

## SERVICE NOTES

The output from the discriminator is fed to VT150 (U3846/2) via C150. The 19 kHz tuned circuit in the collector of VT150 filters out the 19 kHz pilot frequency which is fed via C153 to the base of VT151 (BC151). Further amplification takes place and frequency doubling (to 38 kHz) is achieved by W150 and W151 in the secondary winding of 19 kHz filter coil L151b, in the collector of this stage. The resultant 38 kc/s signal is further amplified by VT152 (BC151).

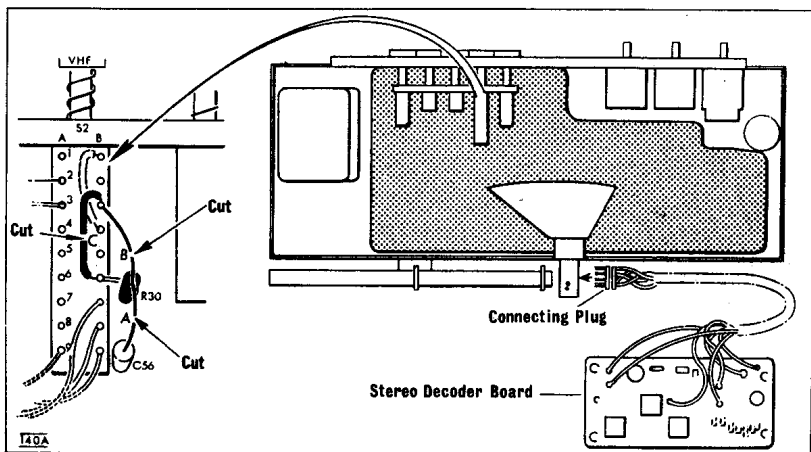
VT150 emitter also provides a low impedance source for the Multiplex signal which is taken via the compensation network R159, C157 to the centre tap of the 38 kHz tuned transformer winding (L152b).

The Multiplex signal is now added to the reconstituted 38 kHz sub-carrier developed in the secondary of L152 and the composite signal is fed to the two pairs of diodes W152, W153 and W154, W155. The sub-carrier will be reversed in phase due to the centre tap of L152 secondary and this has the effect of interchanging the left- and right-hand channels on the composite signal waveform, therefore, the outputs of W152 and W154 combine to give the right-hand output and the outputs of W153 and W155 give the left-hand output. Pulses of the sub-carrier appearing across the diode loads will be of opposite polarity and will cancel out.

In order to provide compatibility, the diodes are forward biased so that they remain conductive in the absence of the pilot tone.

The right-hand and left-hand outputs are fed via their respective de-emphasis components R167, C165 (RH) and R171, C166 (LH) to the audio amplifier stages.

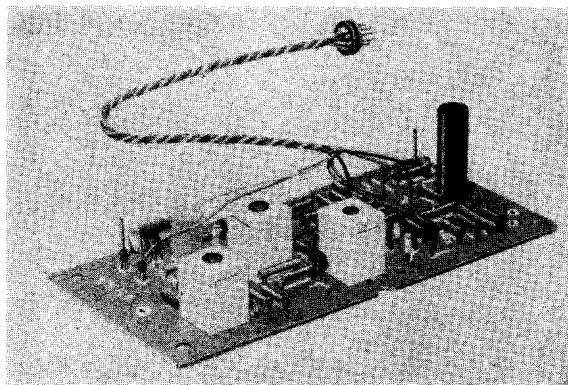
### Typical Fitting Procedure



# BRC

## SERVICE MANUAL

### STEREO DECODER TYPE SD2



#### Fitting Instructions

The decoder unit is connected to a BRC radiogram by inserting the 7-pin plug into the socket provided on the rear of the radiogram chassis. Four wood screws are provided with the decoder so that it can be secured to the chassis mounting board. Cut to open circuit the three wire links on the chassis as shown.

#### Please Note

*Due to the inherent characteristics of a stereo transmission, a slight increase in background noise is unavoidable. If it is obtrusive, this indicates that an external aerial is required. An external aerial should be connected via 75 ohm twin feeder and the internal aerial must of course be unplugged. The decoder unit has been fully aligned during manufacture and no additional adjustments are required.*

## BRITISH RADIO CORPORATION LIMITED

### SERVICE DEPOTS

**LONDON:**  
P.O. Box No. 121, Lea Valley Trading Estate, Angel Road,  
Edmonton, London, N18 3BP. Tel. 01-807 3060  
Spare Parts Tel. 01-807 0791; Answering Service: 01-807 6332  
Telex: 264905 Cablegrams: Britradco Edmonton

**MANCHESTER:**  
Thorn House, Derby Street, Cheetham,  
Manchester 8. Tel. 061-832 2499

**GLASGOW:**  
155 Shieldhall Road, Glasgow, S.W.1.  
Tel. 041-882 4512

**THORN** British Radio Corporation Ltd. is a member of the Thorn Group.

# COMPONENT DETAILS

When ordering replacement components, please quote Model number and include the description or function given with the part number.

## CAPACITORS

Ref.	Value	Tol.	Rating	Function	Part No.
C150	0.22 $\mu$ F	10%	250V	Decoder input coupling	8M31
C151	0.01 $\mu$ F	2 $\frac{1}{2}$ %	30V	L150 tuning	8M74
C152	8 $\mu$ F	Elec.	6V	VT150 emitter bypass	0E0-222/02
C153	0.01 $\mu$ F	25%	500V	VT150/VT151 coupling	7M73
C154	0.01 $\mu$ F	25%	500V	VT151 emitter bypass	7M73
C155	1500pF	2 $\frac{1}{2}$ %	30V	VT151 collector decoupling	8M75
C156	7000pF	2 $\frac{1}{2}$ %	30V	L151B tuning	8M76
C157	5000pF	20%	500V	Part compensation network	2M27
C158	0.1 $\mu$ F	20%	250V	VT152 emitter bypass	8M71
C159	1500pF	2 $\frac{1}{2}$ %	30V	L152B tuning	8M75
C160	2000pF	20%	500V	W155 bias decoupling	7M89
C161	2000pF	20%	500V	W152 bias decoupling	7M89
C162	2000pF	20%	500V	W153 bias decoupling	7M89
C163	2000pF	20%	500V	W154 bias decoupling	7M89
C164	150 $\mu$ F	Elec.	18V	Supply line decoupling	0E0-229/13
C165	0.01 $\mu$ F	25%	500V	Part de-emphasis (RH)	7M73
C166	0.01 $\mu$ F	25%	500V	Part de-emphasis (LH)	7M73

## RESISTORS

All  $\frac{1}{4}$  watt carbon, 10% tolerance unless otherwise stated

Ref.	Value	Tol.	Rating	Function	Part No.
R150	1-2K $\Omega$			DC dropper and decoupling	2B87
R151	33K $\Omega$			VT150 base bias potential	1A88
R152	8.2K $\Omega$			divider	7A42
R153	12K $\Omega$			RF stopper	1A89
R154	1.2K $\Omega$			VT150 emitter stabilizer	7A44
R155	39K $\Omega$			VT151 base bias potential	2B01
R156	150K $\Omega$			divider	5A48
R157	1K $\Omega$			VT151 emitter load	2A25
R158	39K $\Omega$			VT152 base bias feed	2B01
R159	2.7K $\Omega$			Part compensation network	7A38
R160	1K $\Omega$			VT152 emitter load	2A25
R161	6.8K $\Omega$			VT152 collector DC load	2B88
R162	10K $\Omega$			Part diode bias pot. divider	4A75
R163	33K $\Omega$			W153 bias feed	1A88
R164	33K $\Omega$			W154 bias feed	1A88
R165	33K $\Omega$			W155 bias feed	1A88
R166	4.7K $\Omega$			Part diode bias pot. divider	1A32
R167	10K $\Omega$			Part de-emphasis (RH)	4A75
R168	33K $\Omega$			W152 bias feed	1A88
R169	10K $\Omega$			LH output feed	4A75
R170	10K $\Omega$			RH output feed	4A75
R171	10K $\Omega$			Part de-emphasis (LH)	4A75

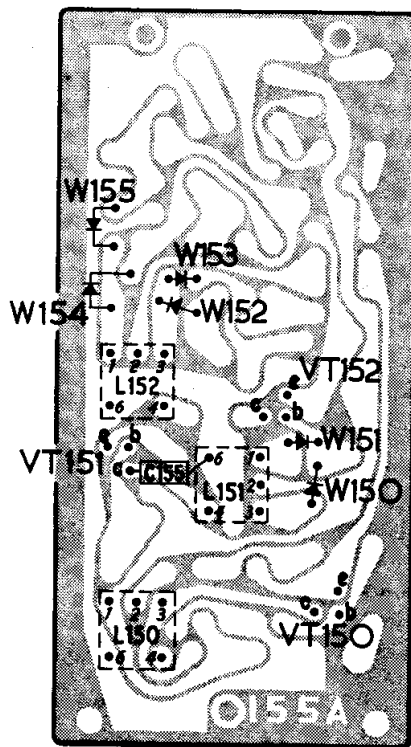
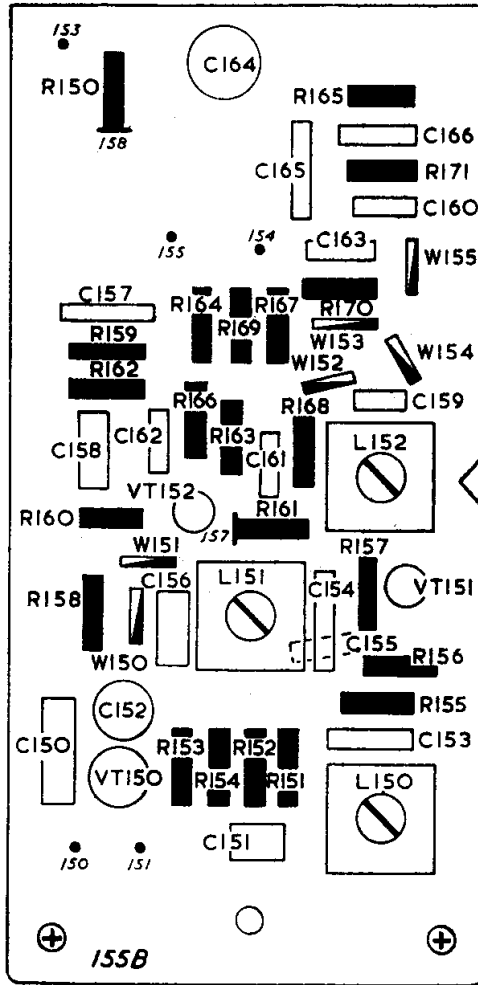
## INDUCTORS

Ref.	Function	Part No.
L150	19kHz tuned collector coils	3D0-062
L151A-B	Frequency doubler coils	3D0-063
L152A-B	38kHz tuned transformer	3D0-063

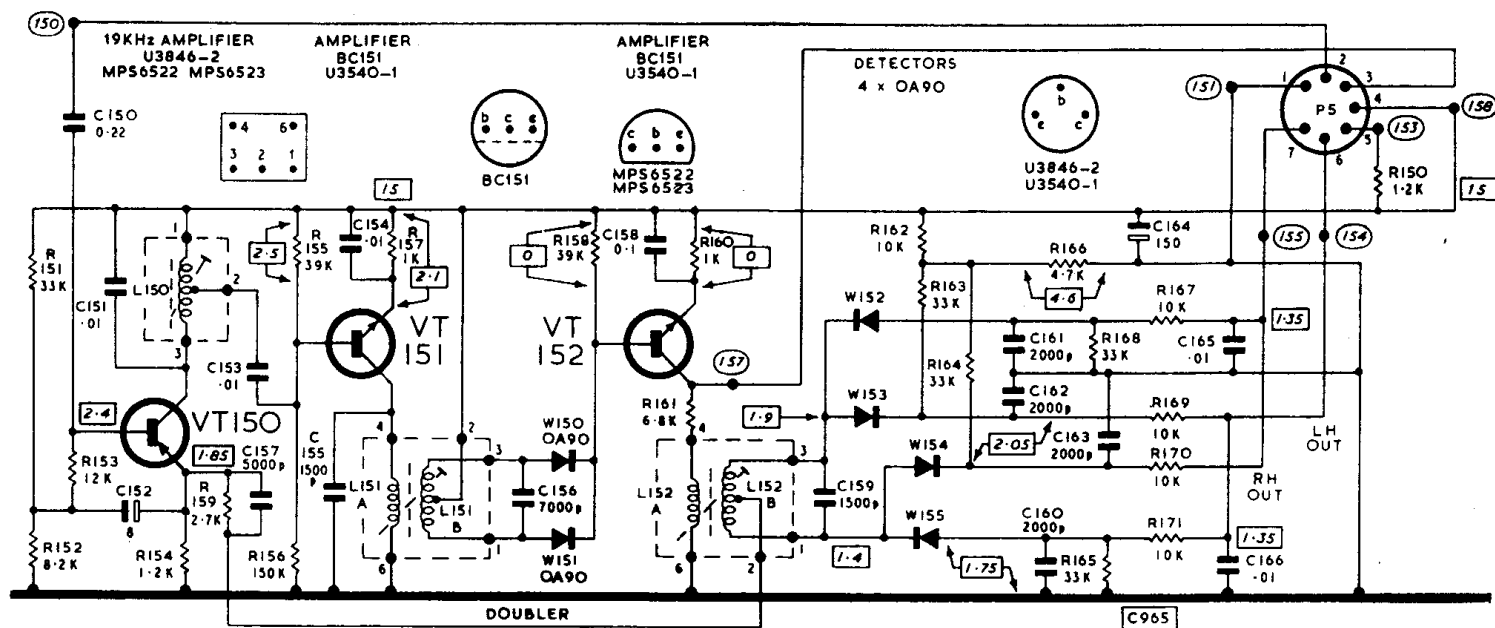
## MISCELLANEOUS

Ref.	Description	Part No.
W150 } W151 }	Voltage doubler diodes (0A90)	0V4-610
W152 } W153 }	Left-hand channel detectors (0A90)	0V4-610
W154 } W155 }	Right-hand channel detectors (0A90)	0V4-610

# COMPONENT LOCATIONS



## CIRCUIT DIAGRAM



Figures in rectangles are voltage measurements taken with a 20,000Ω per volt meter with respect to positive chassis except where indicated otherwise. Ringed figures indicate printed board tag connection points.

## ALIGNMENT DATA

The following information should be used in conjunction with the Alignment Data for the model with which the Stereo Decoder is used. Although alignment of the Decoder panel is quite straight-forward, no attempt should be made at re-alignment unless suitable equipment is available. This should consist of an Encoder providing a 19 kHz pilot signal and also a composite signal that may be switched to provide a difference signal, a mono signal, and an easily identified combined left and right-hand signals (or possibly separate left-hand and right-hand signals).

Inject a 19 kHz pilot signal to pin 2 of SKT5 (Decoder socket) and connect a millivoltmeter, capable of reading up to 250 mV at 19 kHz, between pin 4 of L152 and chassis.

Peak L150, L151 and L152 for maximum output (reducing 19 kHz signal level during alignment to maintain an output of 200 mV). L152 should be peaked with the core almost fully unscrewed but if no peak is observed the core should be left fully unscrewed. For an output of 200 mV the 19 kHz input should be approximately 7 to 10 mV.

Inject a composite signal to pin 2 of SKT5, and select the difference signal. With an input of 60-75 mV, check that the output from each channel is equal; if otherwise, slightly

readjust L151 for maximum equal outputs. With the voltmeter connected to pin 6, then to pin 7 of SKT5 the output from each should be 60 mV. If the output is checked at the loudspeaker sockets it is essential that the audio amplifiers are correctly balanced for equal outputs before commencing alignment.

If left-hand and right-hand signals are available check that decoder outputs are correctly phased, i.e. right-hand input gives an output from right-hand channel, and that separation is satisfactory, i.e. right-hand input gives minimum left-hand output.

For overall alignment of the multiplex decoder, a difference signal (RF carrier) should be injected to the aerial sockets. The signal strength should be sufficient to cause limiting (25μV approximately) and a check should be made to ensure that the audio output from each channel is balanced. Ensure that the balance control (if provided) has been set correctly during audio checks otherwise results may be misleading and, if necessary slightly readjust L151 to obtain correct balance. Finally, if L151 has been readjusted, check that phasing is correct.

*The manufacturers reserve the right to vary specifications or use alternative materials as may be deemed necessary or desirable at any-time.*