



INSTALLATION

PRE-AMPLIFIER CONTROL UNIT SC.24

1. GENERAL

The SC.24 is a transistor stereophonic pre-amplifier control unit having a wide range of facilities with outstanding performance. It is intended for use with PA.50, SPA.50 and PA.100 power amplifiers but may be used with any power amplifier.

2. MAINS INPUT VOLTAGE SELECTION

The amplifier is designed to operate from A.C. Mains of 110-130V. and 220-240V., 40-60 Hz.

To change the voltage setting remove the cover plate over the mains voltage selector on the rear panel of the equipment and rotate to the desired voltage setting. The input voltage to which the equipment is set will be visible through the window of the cover plate. To provide for variations of the mains input voltage the setting should be within +5% -10% of the nominal supply voltage.

DISCONNECT THE SUPPLY BEFORE ANY ADJUSTMENT IS MADE.

3. VENTILATION

Special arrangements are unnecessary for the SC.24 as very little heat is generated in itself. It should not be placed above power amplifiers generating heat, however, unless adequate ventilation is provided.

4. MAGNETIC RADIATION

The pre-amplifier is fitted with a small mains transformer having a compact magnetic field. It should be appreciated, however, that hum may be induced in unshielded transducers if placed in close proximity.

5. TERMINATIONS**5.1: Audio Inputs (Fig. 1)**

Four sets of audio inputs are available in addition to a tape monitor input as detailed below. Selection is by push button switches.

DISC.	2.0 mV. sensitivity (R.I.A.A.) (BS.1928/1961) 47kOhms
AUX. 1.	2.0 mV. sensitivity (R.I.A.A.) (BS.1928/1961) 47kOhms or 2.0 mV. sensitivity (Flat characteristic) 47kOhms
TUNER.	80 mV. sensitivity (Flat characteristic) 100kOhms
AUX. 2.	80 mV. sensitivity (Flat characteristic) 100kOhms
TAPE.	80 mV. sensitivity (Flat characteristic) 100kOhms

5.1.1 Disc, Aux. 1

Two sets of disc inputs are provided one marked 'DISC' and the other 'DISC. 2, AUX. 1' Both inputs are equalised to R.I.A.A. (BS.1928/1961) characteristic, but the 'DISC 2, AUX. 1' input can be modified for a level frequency response of high sensitivity by adjusting a link connection (Fig. 2).

5.1.2 Tuner and Auxillary 2

Tuner and Aux. 2 inputs are identical and have a flat frequency response characteristic of medium sensitivity. Aux. 2 is suitable for an additional tuner, or a tape machine for replay only.

5.1.3 Tape Machine (Fig. 3)

The tape machine inputs are independent of other inputs to permit listening to the recorded output from a tape machine whilst the amplifier is being used for recording from one of the other inputs, i.e. disc or tuner etc.

Two sets of tape input terminations are provided, one to phono sockets, and the other to a 5 pin DIN socket, which also provides recording outputs.

An additional tape machine for reproduction only may be connected to the 'AUX. 2' termination. This input should be used for tape copying.

5.2: Audio Outputs**5.2.1: Power Amplifiers**

The output source resistance of the SC.24 is very low and it is therefore possible to use the SPA.50 amplifier remote from the SC.24. For a loss of 3dB at 20KHz., screened cable of up to 5000 pf (160 ft. of 30 pf/ft. cable) may be used.

5.2.2: Headphones

The headphone output socket is situated on the Front Panel below the push button switches. A 3 point jack plug is supplied for connection to headphones leads.

5.2.3: Tape Recording

Two sets of tape recording outputs are provided. One set supplies an output level of 250 mV. from a low source resistance to phono sockets. The other is available at the DIN socket at 30 mV. output.

5.3 A.C. Supply Mains**5.3.1 Input**

Mains input is by a 3 core cable wired in accordance with the new International coding. i.e. Live phase—brown, neutral phase—blue; earth—yellow/green.

5.3.2. Outlets

Four sets of AC outlets are provided; two sets being switched and two unswitched. The voltage at these terminations will be the same as the mains supply.

6. SETTING UP A COMPLETE INSTALLATION**6.1 Hum**

The SC.24, SPA.50 combination has a very low hum level which under practical conditions can be considered non-existent.

6.2 Earthing

Only one piece of equipment should be earthed in a complete installation, preferably the pre-amplifier. If more than one earth connection is used a loop circuit with circulating hum currents may be introduced.

6.3 Pre-set Controls (Fig. 4)

These controls are on the rear panel. The 'DISC' and 'AUX. 1' controls are in circuit between the 'DISC' pre-amplifiers and the tone control amplifiers. The 'TAPE' controls are in circuit between the tape buffer amplifiers and the tone control amplifiers.

The purpose of the controls is to enable adjustment to the overall sensitivity of the amplifier for the 'DISC. AUX. 1' and 'TAPE' inputs and so permit the volume control to be operated over all its range regardless of the source input levels.

The pre-set controls should be adjusted to provide a normal listening level at approximately halfway on the main volume control, with a high listening level at or near maximum. The overload point of the power amplifiers should not occur below maximum on the volume control for heavy passages of a symphony orchestra on a normal recording.

It is essential that the pre-set controls in each channel be adjusted also for correct balance of channels with the 'BALANCE' controls on the front panel set at maximum. If this operation is not done by a dealer, or if a tone test record and voltmeter are not available, a monophonic music signal may be used. The output from each loudspeaker is adjusted aurally to be equal when the amplifier is switched for stereo operation.

The pre-set 'output' controls are adjusted to suit the input sensitivity of the amplifier(s) in use. For the PA.50, SPA.50 the output should be set at 1.0 V.

6.4 Stereophonic Sound Presentation

Ensure that the left and right channels are correctly connected from the pick-up, tape machine, tuner etc., through to the loud-speaker. If a stereophonic test record and test tape are available, a complete system check can be made.

7. OPERATING THE EQUIPMENT

7.1 Input Programme Selection

All programme sources may be permanently connected to the pre-amplifier and selected by means of the push button switches on the front panel. The front panel is engraved to show the programme sources corresponding to the input sockets.

7.2 Tape Replay and Monitoring

The INPUT sockets on the rear panel marked 'TAPE INPUT' should be connected to the OUTPUT sockets of the tape machine marked 'AMPLIFIER' and the 'TAPE OUTPUT' sockets on the amplifier should be connected to the RECORDING INPUT sockets on the tape machine.

By operating the push-button on the front panel marked 'TAPE MONITOR' the recorded programme may be monitored WHILST THE RECORDING IS TAKING PLACE, if the installation is connected as shown in the schematic arrangement of Fig. 3. Reproduction of recorded tapes is obtained similarly by operation of the 'TAPE MONITOR' push-button. Recordings may be made from any input connected to the pre-amplifier by setting the function switch to the desired input signal.

7.3 Tape Copying

For tape copying the playback machine should be connected to the 'AUX. 2' input, see Fig. 3 as above. The process of recording and monitoring can then be carried out as detailed in 7.2.

FIG. 1. Audio Input Terminations

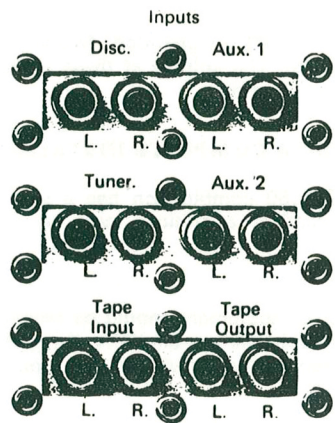


FIG. 4. Pre-set Controls

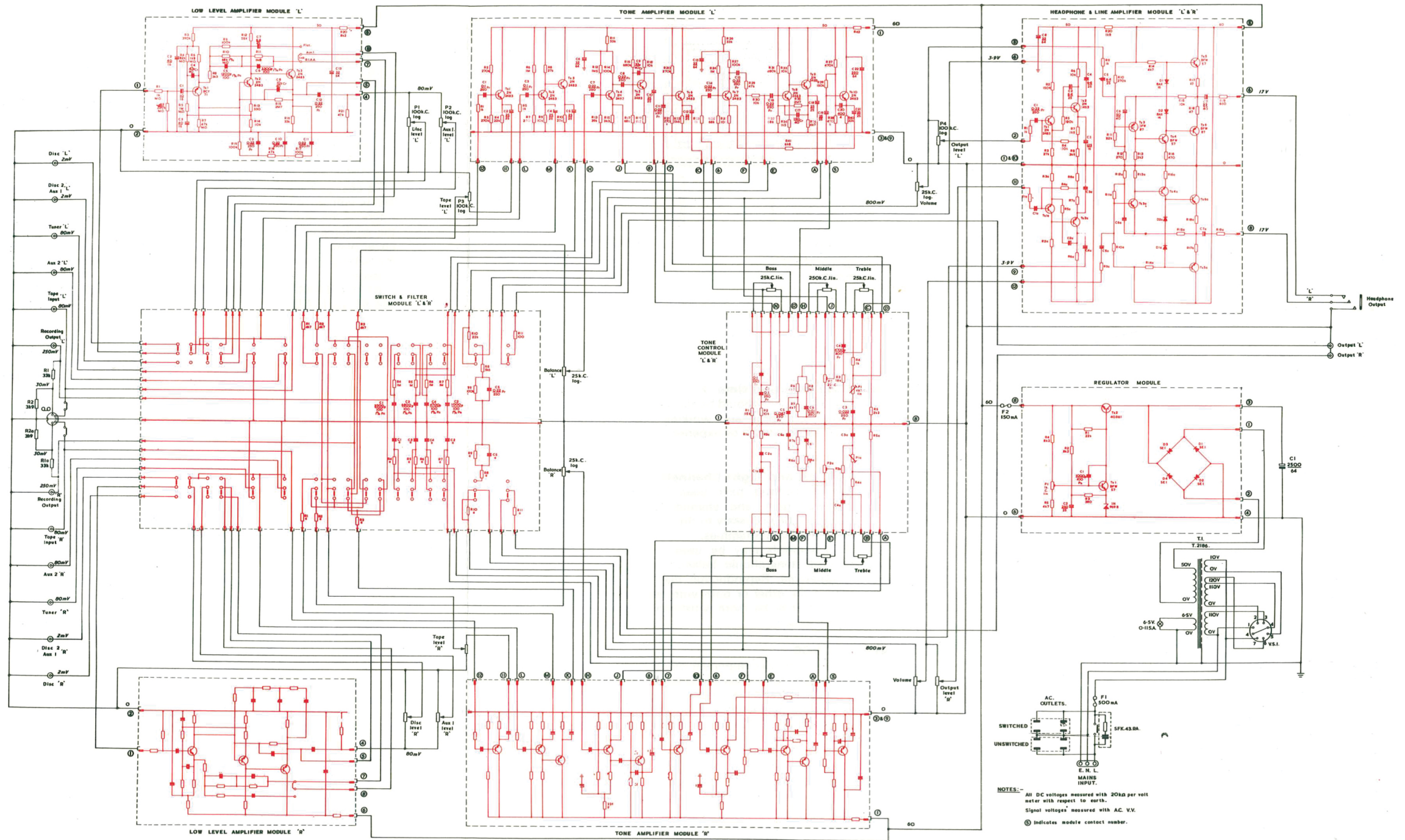
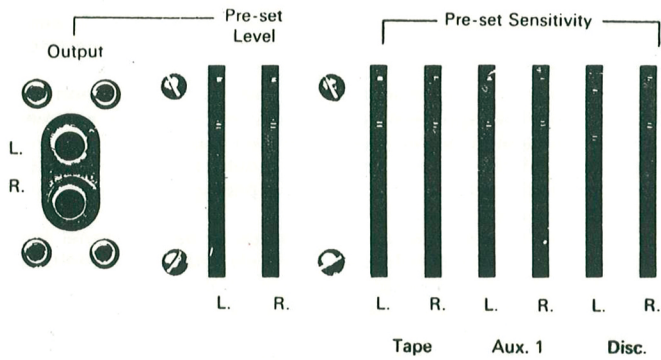
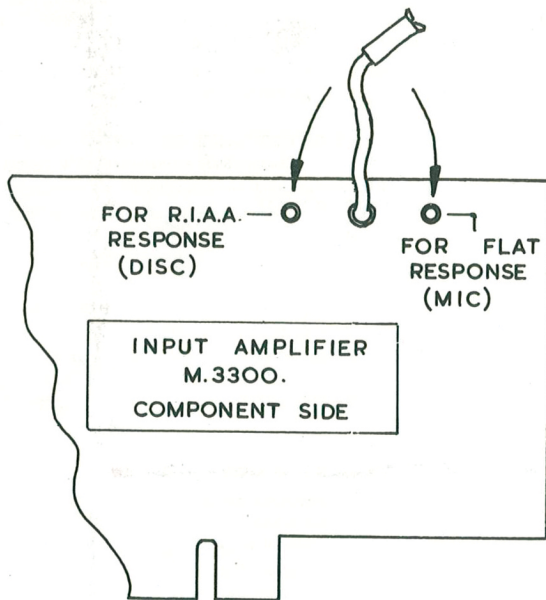


FIG. 2. R/AA/Flat response link adjustment



7.4 Treble Filter

The purpose of the treble filter is to reduce the response to high frequencies at a more rapid rate than is possible with the treble control. It should not be used except with poor programme material as the elimination of the higher frequencies not only removes distortion products but the necessary fundamental and harmonic frequencies of the original signal. (See T.I. referred to in Section 9).

7.5 Tone Controls

The tone controls are for adjusting the balance of high, middle and low frequencies—generally to compensate for variations in the programme material. The BASS control will increase or decrease the low frequency output in relation to mid-frequencies and the TREBLE control will operate similarly at high frequencies. The mid-range control provides an *increase* only in the output of middle frequencies. Under normal circumstances these controls should be set to their normal position. If a maximum setting of the tone controls is found to be necessary at all times, the ancillary equipment should be checked for faults or deficiencies.

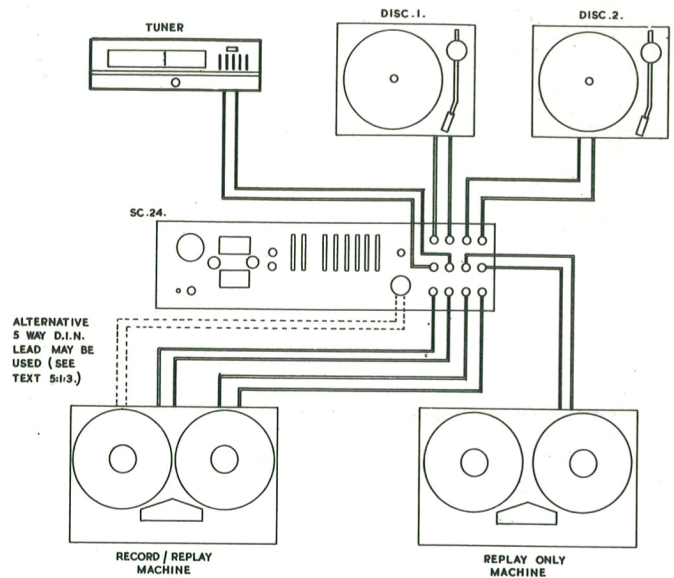
7.6 Monophonic Operation

The Stereo or Mono mode of operation is selected by two push button switches on the front panel. With the switches in the stereo position (both out) separate left and right channel signals appear at the output terminations. This is the normal position for reproduction from a stereophonic input.

When one monophonic signal only is available it can be connected to either channel input and reproduced on either or both loudspeakers (depending on the position of the balance controls) by depressing the relevant Mono L or R buttons. A second monophonic signal may be connected to the other channel input and either signal can be selected and reproduced on either or both loudspeakers. This facility is useful when replaying a 2/4 track monophonic tape on a stereo machine which has no track selection facility.

Monophonic operation from a stereophonic signal is obtained by depressing both Mono L and R buttons and using the BALANCE controls to obtain reproduction on L or R or both loudspeakers. Sometimes a reduction in output will be observed in the 'MONO' position on a stereophonic programme. This is due to phase cancellation, and it occurs when spaced microphones are used. Some stereophonic discs are quite unsuitable for monophonic operation as the phase cancellation when operated in a monophonic mode affects the sound balance.

FIG. 3. Tape machine connections



7.7 Stabilisation warm-up time

Approximately 30 seconds should be allowed after switching on for the capacitors to charge and working potentials become stabilised. Severe distortion will be experienced if used during the warm-up period.

7.8 Balance of Left and Right Channels

Once the pre-set controls have been adjusted for suitable output level, overall gain, and channel-to-channel balance, adjustment should not be necessary to the front panel BALANCE controls on stereophonic programmes.

The BALANCE controls may be used, however, to satisfy individual tastes of stereophonic balance, and direction of a monophonic programme. Reproduction may be obtained from one loudspeaker or the other or both with any desired balance. Monophonic speech may be more satisfying when reproduced on one loudspeaker only.

8. MAINTENANCE

A circuit diagram giving all component values is shown in Fig. 5.

This Technical Instruction (Installation) together with Technical Instruction No. TI(A) 165 and the sales leaflet giving specification data will enable first line maintenance to be carried out.

A Technical Instruction TI.C24.970 is available for full service of the equipment.

9. USE IN THE HOME

A separate leaflet No. A15 'Use of Audio Equipment and Loudspeakers in the Home' describes the operation of Radford Audio equipment and loudspeakers with ancillary equipment for high quality domestic sound reproduction and is available upon request.

10 GUARANTEE

This equipment is guaranteed for 1 year from the date of purchase in respect of labour and materials. Please read guarantee enclosed and return the registration card immediately.

Radford Audio Ltd. Bristol BS3 2HZ