HIS MASTER'S VOICE R53B, R43B

TECHNICAL SPECIFICATION

POWER SUPPLY:
200 to 250 volts, 50 c.p.s.

CONSUMPTION:
Radio ..... 70 watts.
Gram. ..... 85 watts.

TUNING RANGE:
Medium-Wave: 540 to 1600 Kc/s.
Short-Wave: 16.5 to 52 Metres.

INTERMEDIATE FREQUENCY:
457.5 Kc/s.

VALVE COMPLEMENT:

6AN7	Frequency Changer
6N8	I.F. Amp.-Demod.
6N8	1st A.F. Amp.-A.V.C.
6N8	2nd A.F. Amp.
807	Power
5Y3GT	Rectifier.

DIAL AND PILOT LAMPS:
6.3 volt, 0.3 amp. (Min. screw-cap base).

LOUDSPEAKER:
12in. Permagnetic.
Voice coil impedance, 12 ohms at 400 c.p.s.

AUTOMATIC RECORD CHANGER:
Plessey 3-Speed Record Changer for Microgroove and Standard Recordings.

DIMENSIONS:

Width	36½ inches
Height	31 inches
Depth	18 inches

WEIGHT:

Gross	128 lbs.
Nett	108 lbs.

CIRCUIT DESCRIPTION

This model incorporates a 6-valve mains-operated radio-gramophone combination. The receiver is a dual-wave superheterodyne for medium and short-wave reception. The gramophone incorporates a multi-speed automatic record changer.

FREQUENCY CHANGER

On the medium-wave band, the aerial is coupled to the signal frequency circuit by means of an iron dust cored aerial transformer, L1-2. For short-wave reception, a short-wave aerial transformer, L5-6, is switched into circuit.

V1, which is a triode-hexode, is employed as frequency changer. The oscillator circuits are shunt fed and incorporate plate tuning. Fixed padding capacitors are used on both wave bands, and a variable padding adjustment is provided on the medium-wave band by an iron dust tuning bolt in the oscillator coil, L3-4.

I.F. AMPLIFIER—DEMOD.

The frequency changer is transformer-coupled to a duo-diode pentode valve, V2, which amplifies at I.F. frequency. With the wave-change switch set to "Local" position, increased bandwidth is secured by the introduction of top coupling and also loading resistors across primary and secondary circuits of the first I.F. transformer. Neutralisation of this stage is effected by condenser C17.

A second I.F. transformer serves to couple the I.F. output to the demodulator diode, where the signal is demodulated and appears across resistor R14.

1st A.F. AMPLIFIER—A.V.C.

The I.F. output of the previous stage is capacity-coupled to one of the diodes of a duo-diode pentode, V3; the A.V.C. voltage obtained is applied to the frequency changer and I.F. amplifier stages; standing bias for these stages is supplied by the back bias resistor R9, whilst the A.V.C. delay voltage comprises the sum of voltages developed across R9 and R19.

The pentode section of this valve amplifies at audio frequency and the input circuit may be switched to either the demodulator diode load or to the pick-up equaliser.

A weighted volume control circuit is employed to compensate for aural deficiencies at low volume levels. This is accomplished by introducing a degree of bass boost at low settings of the volume control.

The output circuit is resistance-capacity coupled through two tone control networks to the second A.F. amplifier, V4; R22, R23 and C30 providing a degree of bass boost. The tone controls provide five degrees of bass and treble cut respectively, and the circuits have been designed to reduce interaction to a minimum.

2nd A.F. AMPLIFIER

This stage incorporates a pentode valve, the output of which is resistance-capacity coupled to the power valve.

POWER STAGE

The output valve, V5, is a beam power tetrode, and is coupled to the speaker voice coil through a step-down transformer. Considerable inverse feedback is used, the feedback voltage being taken from the output transformer secondary and fed back to the cathode circuit of the penultimate valve. A phasing network, comprising C46 and R35, is connected across the transformer primary.