / Burns London guitar company was started in 1959 by Jim Burns as a home grown attempt to satisfy the market created by the American guitar makers. In 1959 American imports to the UK were restricted and it was almost impossible for UK guitarists to lay hands on a Fender Strat or a Gibson Les Paul, let alone pay for one.

Burns admitted that he knew little about pickup design and it would seem that he never even had the chance to look inside a Fender or a Gibson pickup. He didn't let that stop him and he came up with the idiosyncratic Burns Tri-Sonic pickups. These had a simple folded steel base, capped by a push-on, chrome plated brass cover. Inside this two piece case was an oval coil of thin copper wire (6,000 turns of 44 awg enamelled copper wire) which was completely self supporting. The wire was wound on a temporary core, the core was removed and the whole thing was then held together by wrapping it in an insulating cloth tape. This self supporting coil was laid inside the case, with a magnet placed in the middle.



Burns Tri-Sonic pickups

A set of modern Burns Tri-Sonic pickups. Image: Burns Guitars London

It seems a variety of magnets were used in these pickups. Some had a single ceramic bar magnet, some, two, end-to-end, bar magnets and some, six small round ceramic magnets with a hole in the middle.

Originally there was no potting so the pickups were very microphonic (May himself filled the insides of his Tri-Sonic pickups with epoxy to stop feedback). The air gap between the magnets and the coil, the small size of the magnets and the odd self supporting coil means that these pickups don't have a high output.

Crude and peculiar though they are, Brian May has used these pickups to create his trademark singing smooth sustain. The various Burns companies had a difficult time and Burns UK went out of business in 1977, but today the Burns brand has been reborn and you can buy new Burns Tri-Sonic pickups from Burns <http://www.burnsguitars.com/accessories.php>.

The current Burns company says that 'only its pickups are genuine' and made to the correct specification, describing all other Tri-Sonic pickups as 'unauthorised fakes'. However Fenton Weill pickups are available from Adeson Co. <http://www.adeson.co.uk>. In its most well known form, the Tri-Sonic pickup has six holes punched in the brass cover, backed by a black sheet of plastic, giving the appearance of pole-pieces, but Adeson can supply pickups in a range of cover styles, including covers without holes or with a slot.



Adeson Fenton Weill



Adeson Fenton Weill Pickup



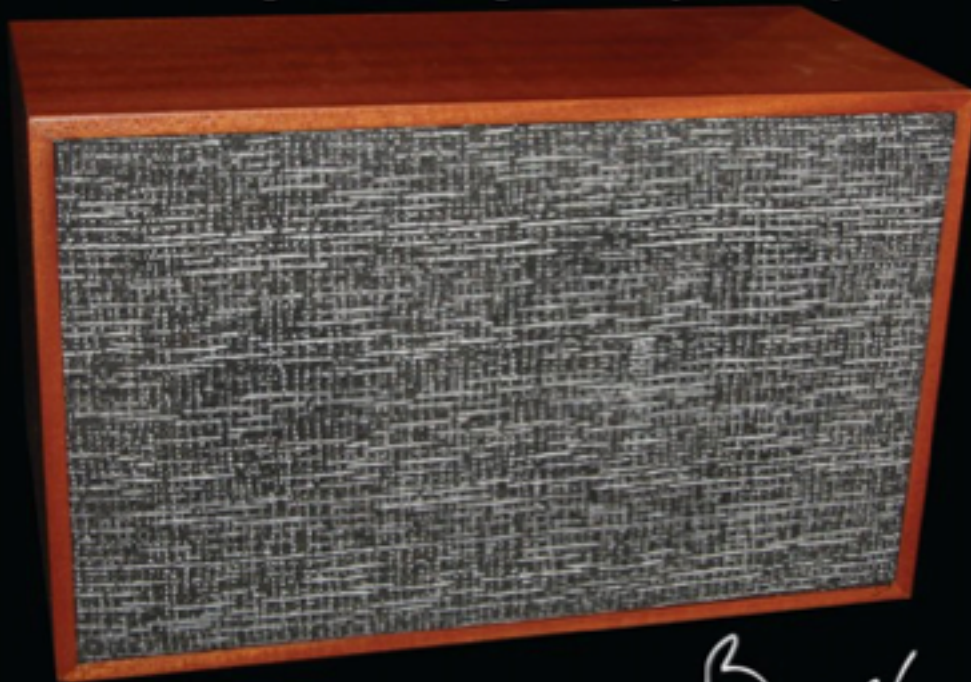
Adeson Fenton Weill Pickups

Adeson Fenton Weill pickups with three cover styles. Image: Adeson
Technically the Tri-Sonic pickups are single coil pickups, but they are wider than the Fender single coils and they have a magnetic steel baseplate that creates a wider, less focused, magnetic field than the Fender design. As a result they pickup over a longer portion of the guitars string and even though they are relatively low inductance pickups (1.9 H, 7Kohm) they create a 'warmer' sound than Fender single coils.

The Deacy Amp

Roger Deacy, Queens bass player, is also versed in electronics and in an equally thrifty move to May building his own guitar, rescued a small amplifier circuit from a skip. He thought it might make a useful practice amp and after he had installed it in a budget bookshelf loudspeaker, a rectangular, sapele veneered chipboard box with a cloth grille that he already had, he gave it to May. The Deacy features a low power (450mW) transformer coupled, solid-state amplifier using entirely germanium transistors, driving a 6 inch diameter twin cone woofer and a separate tweeter, both made by the German manufacturer Elac Electroacoustic. There are no controls, just an input jack and it is externally powered by a large 9V battery.

Brian May Deacy Amp Replica



Brian May ✦

Knight Audio Technologies Ltd

Brian May Deacy Amp Replica made by Knight Audio Technologies

The Brian May Deacy Amp Replica made by Knight Audio Technologies.

Image: Knight Audio Technologies Ltd.

May discovered this crude, patched together amplifier was a perfect match to his Burns pickups and treble booster, and that when it was overdriven, the combination of the low power germanium circuit and the unique break-up characteristics of the Elac speakers produced a smooth and creamy distortion. Even better, by using different pickup combinations it was possible to produce a range of unique and useful tones. The Deacy Amp now has pride of place in May's home studio and has been heard on most of Queen's recordings.



The VOX VBM1 amplifier

The VOX VBM1 amplifier. Image: VOX

A small run of Vox Deacy VBM1 amplifiers, inspired by the Deacy rather than replicas, were manufactured by Vox from 2003 to 2005. These didn't resemble the original at all as they had a white tolex covered cabinet with gold piping, a VOX logo and speaker cloth and a control panel with 4 jacks, 3 knobs and a power switch. An extremely accurate replica of the Deacy is available from Knight Audio Technologies <http://www.deacyamp.com> (as the author of this article I must state that although I have a similar name I have no connection with Knight Audio Technologies).

The VOX AC30s valve amplifier

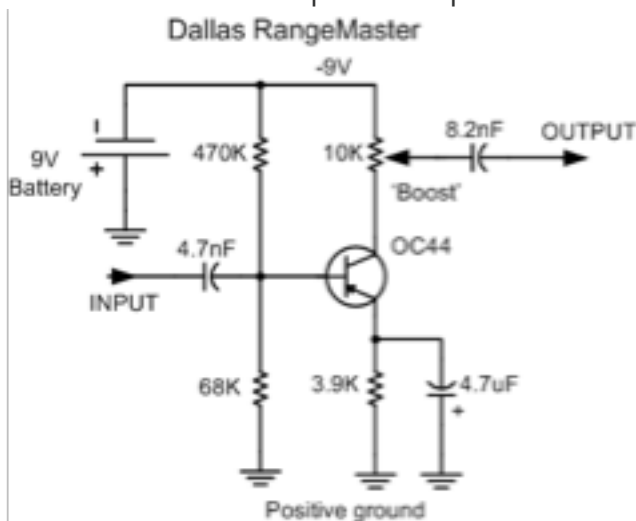
Vox AC30s were a very popular amplifier among British bands when May started out with Queen. They had been used by the Beatles and were known for their chiming clean tone, due to some extent to their quartet of EL84s output valves, a high gain power pentode with a T6 ½ mini glass envelope and a B9A noval base. Unlike the output valves used in American guitar amps, EL84s were readily available in the UK at the time the AC30 was developed. The AC30 isn't much more than two of its predecessor amps, the AC15, melded together.

All the valves used in British amplifiers were manufactured across Europe in their thousands and some of the top brands, such as Mullard and Brimar, had large factories in England. The Brimar brand <http://>

brimaruk.com/ has been recently resurrected and has a plan – The Great British Valve Project, to re-start valve manufacturing on a larger scale in the UK using some of the original factory equipment.

The Dallas RangeMaster Treble Booster

Vox AC30s are not known for an overdriven sound. Early on May used a crude single transistor booster called a Dallas RangeMaster. This battery powered external unit was originally marketed as a clean treble booster, but as a number of notable British guitarists had discovered, its additional gain was capable of overdriving many amps of the time and its attenuation of the low end helped keep the overdriven sound from getting muddy.



Circuit of the Dallas RangeMaster

Circuit of the Dallas RangeMaster. Image: T. Relph-Knight

The Dallas RangeMaster uses a single germanium transistor configured as a common emitter gain stage. The input coupling capacitor is 0.0047uF and the input impedance of the amplifier is only around 30K ohm. The small value of the input coupling capacitor means that low frequencies are attenuated before they reach the input. As a result only the highs are amplified and in this sense the circuit may be regarded as a treble booster. However the low input impedance of the circuit actually damps the highs from the pickups, so in practice, when connected directly to a guitar, the circuit acts more like a mid boost peaking at around 1,500 Hz. Like many early pedal designs, if the RangeMaster is fed from another effects pedal that has a low output impedance output, its performance will change quite radically. When driven from a low impedance it will function as a treble boost.

It also appears that, with the original resistor values, the transistor is under biased and the RangeMaster goes into asymmetric clipping quite easily. In this sense it acts more like an overdrive pedal with some inherent

distortion. Building modern copies of the RangeMaster today is getting increasingly difficult as the supplies of fully functional NOS (New Old Stock) germanium transistors are rapidly diminishing.

As with many of the very early effects the RangeMaster has a positive ground, which means that if it is used in combination with modern effects, which are all negative ground, it must be run on batteries, rather than from a common power supply.

Australian Greg Fryer <http://www.fryerguitars.com/> has a long association with Brian May, having been one of the first luthiers to attempt making some authentic copies of Brian's Red Special guitar in 1996 - 1997. Fryer also makes a range of RangeMaster style 'treble boosters' and Brian uses these in place of the RangeMaster, which has long gone missing.

Strings and picks

Brian uses German made Optima Gold strings, which are long life, gold plated strings. Optima even developed the Brian May Signature strings especially for him, and he picks with a British sixpence coin. These are not the Victorian silver coins, but 'modern' coins made from nickel silver, discontinued in 1970 and are still readily available. His guitar tech says he spends a lot of time cleaning metal fragments from the coin picks off of May's guitars and that he has a large bag of replacement coins.

Playing technique

In the studio the guitar parts for Queen recordings are often layered for an almost orchestral sound. To achieve a layered effect when playing live May uses two delay pedals, with one set so the delay equals the beats per minute of the piece he is playing, and the second to twice that delay. For the P.A. the dry guitar signal is panned to the middle, with one delay to the left and one to the right. This might explain why he uses AC30s in multiples of three on stage, when he is using the delays each signal path can be routed to a different amplifier for left, centre and right, and each one miked up accordingly for the P.A.

Other interests

May campaigns on behalf of the preservation of British wildlife including Badgers and Hedgehogs and is a knowledgeable amateur astronomer <http://brianmay.com/>.