



# DYNATRON

## AUDIO EQUIPMENT SERVICE MANUAL FOR SRX25 SERIES CHASSIS

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**RG60 RG61 RG62 RG63 RG64 RG65**

**RG66 RG67 RG68 RG69**

**HFC11 HFC11M HFC12 HFC13 HFC14**

**TRV20**

# SPECIFICATION SRX25 SERIES TUNER/AMPLIFIER

## AMPLIFIER SECTION

### Semiconductors

16 Transistors (10 Ge type, 6 Si type).  
4 Diodes, 1 Se Power, 1 Ge Power.

**Power Output** 32 Watts (IHF rating), 3 ohm load.

### Performance each Channel

De-luxe Models: 10 Watts (continuous rating).  
Standard Models: 8.5 Watts (continuous rating).

### Distortion

Total less than 1% at rated outputs—1000 Hz.

### Signal to Noise Ratio

Better than -65 dB (ref. rated O/P) on all inputs.

### Frequency Response

Main amplifier -3 dB at 30 Hz and 25 kHz.  
Radio/Tape Input -3 dB at 30 Hz and 20 kHz.  
Pick-up input corrected for RIAA curve  $\pm 1.5$  dB 40 Hz to 18 kHz.

### Input Sensitivities

Tape input	30 mV	} for rated O/P — 1000 Hz.
Magnetic P.U.	4.5 mV	
Piezo P.U. (Ceramic)	60 mV	

### Signal Handling

+30 dB on specified sensitivities.

### Tone Controls

Bass  $\pm 10$  dB at 100 Hz relative 1 kHz.  
Treble  $\pm 10$  dB at 10 kHz relative 1 kHz.

### "Loudness" Filter

+ 15 dB at 50 Hz.

### "S" Filter

-10 dB at 10 kHz.

### Balance Control

8 dB each channel.

### Tape Socket

Output 30 mV in 20 K ohms or higher. (Input at specified level.) Unaffected by volume or tone control settings.

## RADIO AM/FM TUNER SECTION Including Decoder

Separate R.F. and I.F. channels for A.M. and F.M.

### Semiconductors

14 Transistors (11 Ge, 3 Si). 10 diodes.

### F.M. Sensitivity

2 $\mu$ V 16 dB quieting (S/N)	} Average over band. 87-108 MHz.
6 $\mu$ V 30 dB quieting (S/N)	
12 $\mu$ V 40 dB quieting (S/N)	

**Full Limiting** at 16 $\mu$ V or better.

**Stereo Separation** better than 23 dB.

**A.F.C.** Pull in range  $\pm 300$  kHz.

**A.F.C.** Hold in range  $\pm 350$  kHz.

### Waveband coverage

V.H.F. 87-108 MHz.  
M.W. 185-570 mtrs. 1620-525 kHz.  
L.W. 1100-2000 mtrs. 150-270 kHz.

### A.M. Sensitivity

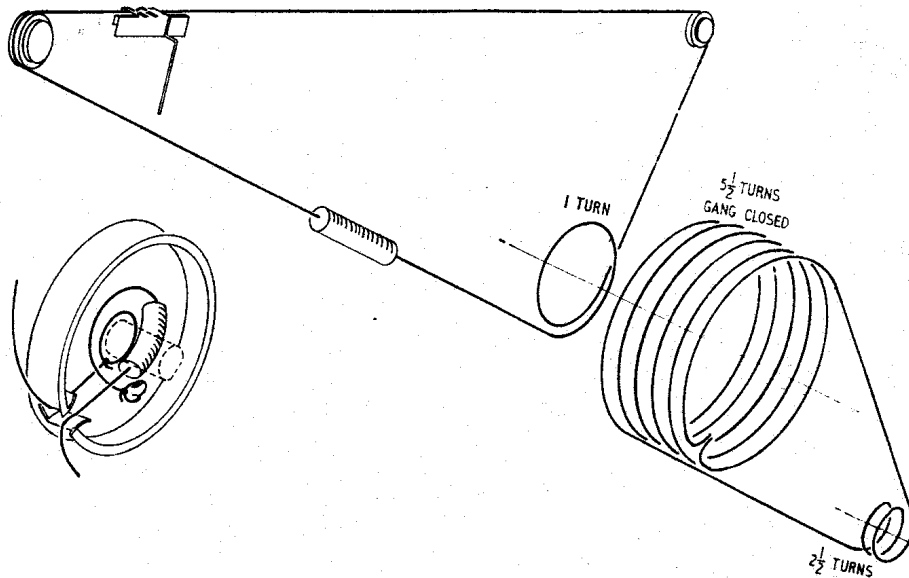
10 $\mu$ V for 20 dB S/N average M.W.  
15 $\mu$ V for 20 dB S/N average L.W.

### A.G.C. Action

+ 70 dB for 6 dB change in audio.



ILLUSTRATION SHOWING 'SHORT' PANEL VERSION SRX25



SERIES COORDING DETAILS VIEWED FROM FRONT GANG CLOSED

## INTRODUCTION

This SRX25 tuner/amplifier assembly is used throughout the Dynatron range of models as listed on the front cover of this Service Manual.

There are slight mechanical differences however, chiefly confined to the length of front panel used.

Short panel 15½" is used for models—RG60, RG61, RG62, RG63, RG64, RG69, HFC13 and HFC14.

Medium panel 17" models—RG65, RG66, RG67 and RG68.

Long Panel 18" models—HFC11 and 11M, HFC12 and TRV20.

The chassis are further sub-divided into SRX25DL and SRX25S series by the use of alternative mains' transformers.

SRX25DL—RG62, RG63, RG65, RG66, RG67, HFC12, HFC13, HFC14 and TRV20.

SRX25S—RG60, RG61, RG64, RG68, RG69, HFC11 and HFC11M.

TRV20 has a pick-up socket provided at the rear socket panel to accept either a Piezo ceramic or Magnetic cartridge. Frequency compensation is to R.I.A.A. curve and is automatically applied for each type of cartridge depending on the manner in which the plug is wired.

## CIRCUIT DESCRIPTION

Reference should be made to the diagram, Fig. 4.

### Audio Amplifier Section

The circuit diagram shows the L.H. channel only since the R.H. channel is identical. VT1 is equalised P.U. pre-amp stage with sensitivity suitable for magnetic cartridges of medium output (5 mV will fully drive the amplifier). Piezo cartridges must have a series resistor of the order of 100 K ohms to give cartridge constant velocity output. Function switch SW1 selects either P.U., Tape or Radio input and feeds signal to tone control amplifier VT102 the output passing to volume/loudness control RV4. SW2 is bass boost or loudness correction switch. From RV4 signal passes to VT3 where base bias is set by network R18, 19, 20 to give correct centre point voltage at board connector point 26. VT4 is class A driver feeding complementary phase splitting driver VT5 and VT6. These in turn drive Class B output stages VT7 and VT8 whose forward bias is set and maintained by diodes D1 and D2 in collector of VT4. Supply volts are provided by T13 and rectifier LT120, C207 being the reservoir. Fuses F3 and F2 of 1 amp rating provide protection for R.H. and L.H. channel output stages. T13 has code number 15702 for the 25S series and 15703 for the 25DL series chassis. Sockets SKT1 and SKT2 are for turntable motor and interior lamp connection and SKT5 is the shuttered mains outlet socket of 200 watts capacity fitted to the rear sockets panel. All power is controlled by toggle switch SW7 via fuse F1 of 1 amp rating. Scale lamps are 6.5V 0.3A M.E.S. type. D201 diode and R204, C206 and C209 form a separate power supply for the Radio Tuner Section.

### Radio Tuner Section A.M.

The A.M. and F.M. tuner sections are quite separate; consider first the A.M. section. Waveband selection is by SW5. The appropriate aerial coil is tuned by gang section VC1 with TC1 trimmer for M.W. and TC2 for L.W. External A.M. aerial coupling coil L1 is connected via contacts on SW4 AFC switch so that the external aerial if connected to SKT7 can be selected at will by operating SW4. T9 oscillator coil is tuned by VC2; TC2 trims M.W. and TC3 L.W. The I.F. amplification is carried out by module LP1159. This unit is factory aligned for accurate band-pass characteristics and a factory replacement should be fitted if service is required. The detector load is provided by R64, R65 and the tuning meter, selected by SW5F for the correct polarity. A.M. audio signals obtained from the junction of R64 and R65 via C52 are selected by SW5D, E and passed to the selector switch SW1.

### Radio Section F.M. V.H.F.

Dipole aerial input to V.H.F. tuner unit AE02119 feeds to R.F. amplifier TR201 and thence to mixer TR202. A.F.C. voltage is applied to capacitor diode D201 via point E decoupled by C202. I.F. output from tuner is fed to 10.7 MHz I.F. amplifier, TR1, TR2 and TR3 which feeds the ratio detector transformer T3 and associated diodes D1, D2. The operating conditions of TR3 are chosen to enable adequate limiting to occur at an aerial input signal of less than 10µV to improve A.M. rejection. RV1 part of D1 load is for detector balance and R16 forms remainder of D1 load. Load of D2 is composed of R15 and R17. The polarity of the tuning meter is changed by SW5F and meter is connected across R17. From the tertiary winding of T3 demodulated F.M. signals pass to the Decoder unit.

### Decoder

Here let us assume that a stereo signal is being received so that a 19 kHz pilot tone will be present in the output

from the detector circuit and fed to TR4 base. TR4 is a pre-amplifier and provides two outputs—the first passing to the secondary of demodulator transformer T6 and the second to T4 tuned to 19 kHz in base of TR5. In the collector circuit of TR5 is T5 with diodes D4 and D5 forming a frequency doubler to provide a switching signal at 38 kHz feeding to TR7. T6 and diodes D5, D6, D7 and D8 perform the demodulation and switching functions to provide correctly phased Left and Right hand signals via C41 and C40 to the filter and de-emphasis networks terminating at points 23 and 27 respectively. 38 kHz from TR7 via C38 is fed to TR8 to switch on TR9. TR9 collector current lights stereo beacon LP5, a 24V, 1 watt L.E.S. tubular lamp. To prevent spurious triggering of the stereo decoder by noise and also to ensure that a satisfactory channel separation is obtained there must be a large enough voltage available from the detector diode D1 load R16 to turn 'off' gating transistor TR6. An adequate aerial signal must therefore be made available. If TR6 continues to conduct, its collector current through R32 will keep the base bias of TR6 too low for proper operation and there will be no 38 kHz signal generated. Therefore the demodulator switching will be inoperative and there will not be any 38 kHz signal from TR7 collector to the stereo beacon circuit and LP5 will not light.

When receiving a monaural broadcast V.H.F. signal there will be no pilot tone signal and the audio signals will pass directly from TR4 to the secondary of T6. The absence of 19 kHz tone means that the 38 kHz switching voltages will not be generated and the demodulator diodes will not be switched. The decoder unit is thus automatic in operation. Please note that realignment of the Decoder circuits should NOT be attempted unless complete encoding equipment is available.

## REMOVAL OF SRX25 SERIES CHASSIS

### RG60, RG61, RG62, RG63, RG64 and HFC14

1. Remove cross-head screws from front edge and rear of control panel facia.
2. Remove external plugs from sockets panel. Lift up front edge of facia to expose chassis and remove leads to gram motor, interior lamp, pick-up, loudspeaker and mains transformer.
3. Feed mains lead through aperture at rear of cabinet and withdraw facia and chassis together.

### RG65, RG66, RG67, RG68

1. Remove sockets section cover panel from rear of cabinet after removing external plugs.
2. Remove mains transformer plug lead and disconnect loudspeaker leads. Release sockets panel from its mounting studs.
3. Remove cross-head screws from top of facia and smaller screws from rear of facia edge.
4. Lift up chassis complete and remove leads to gram motor, interior light and pick-up.
5. Withdraw facia and chassis with sockets panel up through cabinet.

### HFC11 and 11M, HFC12, TRV20

1. Remove base of cabinet and release 4 screws holding main chassis to front of cabinet, also 2 nuts holding sockets panel.
2. (a) HFC11 and 12—Release plugs connecting gram motor, pick-up and mains transformer.  
(b) TRV20—Release mains transformer plug lead.

### RG69

1. Remove base of cabinet and release plug leads for gram motor, interior lamp, loudspeakers and mains transformer.
2. Remove 2 nuts holding sockets panel to cabinet.
3. Remove screws holding facia panel and withdraw complete assembly through top of cabinet.

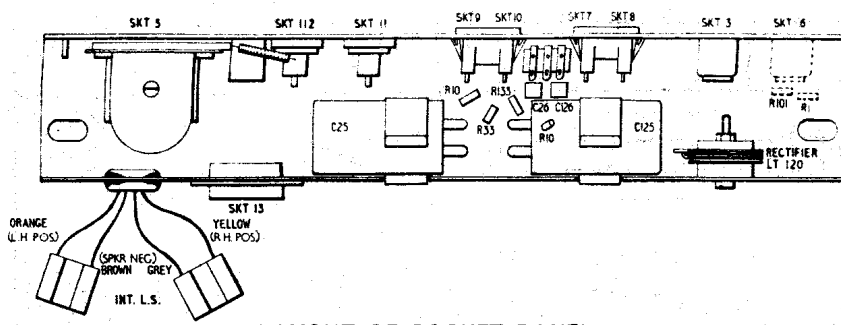
### HFC13

1. Release fixing screws and lift motor board to gain access to rear sockets panel mountings and mains transformer plug.
2. Remove cross-head screws from tuner facia panel top and right-hand edge. Lift facia panel with main chassis attached and when all plugs are removed withdraw chassis and sockets panel up through cabinet.

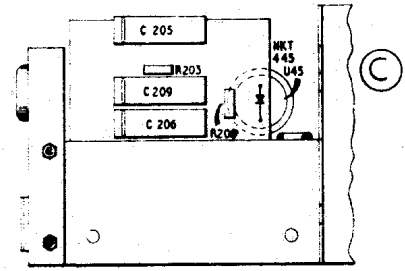
## MAIN CHASSIS

To work on underside of audio print panel, Fig. 2, release the 2 special studs securing board and lift up panel by hinging on the cable form immediately behind the control potentiometers (front of chassis).

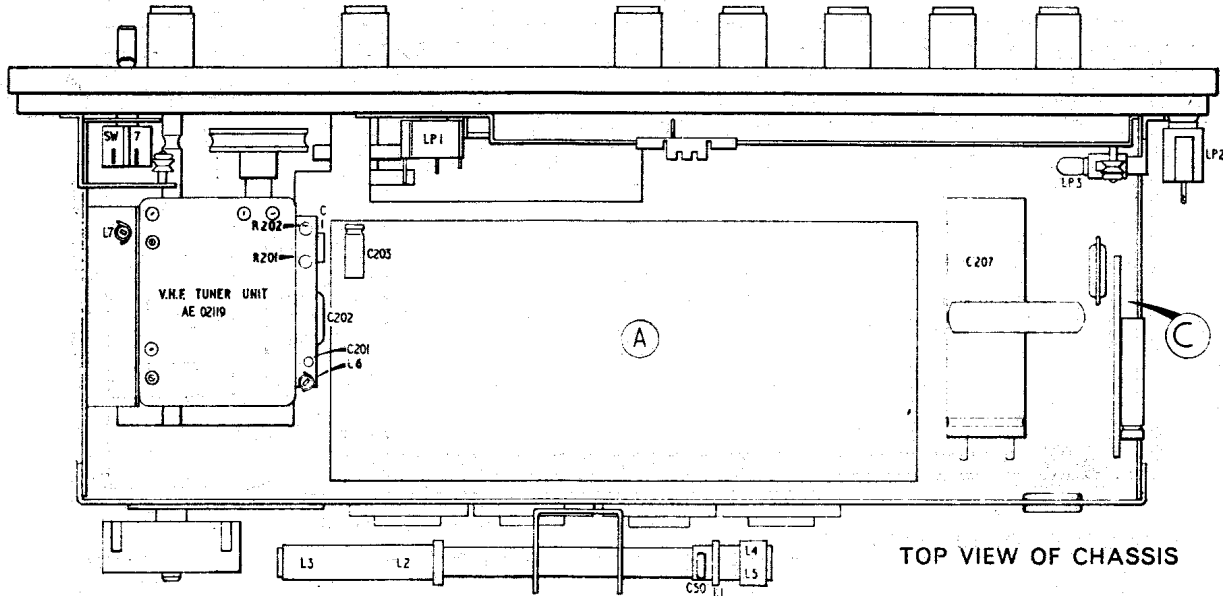
To work on underside of receiver print panel, Fig. 1, release 4 special studs securing board and unsolder leads to ferrite aerial and tuning gang so that the board may be lifted and hinged on the cable form at front of chassis.



LAYOUT OF SOCKET PANEL



TAG STRIP ASSY.



TOP VIEW OF CHASSIS

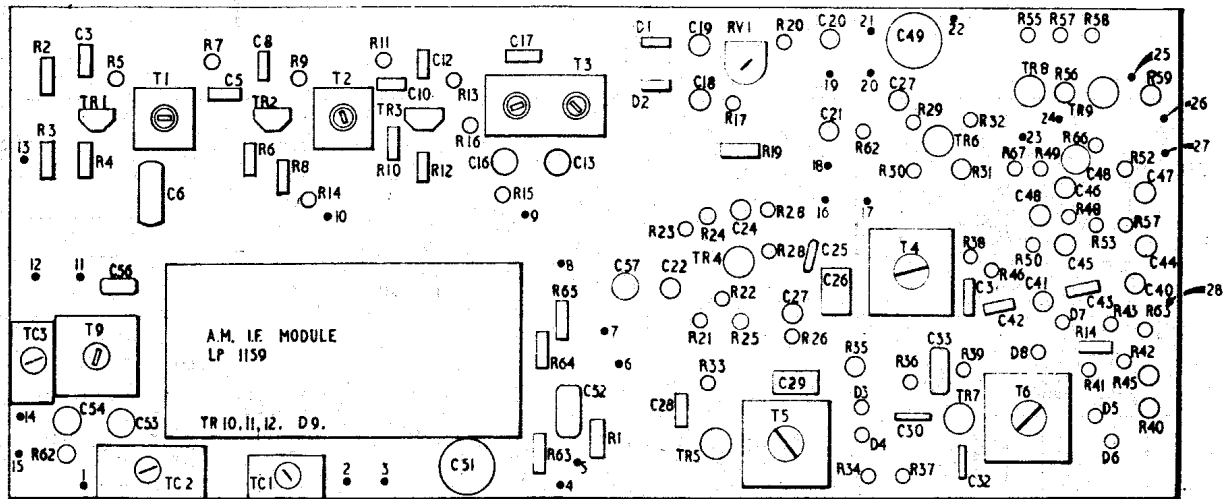
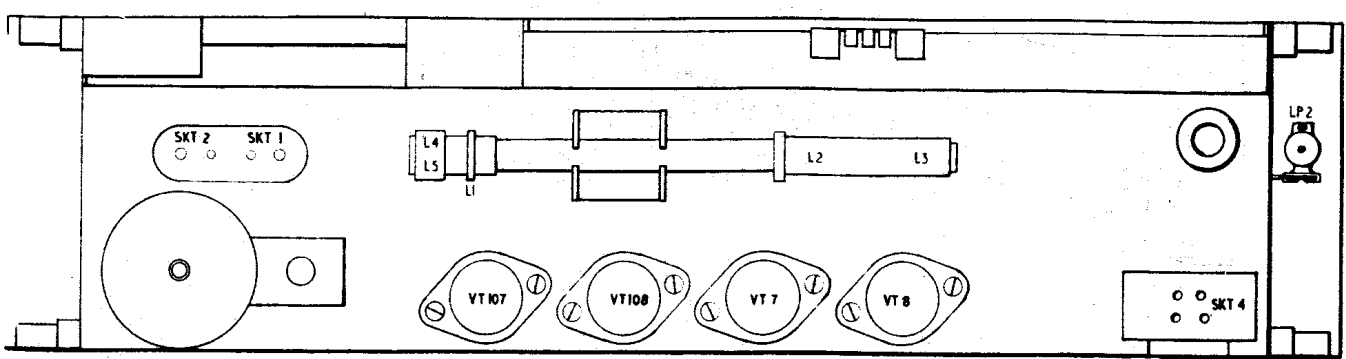


Fig. 1 LAYOUT OF RECEIVER PRINT PANEL

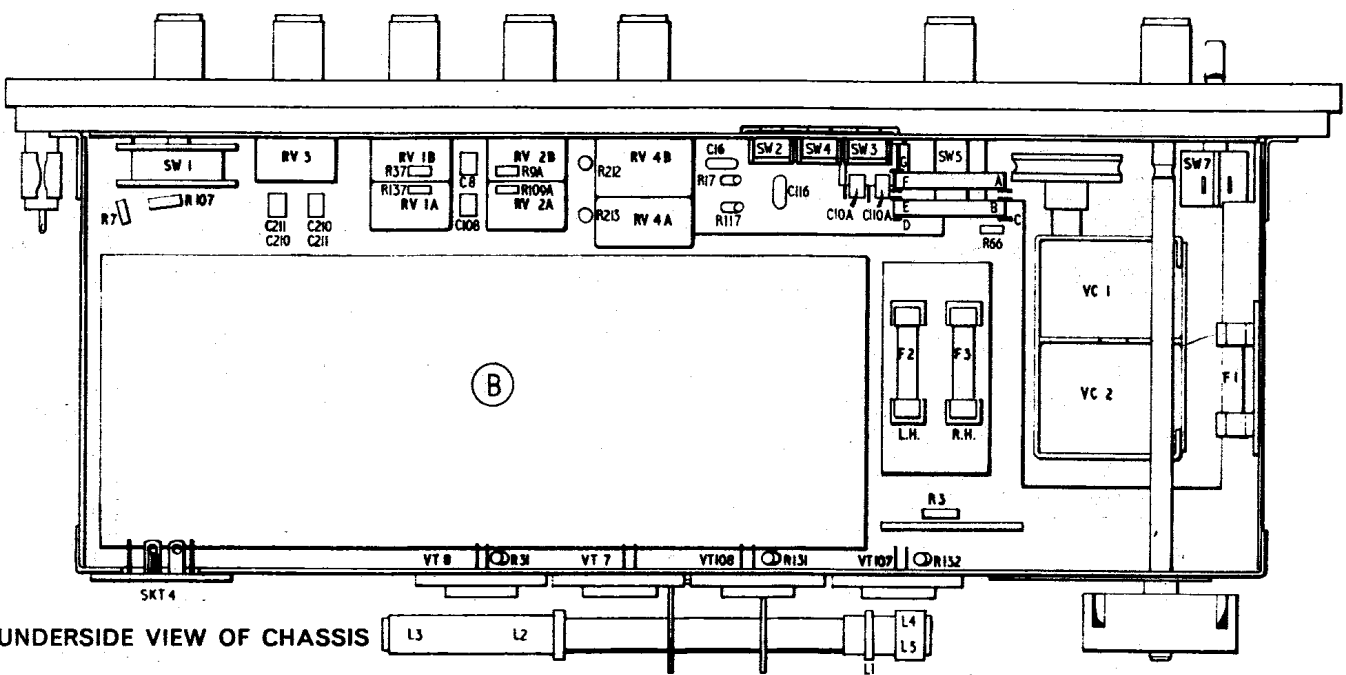
**LOUDSPEAKERS**

- RG60 2 × 8" dual cone units
- RG61 2 × 10" × 6" dual cone units
- RG62 2 × 8" dual cone + 2 × 3" H.F. units
- RG63 2 × 10" + 2 × 5" + 2 × 3" H.F. units
- RG64 2 × 8" units
- RG65 2 × 8" dual cone units
- RG66 2 × 8" dual cone units
- RG67 2 × 8" dual cone units

- RG68 2 × 6½" dual cone units
- RG69 2 × 6½" + 2 × 3" H.F. units
- LS100 6½" + 3" H.F. units
- LS150 8" + 3" H.F. units
- LS200 8" + 3" H.F. units
- LS250 } 12" + 3" H.F. units
- LS275 }
- LS300 12" + 2 × 3" H.F. units



REAR VIEW OF CHASSIS



UNDERSIDE VIEW OF CHASSIS

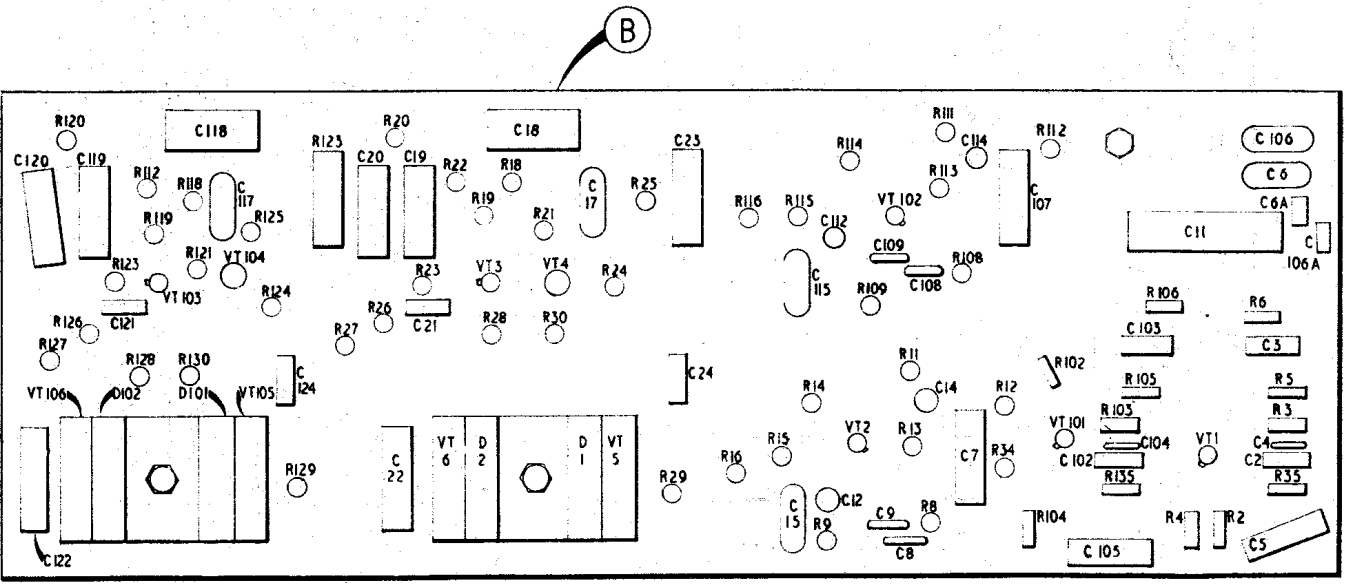
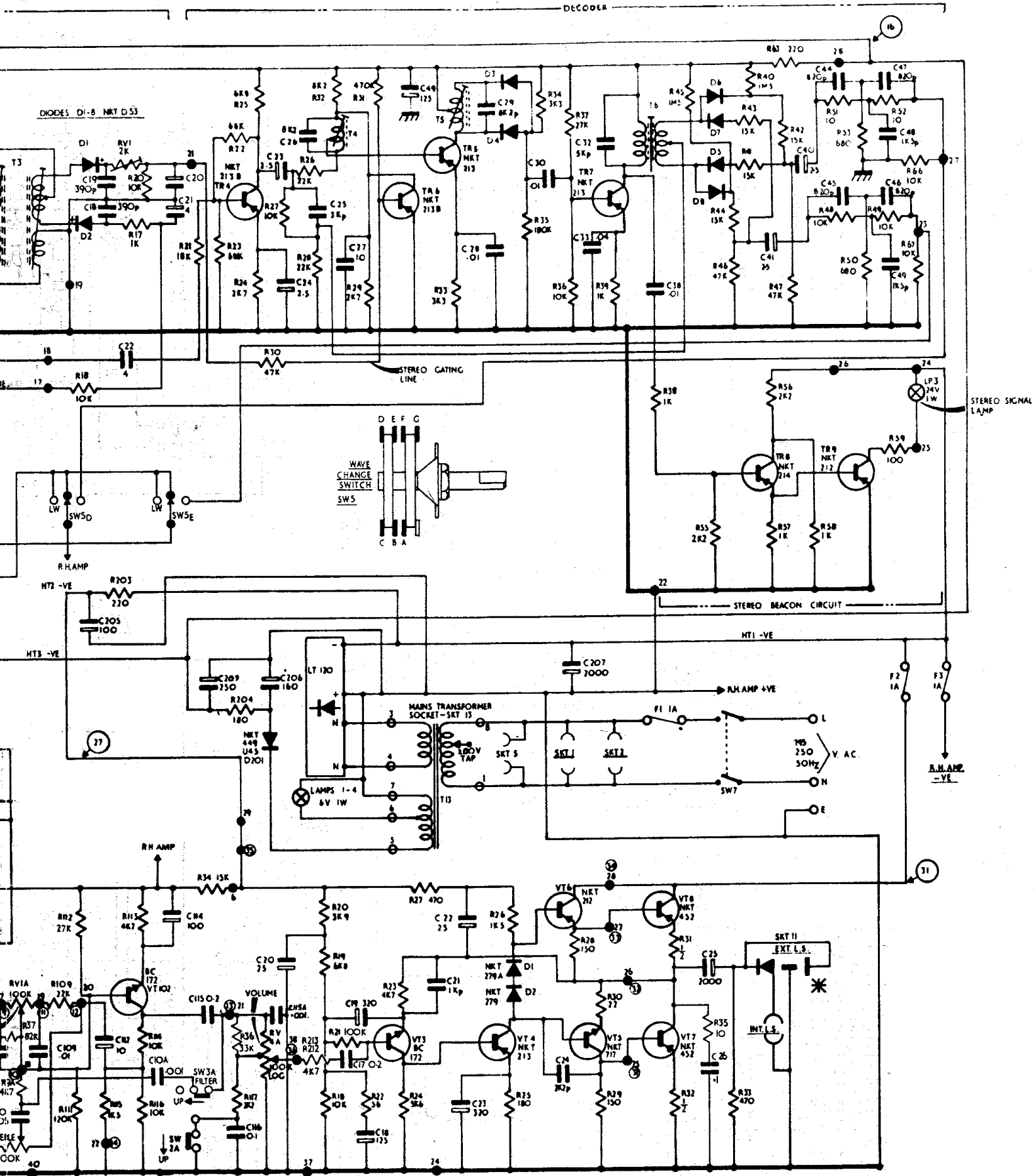


Fig. 2 LAYOUT OF AUDIO PRINT PANEL

**TURNTABLES & PICKUPS**

- RG62, RG65, RG66 and RG67: Garrard Model 3500 with 9TAHC cartridge
- RG60, RG61, RG64, RG68 and RG69: Garrard Model 2025 TC with 9TAHC cartridge
- RG63: Garrard Model 50 Mk 2 with 9TAHC cartridge
- HFC11: Garrard 2025 TC with 9TAHC cartridge
- HFC12: Lenco/Goldring GL75 with G800 or G800H cartridge
- HFC13 & HFC14: Garrard Model 3500 with 9TAHC cartridge





LEFT HAND AMPLIFIER ONLY SHOWN.  
 COMPONENTS ON CHASSIS WIRING - R201 & C201 ETC.  
 ● BOARD CONNECTOR PINS. (77) D.C. TEST VOLTAGES. (7) R.H. AMP. PIN NUMBERS.  
 WAVE CHANGE SWITCH TO M.W. & A.F.C. ON, SELECTOR SWITCH TO "RADIO".  
 \* SKT 12 R.H. L.S. OUTPUT.

LAMPS: 6.5V 0.3A M.E.S.  
 24V 1W L.E.S.

Fig. 4 CIRCUIT DIAGRAM OF SRX25 SERIES CHASSIS

## NOTES

### COPYRIGHT

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*Issued by SERVICE DEPARTMENT*

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