

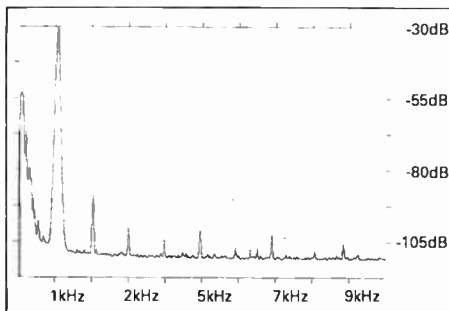
layer types as used in the preamp. The input forms a differential amplifier that is fed from a constant current source and the output from this (collector) is fed to the main voltage gain stage. Capacitive compensation is included prior to the base of the voltage amp, to attenuate ultrasonic signals, and thereby reduce the 'speed' of the early stages. Here a Dubilier electrolytic on the negative line is coupled to ground via a polystyrene cap.

Subsequently, the output from the voltage amp is fed to the base of the drivers (1A) which are stabilised by a small compensation transistor bolted to the same internal heatsinks as the drivers and output devices. Four pairs of Sanyo 2SD1047 (npn)/2SB817 (pnp) output transistors are employed in the RB-890, while only three pairs of these paralleled 12A devices are used in the RB-870BX. No choke is present at the output; such is the stability of the design that only a simple RC network is included. A moderate, approximately 30dB, resistive feedback loop extends from beyond the Zobel to the differential input.

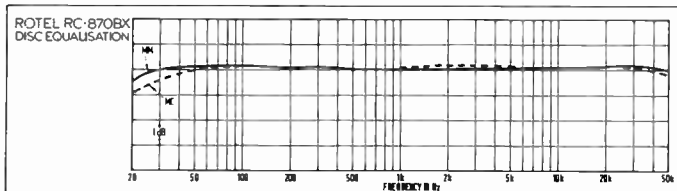
In bridged mode, the output of one channel is fed back into the inverted input of the other channel, via a coupling capacitor and two metal film attenuators. This replaces the original method of running both channels together and phase-inverting one channel through a 5532N op-amp. Theoretically, a 6dB power increase is possible by the summation of the supply voltage, so long as sufficient current is available to maintain this voltage across the load.

Lab report

Rotel's RB-870BX proved quite tolerant of difficult loads, showing increases of +2.2dB and +1.4dB into lower impedances; the RB-890 managed slightly less, with a +2.1dB increase into 4ohms and +1dB increase into 2ohms. When bridged, the RB-870BX fell short of the theoretical +6dB increase, but still afforded a substantial +5.1dB into



Left, RB-870BX: distortion spectrum from 1kHz tone at 1W. Note that distortion is predominantly second harmonic. Results for the '890 were similar, but with an anomalous increase in 8th harmonic. Below, RC-870BX disc eq accuracy



8ohms. The '890's supply relaxed somewhat, although a maximum of 729W should be sufficient for most applications! The rail fuse would also tend to blow on the '890 if connected to the 2ohm load (or 4ohm load when bridged) for more than a few seconds.

Figures of 72dB and 75dB for separation were acceptable but could have been higher, perhaps, considering the dual-mono construction. Distortion was low throughout.

Sound quality

After adequate time to warm up, it was clear that the RB-890 power amplifier placed some emphasis on the articulation, precision and general eloquence of the midband. Its presentation of higher or lower frequencies was not quite as pin-point, consequently most well-recorded vocals leapt from the soundstage with unexpected vigour. Alison Moyet, for example, was projected with a realistic *presence* that belied the very reasonable cost of this amplifier; her breathing, lip movements and physical motion [!] were all faithfully revealed.

This innate precision extended to midband instruments with entirely different harmonic textures – the characteristic wooden rasp of the consort of violins from Amon Ra's *In Nomine* sounded wonderfully rich and reverberant, constantly 'blooming' yet quite under control. Nevertheless, this lack of smearing was undoubtedly aided by the lean quality possessed of this amp – it never sounded overtly cold or hard but it did fail to dig out the deepest bass notes. Tonal integration did suffer as a result of this prominence, and the perception of stereo depth or recorded ambience was also curtailed, perhaps allied to the restriction of the lowest frequencies. Tomas Ornberg's *Blue Five* remained wonderfully buoyant, sparkling and

alive throughout 'Rocky Mountain Blues' but the uncanny far depth imaging available from this recording was still muted.

Strangely, the smaller and cheaper RB-870BX displayed greater competence in this area; it was obviously less explicit in the midband but benefited from a smoother, better balanced sound overall. A freedom from audible discontinuities more than redressed any lack of finite resolution, eg, the sheer fluidity and instrumental poise encountered throughout 'Let's Sow Wild Oats', from Tomas Ornberg's *Blue Five*, was unexpectedly superior to the rendition enjoyed through the RB-890. Sax, clarinet and banjo were revealed with a crystal clarity that certainly did not detract from the warmth or comfort of the recording.

This same all-encompassing fluidity was maintained during EJ Moeran's *Fantasy Quartet* (Altarus) where the rich timbral rustle of the strings was strongly counterpointed by the accompanying oboe. Tonal colours were reflected vividly with an increase in the recreation of *believable* space when compared with the costlier RB-890. In overall terms, the RB-870BX was somehow less 'obvious' than the RB-890; by imposing less character on the sound it was therefore more transparent, and ultimately preferable in the musical sense.

Conclusion

Rotel's new top-of-the-range power amplifier is a powerful, sensibly constructed unit that offers a level of performance fully in accordance with its very reasonable retail price. Nevertheless, its cheaper brother, the RB-870BX, also provides a favourable Watt/Pound-Sterling ratio coupled with a superior subjective performance. It is an exceedingly well-balanced and transparent amplifier that will undoubtedly form the heart of many very good systems; it is confidently recommended.

The RC-870BX preamp may not stand out in such sharp relief, but it offers fine value for money and represents a good example of what can be achieved with a 'no-frills' topology. The RC/RB-870BX combination will probably be of greater interest however, and having been fully conversant with the original Rotel '870 combo', I can say with some confidence that this new couple represents a significant step forward. It offers more than a taste of the high life, without recourse to a second mortgage. ☛

TEST RESULTS		ROTEL RC-870BX/RB-870BX, RB-890BX	
PREAMPLIFIER (RC-870BX):		aux/CD	m-m/m-c
Stereo separation			
(100Hz):		85dB	70dB/68dB
(1kHz):		89dB	76dB/80dB
(20kHz):		73dB	62dB/60dB
Channel Balance (1kHz)		0.05dB	0.02dB/0dB
Noise (unwtd):		-100dB	-82dB/-68dB
Total harmonic distortion:		0.0076%	0.0085%/0.023%
SMPTE IM distortion,			
2nd order:		0.0054%	0.019%/0.041%
3rd order:		0.0012%	0.012%/0.0113%
Input sensitivity/(1V rms):		156.6mV/24kohms	2.54mV/0.26mV
Disc overload (500Hz):			127.2mV/22.83mV
(1kHz):			174.3mV/38.96mV
Disc eq accuracy		+0.15dB/-0.21dB	
Output (max)/impedance:		11.65V/330ohms	
Typical price including VAT			£225
POWER AMPLIFIER:		RB-870BX	RB-890BX
Power output,			
Continuous, 8ohms:		125W	207W
Continuous, 4ohms:		206W (+2.18dB)	335W (+2.09dB)
Continuous, 2ohms:		283W (+1.38dB)	416W (+0.95dB) – fuse
Bridged, 8ohms:		403W (+5.08dB)	623W (+4.79dB)
Bridged, 4ohms:		527W (+4.08dB)	792W (+3.74dB) – fuse
		1kHz 10kHz	1kHz 10kHz
Distortion (THD)			
at 0dB/W (=1W)		0.0038% 0.031%	0.0087% 0.0346%
at ½ power		0.0041% 0.032%	0.028% 0.0325%
Stereo Separation			
(½ power, 1kHz):		75dB	72dB
Anharmonic Distortion:		-100dB	
Noise (unwtd):		-108dB	
SMPTE IM distortion		0.0056%	0.0051%
(0dBW), 2nd Order:			
3rd Order:		0.0001%	0.0013%
SMPTE IM distortion			
(½ power), 2nd Order:		0.0072%	0.0071%
3rd Order:		0.0005%	0.0032%
Input Sensitivity			
(for rated output):		1.184V/25kohms	1.529V/22kohms
Output Impedance/			
Damping Factor:		1.184V/25kohms	1.529V/22kohms
Output Impedance/			
Damping Factor:		0.044ohms/181	0.0441ohms/181.5
DC offset, left/right:		-1.07mV/+9.22mV	-21.3mV/-18.44mV
Phase:		positive	positive
Typical price inc VAT		£325	£375