



ROTEL

RA-971 MkII Integrated Amplifier



It has to be said that this Mark II version of the highly-acclaimed RA-971 integrated amplifier has more impressive 'innards' than previously. Not only is the toroidal power transformer manufactured by Rotel itself, but it also uses slit-foil capacitors made specifically for Rotel. The printed circuit board is a work of art, most notably because it uses symmetrical circuit tracing, so the left and right-channel circuit paths are absolutely identical. Along the signal path proper, only polystyrene and polypropylene capacitors are used, with metal film resistors being used everywhere. In fact, given all the attention to detail that becomes evident the minute you pop the lid, it's no great surprise why Rotel continues to enjoy an excellent reputation with hi-fi enthusiasts around the world, though most particularly in Great Britain, where the brand enjoys an almost 'cult' status that puts it on a philosophical par with home-grown English amplifier manufacturers. Here in Australia, Rotel's products enjoyed a similar cult status during the 1970s, but on the whole, Australians never seemed to take to Rotel's rather austere cosmetic styling—and it only takes a brief glance at the RA-971 MkII to show that so far as styling is concerned, Rotel has not changed significantly during the intervening decades. Interestingly, although there have been some recent changes in management at Rotel that has seen production switch from Japan to China for many models, and the release of a raft of new and updated models (of which this is one), the basic 'family-owned, family-operated' ethos still exists at Rotel, and the company has not lost sight of its mission statement, which is to produce equipment that is 'musical, reliable and affordable'.

THE EQUIPMENT

The minor re-design of the RA-971 was primarily to ensure the Mark II version had a sufficiently extended frequency response to accommodate the two new super-fidelity compact disc formats, DVD-A and SACD, that have emerged since the original RA-971 was designed. To this end, the Mark II's frequency response now extends to 100kHz, -3dB. Importantly, this extended response is achieved using discrete transistors, rather than monolithic integrated circuits. Take a look inside and you'll find that Rotel cleverly 'piggybacks' individual components to ensure stability. This is one reason the RA-971 is made in China—you can't get a machine to do this: fitting and soldering piggybacked components is something you can do only when you have access to low-cost labour. When building a wideband design such as the RA-971 it's difficult to keep circuit noise low, but Rotel has managed this well: hum and hiss are inaudible during normal playback.

Distortion has been reduced in a very unusual (and unusually useful!) manner. Rather than make both the A and B speaker output terminals switchable (with all the wiring and switches that this would entail) Rotel has instead made only the 'B' speaker terminals switchable: the 'A' speakers are hard-wired to the output terminals, so there are no relays or switches in the signal path. (Though the output stages *are* protected, as we were to discover.)

As you can see from the photographs, the front panel is austere, to say the least. There aren't many controls (not that there would be on an integrated amplifier anyway!) and of the controls that are fitted, the bass, treble and volume controls have a disappointingly 'plastic' feel. Bass



and treble controls on an 'audiophile' amplifier? Yep, but if you want to be a purist, Rotel provides a by-pass circuit (in the shape of a tone defeat button) that takes the

bass and treble controls from the signal path. Somewhat regrettably, this defeat button does not take the balance control out of the signal path. I say 'regrettably' because Rotel has elected to provide control over channel balance by way of a dual-gang, friction-coupled volume control rather than a more conventional channel balance control. The drawback with the dual-gang system as implemented

any type. This isn't a real worry: if you want a high-quality turntable sound these days, you're better off buying a stand-alone phono stage than trying to rely on an internal circuit.

The rear panel is conventionally laid out but, as you can see from our photograph of it, the 'user advice' screen-printed on the rear panel contains some unfortunate typographical errors that make the advice confusing enough that it may have some first-time buyers reaching for their *Owners' Manuals* (in which they'll find the correct advice, clearly stated). It's on the rear panel that you will find the one external difference between the original RA-971 and this Mark II version. Noticed it yet? It's the addition of

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is that the balance between the channels will be slightly different for each different setting of the volume control. Any differences would be minor, but even these minor differences would almost certainly outweigh any advantages gained through using symmetrical circuit board traces.

Six line-level inputs are fitted, selectable via a single rotary switch, two of which are record/play loops for a CD-

pair of pre-out terminals. Initially, I couldn't quite see the point of the pre-outs until it was kindly pointed out to me that using these terminals, you can add an RB-971MkII power amplifier for use in a bi-amp set-up.

LISTENING SESSIONS

It didn't take more than a quick flick of the volume control to discover this little Rotel is a real giant killer.

Brand: Rotel
Model: RA-971 MkII
Category: Integrated Amplifier
Suggested Price: \$679.00
Warranty Period: Three Years
Distributor: International Dynamics Pty Ltd
Address:
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ROTEL

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weeks, during which I played back an exceedingly wide variety of music styles, from techno, through rock, to orchestral (even, so help me, C&W) much of it at near-deafening levels, I never once taxed RA-971's output capability, even when using very low-efficiency (84dB SPL/w/m) loudspeakers. I also wired up and played two pairs of speakers (connected to A and B) in order to make the Rotel work even harder for its keep. It passed every test with its standard flying high. When working at high sound pressure levels, or into difficult speaker loads, the sound quality remained unfailingly sweet and clean, with magnificent bass. This particularly crisp bass reproduction was shown to best effect with solo piano works, but the control was also audibly apparent when



R or MD recorder. There's also a 'record-out' selector. When you check the input legends, you'll see there isn't one marked 'turntable' for the good reason that there is no phono input of

It's hard to credit that so much good sound could issue from such a small package!

In the course of evaluating the RA-971 MkII, a matter of a few

replaying male voice (one of the most difficult tests for fidelity, as it happens). For male voice, I regularly use the BBC's recording of the Dylan radio play 'Under Milkwood'.

Listening to this through the RA-971 made the work seem even more involving than it already is. I also had a lot of fun with Rickie Lee Jones' latest, 'It's Like This'. The Rotel captures the mood of her singing to perfection, but also perfectly reproduces the rather odd tonal character of her voice, capturing the 'quirkiness' of the vocal catch, but without delivering any of the nasality you can sometimes get with inferior components. (If you went off RLJ after *Ghostyhead*, it's time to take another listen!) Another wonderful experience was listening to the tone of Anne-Sophie Mutter's violin on the new Deutsche Grammophon Vivaldi Four Seasons disc, recorded at Copenhagen in the Tivoli Concert Hall. I initially purchased this not so much for the music (how many copies of The Four Seasons does anyone need?) but as reminder of the time I visited the Tivoli. (I deny entirely that my purchase had anything whatsoever to do with the fabulous photo of Mutter that graces the CD cover.)

These ease with which the Rotel handled both male and female vocals, as well as violin and piano, meant that it was almost a given that rock would be well-covered, and this turned out to be the case. Tight, forceful bass delivered bass drum-kicks to the pit of your stomach, while electric bass and double-bass lines flowed with elegance and sonority, perfectly delineated from the percussion. Throw in some rhythm and lead guitar, with a bit of sax punctuation and the whole became more electrifyingly musical than the sum of the parts. The music took on an energetic, driving force—the type of force that brings an involuntary smile to your face and makes you realise you've been tapping your foot for the last eight bars.

CONCLUSION

Any minor criticisms one could have of the RA-971 MkII pale into insignificance when you take into account the bargain-basement pricing. If you need a powerful two-channel amp, this Rotel is one hell of an amp for the dough. **AHF**

greg borrowman

Readers interested in a full technical appraisal of the performance of the Rotel RA-971 MkII should continue on and read the 'LABORATORY REPORT' published on the following pages. All readers should note that the results mentioned in the report, tabulated in performance charts and/or displayed using graphs and/or photographs should be construed as applying only to the specific sample tested.

TEST RESULTS

Were it not for some power limitations at very low frequencies (20Hz), Rotel would be able to rate this amplifier much higher than the 60-watts it does rate it, as you can see from the results tabulated in the Power Output table. Note that *Australian HI-FI Test Laboratories* was unable to test operation into 2 ohm loads with both channels driven, due to the Rotel's very efficient electronic protection cutting in to protect the output from the continuous test tones. This was also true for a 20kHz test signal into 2 ohms. That the protection circuit cuts in at these load/frequency/voltage points is more than reasonable I think, for an amplifier in this price/performance category, particularly since the circuit's detector is fairly slow, so transients will not trigger the pro prematurely. The table shows the strong

results at mid-frequencies, with the single-channel 8-ohm output tipping 102 watts (20.0dBw). At mid-frequencies into 4-ohm loads, the Rotel produced 160-watts (21.0dBw) with one channel driven, dropping to a more sedate 121-watts (20.8dBw) when both channels were driven. With a single channel driven into 2-ohms, the Rotel delivered 217 watts (23.3dBW) into the load.

The frequency responses returned by the RA-971 were equally impressive, with the one-watt response extending from 8Hz to 156kHz-1 dB. The -3 dB down-points for this same power level were 4Hz and 291kHz. Channel balance varied depending on the setting of the volume control (see main body copy) but it averaged around 0.29 dB. Channel separation was excellent at low and mid-frequencies, with a 1kHz result of 85 dB. It diminished at higher frequencies, as you'd expect, but was better than 70 dB at 20kHz. The signal-to-noise ratio was excellent for such a wide-band amplifier. *Australian HI-FI Test Laboratories* measured 85 dB unweighted, improving to 96 dB with IHF-A weighting, this latter figure being just a bit better than Rotel's specification. Input sensitivity was 122mV (for rated output) and there was a phase error of just 0.07 degrees between the left and right channels. **AHF**

Steve Holding

Power Output Table (Rotel RA-971 MkII Amplifier)

Channels Driven	Load	20Hz	2kHz	20kHz
1	8Ω	92 (19.6)	102 (20.0)	91 (19.5)
2	8Ω	62 (17.9)	83 (19.1)	80 (19.0)
1	4Ω	135 (21.3)	160 (22.0)	150 (21.7)
2	4Ω	114 (20.5)	121 (20.8)	128 (21.0)
1	2Ω	131 (21.1)	217 (23.3)	Pro (n/a)

Note: Figures in brackets are dBW—decibels referred to one watt. 'Pro' indicates protection triggered.

Channel Balance: 0.29 dB (1kHz)
 Channel Separation: 85 dB (1kHz)
 Phase Error: 0.07 degrees
 Input Sensitivity: 122mV (for rated output)
 S/N Ratio re 1 watt: 85 dB/96 dB (unweighted/A-weighted)
 S/N Ratio re 60 watts: 81 dB/94 dB (unweighted/A-weighted)
 Freq Response: 8Hz - 156kHz (-1 dB)
 Freq Response: 4Hz- 291kHz (-3 dB)