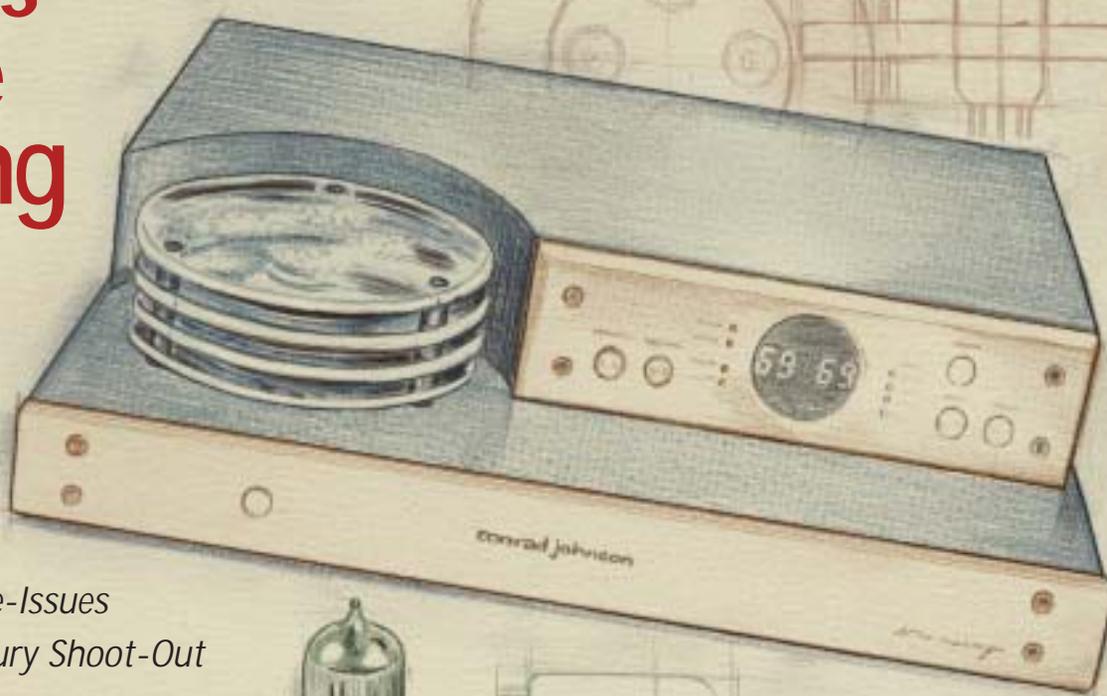


# hi-fi+

Issue 35  
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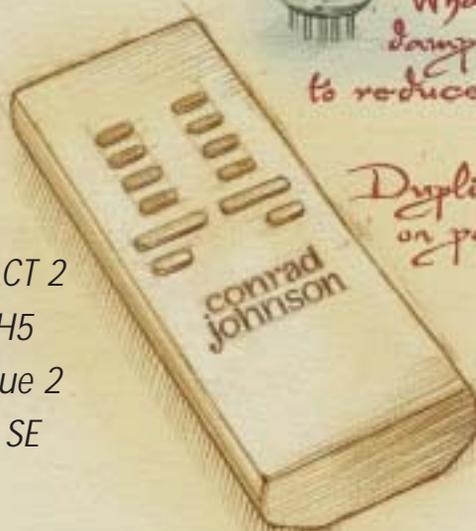
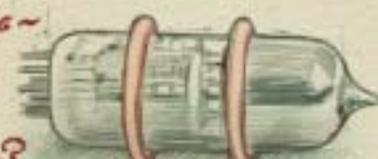
*Focal-JMLabs Chorus 707s*  
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### ▷ Hot and Glowing

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# Border Patrol S20 SE Power Amp

by Jason Kennedy

Back in those heady days before home cinema and the plethora of formats that came with it, an audio anarchist called Peter Qvortrup ran a company called Audio Innovations. His aim of world domination through valve amplification seemed crazy but harmless and many people were able to buy lovely amplifiers like the Series 500 integrated (a push pull EL34 design) for around £500, hook it up with some Snell Ks and a Systemdek turntable and produce a miraculously musical and entertaining sound.

At that time, Gary Dews was selling just such systems in the unit across the way from Audio Innovations' Brighton HQ and not grumbling all that much for a fellow from Featherstone. When Innovations moved to Portsmouth Gary carried on retailing from what had become Definitive Audio Brighton and the market being relatively lively, things ticked along quite smoothly. Around this time Audio Innovations employee Guy Sargeant's part-time potterings produced a rather unusual, green valve power amp (with PX4 output tubes if memory serves) nick-named the Border Patrol. I'm not sure where this name originated but chances are it was meant to be a light-hearted reference to the slightly militaristic green

enamel finish of the metalwork. It was also dubbed the Big Ten, another humorous reference to the fact that it produced nine watts, but one which backfired when Guy's employers heard about it – whence the name reverted to BT for big trouble!

What became of that green amp could probably be answered by Guy, who still likes to keep his hand in with valve amplification even though he has a relatively proper job with what remains of the JPW/Heybrook axis. Nonetheless the name struck a chord with

Gary who having a decent grasp of tube amp design himself made his first Border Patrol power amplifier in 1993. In his opinion the brand didn't really become established until he produced the first fully finished, silk screened models in '97. Since that time BP has produced a number of variations on the power amp theme alongside some of the meatiest external power supplies in the valve kingdom. The latter being made for valve amps from other brands, with Audio Innovations models such as the First and Second Audio 2A3 designs being among a wide variety

of successful projects. By the time you read this the first Border Patrol pre-amp or Control Unit as it's dubbed, a design which not surprisingly uses a similar power supply arrangement to the big amps, should be slowly shuffling off the production line.

As the BP website reveals, they offer various ways to skin the valve cat, all using 300B triode output tubes. There are SETs (single ended triodes) with one output tube per channel and push-pull versions with four output tubes. The latter are technically, but not necessarily sonically, superior to the parallel single ended arrangement found on the S20 SE that I



▶ have before me.

A fully hard wired, all triode design, the S20 SE is class A all the way through its 18 watts. It uses a Russian 6545Pi input driver valve that has high gain, low impedance and high transconductance. The latter in simple terms indicates sensitivity but as an

be turned past the ten o'clock position because input sensitivity on the power amp is so high. Gary has designed the

runs very warm indeed you won't feel inclined to leave it on all the time unless the central heating has packed up.

One thing that strikes you about this power amp and its supplies is the attention to detail. At first glance it looks to be of a similar build quality to many other small brand amplifiers; in other words fine but nothing to write home about. But look a little closer and use the product for a while and you realise that this is a fully finished well thought out component that will stand the test of time as well if not better than machine made audio electronics. Look under the lid at the way components are connected up and held in place and it inspires a confidence that can sometimes be lacking in the valve world. Connections are straightforward, RCA phonos for the incoming signal and alternative four or eight ohm taps for the speaker connection. Standard of finish is high throughout, but stops just short of slick while the paintwork is perfect and the screen printing professional.



S20 SE so as to avoid this practical inconvenience and as a result it is well suited to the majority of pre-amps on the market.

indication of its importance used to be referred to as the 'goodness factor'. Higher sensitivity being 'A Good Thing' in almost all high fidelity components, unless we are talking power amp inputs. The 6545Pi drives an inter-stage transformer which in turn drives a 300B output tubes and thence the output transformer. The 300Bs on this S20 SE are TJ Fullmusic Meshplates from China, Gary prefers the Western Electric variety but these are currently not available, not to mention considerably more expensive.

It is still not unheard of to come across pre/power amp combos where the volume pot on the pre-amp cannot

The other good thing you need in any amp is a decent power supply, the S20 has just that in its valve rectified, choke input filter, high voltage supply of which there is one for each channel. The amp is dual mono all the way back to the mains sockets. These feed the requisite voltages to the amplifier via meaty multipin connectors. Rather conveniently both supplies and the amp itself are powered up with a single chunky switch. Somewhat inconveniently this switch is located behind one of the supplies and as this amplifier



This is a solid product make no mistake. I used the Border Patrol with Living Voice Avatar OBX-R speakers, a combination that works well because of the decent sensitivity of the speakers and a shared approach ▶

► to sound reproduction. By which I mean that both brands value the high fidelity virtues of dynamics and timbral resolve a little higher than average. It does seem that if you can get these two things right everything else falls into place. Timing for instance is very good – this is a nimble amplifier that keeps up with everything you throw at it. It reminds you of why Quicksilver was such a good name for a valve amp brand: not such a great name that the company still exists, but you can't rely on a name alone.

What you get alongside the S20 SE's speed is rather substantial bass that, truth be told, is distinctly atypical for a valve amp. Those two power supplies are damn 'stiff' as they say in the trade, and allow the essentially low power output valves to deliver some serious grunt. Because this is SET grunt it reveals all the colour and shape of bass notes in a tuneful and dynamic fashion. The majority of SETs sound distinctly lame in the bass compared to the Border Patrol, this is a triode amp for those reared on transistor bass. Stick on some heavy modern beats and you'll know all about the instrumentation, recording and processing of the sounds used to produce the bass – low synth bass being particularly well delivered, the amp revealing the character that the musician and producer have clearly gone to some effort to create.

Another unusual aspect of this amp is its response or bandwidth; valves are famous for having a glorious mid-band and a tendency to emphasise this above all else.

The S20 while phenomenally transparent in the mid-band has a remarkably even and clean response. You don't miss out on the frequency extremes and this is a wide band amplifier by anyone's standards. Gary credits this to the transformers which he has made especially for each of his amplifiers. They are designed to avoid

watts is still 18 watts and you don't get the power that a similarly priced transistor design can offer, but the way funky rock tracks pump with energy and colour is extremely beguiling. Even if you push the level hard, the way it clips is actually rather nice with certain types of material, and I don't mean violin quartets!

When a tranny amp clips the distortion produced is pretty offensive,



saturation at all costs and to keep phase reversal as far out of band as possible.

The S20's mid-band is proper SET stuff, voices are superb and you can hear all the words all of the time. This is a fluid and revealing amp that combines a delicacy which lets you hear micro dynamics clearly with an ability to swing real energy when it's required. At the end of the day 18

a valve design on the other hand can actually sound quite good, that's why many electric guitar players still prefer using valves in their amps.

The Border Patrol is also very strong when it comes to producing three-dimensional notes in a soundstage that is as deep as they come. With sampled and treated music where studio effects are heavily used sounds are solid yet never static, the way that the artist uses reverb and level to manipulate the placement of the sound source is extremely well recreated with the BPs. This quality also applies ►

▶ to the reproduction of acoustic space, this is not one of those blowsy valve amps that makes everything enormous, it's a precisely focussed device, but when something comes along with genuine height information you really know about it. It's as if the speakers are now taller or the room more capacious. What's more the resolution of small sounds is so good that you can precisely identify what the sources for all those sounds are.

Captain Beefheart's *Clear Spot* is a classic abstract blues album with gorgeous 'phat' bass lines, colour, life and energy and no apparent shortage of grunt in the BP's capable hands. It's a lovely meaty sound which majors on grin factor, Don van Vliet's distinctive take on music works a treat with this level of attention to timing and energy. Technically speaking valve amps produce quite a lot of odd order harmonic distortion, but if this is distortion it certainly doesn't get in the way of the music.

As the opportunity arose I gave the S20 SE a spin with some Vivid B1 loudspeakers (reviewed by PM in issue 33), this rather more demanding and neutral design proved nearly as well suited to the amp as the Living Voice. The Vivid helped it to reproduce the character of recordings rather well and did rather a lot to show that tubes can do cymbals rather realistically thank you. In general you could hear how each recording had been treated, the compression and lack thereof being very obvious. Presence is of course a valve strength and Adem's atmospherically charged *Homesongs* provides plenty of the stuff from the

close miced, double tracked vocals to the creak of the organ's foot pedal. This is a slightly super real recording when reproduced by kit of this calibre but thankfully that only adds to its musical appeal.

With denser mixes such as EST's *Seven Days of Falling* a lot of the finer sounds that had previously been

indistinguishable become the notes of specific instruments. Low-level sound is transformed into clear cut musical detail, something which applies to the beats of Timbaland and Missy Elliott just as much as with Scandinavian jazz. The former's masterpiece, *Da Real World*, is a slick, dark album that comes through tight and dirty, delivering plenty of revelations in the micro dynamic arena. This may not be sophisticated music in the traditional sense but it is not short on fine detail, it's a bit like the way the better projectors and plasma screens reveal more going on in shadowy areas, the BPs highlight both the character in the singer's voice and the nature of all the backing sounds and effects. This is a bass heavy experience and this amp combines with a speaker like the Vivid to recreate the power and variety of tonal shading in the bottom end to persuasive effect.

The Border Patrol S20 SE is an impressively well-built amplifier that gives the impression that valves aside it would give more than a lifetime's service. Combine this with its glorious energy, drive and resolve and you have a remarkable amplifier that anyone with reasonably sensitive speakers would be a fool to miss. ▶+



#### TECHNICAL SPECIFICATIONS

Type:	Parallel single-ended valve power amp
Valve Complement:	2x 6545pi 4x 300B
Power output:	18 watts, fixed bias
Input sensitivity:	200mV RMS to full output
Frequency response:	8Hz-45kHz. +/-3dB
Dimensions (WxHxD) -	
Audio chassis:	430 x x 220 330mm
Power supplies:	220 x 145 x 345mm
Weights -	
Audio Chassis:	22kg
Power Supplies:	16kg each
Price:	£6,600

Manufacturer:  
Border Patrol  
Tel/Fax. (44)(0)1242 717171  
Net. [www.borderpatrol.net](http://www.borderpatrol.net)