



Fig. 1. Decca 4RC cartridge frequency response and crosstalk

Switching to the C4E (which was used at 2 grams playing weight) produced very little change in overall quality though I should say the elliptical version has slightly less hard treble and sounded just that little bit more natural to my ears.

Frequency response and inter-channel crosstalk were measured on each channel with a load of 68,000 Ohms and are shown in Fig. 1. The frequency range is wide and remarkably smooth: crosstalk is low and indeed appears much better than in our review of the C4E. Decca do not include a figure for crosstalk in their published specification but our measurements certainly show this new cartridge to possess as good separation over the middle frequency range as any pickup on the market.

Sensitivity is relatively high, measuring 1.5 and 1.46 mV for the Left and Right outputs respectively for a recorded velocity of 1 cm/sec at 1,000 Hz. The cartridge itself weighs 13 grams, which puts it amongst the heavyweights, but this can easily be counterbalanced on any of the good quality pickup arms or turntables. Lateral compliance was 15×10^{-4} cm/dyne and vertical compliance 5×10^{-6} cm/dyne. No doubt this order of compliance must be considered in the context of the relatively high recommended playing weight of $3\frac{1}{2}$ grams and the internal damping of cartridge movement, etc. It certainly permits this medium-priced pickup (top-priced pickups cost more than twice the Decca 4RC's 16 guineas) to be considered for use with pickup arms which would jib at the typical high lateral compliance of 30×10^{-6} cm/dyne, possessed by the Decca C4E, ADC 10E/II, etc.

While I kept to the $3\frac{1}{2}$ grams weight during the above tests, I then tried the effect of playing the tracking tests on CBS test record STR100 and Shure "An Audio Obstacle Course", and found that even the most difficult passages could be tracked quite safely at 1.5 grams. Perhaps the Decca statement I quoted earlier errs on the side of conservatism.

An exceptionally clean waveform was produced over the frequency range. Background noise and distortion were inaudible and no hum troubles were experienced using ordinary commonsense earthing and layout of the turntable and amplifier.

At its sensible price of £16 16s. this new Decca cartridge makes an excellent choice for use with a wide range of pickup arms and turntables—except that magnetic turntables must be avoided. It is sensitive and produces a signal of the highest quality. JOHN BORWICK.

Beolab 5000 Stereo Amplifier. Price: £140. Manufacturer: A/S Bang & Olufsen, Struer, Denmark. Distributor: Bang & Olufsen UK Division, Eastbrook Road, Gloucester.

The Beolab 5000 stereo amplifier is a matching unit to the Beomaster 5000 FM tuner (reviewed last month) and its styling follows the same

theme: dark oiled wood for the top cover, mat black end cheeks and a 'slide-rule' front panel. The front panel is a heavy die-cast matt-silver finished unit carrying four cursors for bass, treble, balance and volume. Below the machine engraved scales are 14 press bars which are finger light in operation. Reading from left to right they are: microphone, phono, tuner, auxiliary, tape, left and right channels, low pass filter, high pass filter, loudness, speakers 1, speakers 2, test and finally power switch, which illuminates a translucent red plastic bar. Also above the left and right channel bars is a small panel which is illuminated 'stereo' when both left and right bars are released.

Along the whole length at the back of the chassis is a massive heat sink which carries the four output power transistors and two similar transistors for the stabilised power supply. There is also a mains outlet socket. On a sloping panel six DIN input sockets are mounted so that the plugs lie within the depth of the chassis. With the exception of the microphone socket, all the others are duplicated with phono sockets. There are five further DIN non-reversible two-pin sockets for the loudspeaker connections. On the base, and just below the row of press bars, are five pairs of pre-set potentiometers which are adjusted so that each signal input produces the same volume level. In addition there are two level change switches for phono and tuner, high or low. All the base metalware is finished in matt black and every socket or function clearly indicated.

As in the case of the tuner, the superbly produced instruction manual fails to show which screws must be released to remove the top cover. The amplifier is finely engineered with a massive, fully screened mains transformer, two hinged printed circuit panels which lock into a vertical position giving easy access to both sides. A further board carries all the input circuits, balanced microphone transformers and filter inductors. The four cursor slider potentiometers are direct acting in-line types, and every component is numbered so that it can be easily identified.

Analysis of the complex circuit shows several interesting features. First, the power supply is highly stabilized and incorporates a thermostat that switches "off" when internal temperature rises above 65 deg. C. On the front panel is a press bar labelled 'loudness' which is intended for use at low listening levels and raises the output at the bass and treble ends of the

spectrum. The 'test' press bar is most useful for accurately setting the input levels of the various signal sources to approximately the same level and also ensuring that the left and right channels are correctly balanced. This is done with any mono signal source, and the potentiometers are adjusted so that, when the 'test' bar is depressed, minimum signal is heard. On releasing the bar, the signal should appear precisely between the two loudspeakers.

Two sets of loudspeakers can be used, either separately or together but, if it is necessary to control the volume of the remote pair, they must have their own volume controls. An unusual feature is the provision for a centre speaker, and a B & O stereo width control unit is available. With this unit it is possible to vary the width of the stereo information.

All the parameters of the technical specification were measured and checked against the Test Certificate. Figure 1 shows the frequency response, which is flat within ± 0.2 dB from 20-20,000 Hz, and the range of adjustment of the bass and treble controls. Distortion measurements were quite remarkable and somewhat better than those on the test certificate. With the input to 'Tuner-high', frequency 1 kHz and load resistor 4 Ohms, the results were as follows:

| Power output (Watts) | Distortion (%) |
|-------------------------|-------------------|
| 0.5 | 0.055 |
| 1.0 | 0.048 |
| 5.0 | 0.046 |
| 10.0 | 0.048 |
| 55.0 | 0.059 |
| 60.0 | 0.238 |

SPECIFICATION AND TEST RESULTS BEOLAB 5000 AMPLIFIER

| | Makers' Specification | Test Result |
|-------------------------------|--|-------------------------|
| 1. Type | Stereo integrated | — |
| 2. Input Sensitivity Pickup | 0.2—4 V and 1.3—14 mV | — |
| Radio | 0.2—4 V | — |
| Tape | 6—200 mV 0.2—7 V | — |
| 3. Output (Watts or Volts) | 2 × 60 Watts | 2 × 80 (at 3.5 Ohms) |
| 4. Output Impedance (Ohms) | 4 or higher | — |
| 5. Frequency Response (Hz) | 20-20,000 ± 1.5 dB | See Fig. 1 |
| 6. Harmonic Distortion (%) | 0.2 | 0.24 (See text) |
| 7. Signal-to-noise Ratio (dB) | 55 dB rel. 50 mW | 56 |
| 8. Crosstalk (dB) | 45 | 56 |
| 9. Treble control (dB) | ± 14 (10 kHz) | See Fig. 1 |
| 10. Bass control (dB) | ± 17 (50 Hz) | See Fig. 1 |
| 11. Filter frequencies (Hz) | 70 Hz, 15 dB/ octave 6 kHz, 18 dB/ octave | See Fig. 1 |

B & O Beolab
5000 amplifier

