

J. E. SUGDEN

C51 CONTROL UNIT AND A51 POWER AMPLIFIER INSTRUCTION LEAFLET

SPECIFICATION - C51

(All levels quoted ± 1 dB unless otherwise stated).

Rated output to Power Amplifier 600mV
Maximum output 1.5V
Output to Tape Recorder 150mV from disc input correctly loaded, direct connection radio and auxiliary

Input sensitivities and Impedances

Magnetic cartridge 2.5mV into 68K equalised to R.I.A.A. through plug in input adaptor to special input.
Ceramic cartridge 250 microvolts basic equalised to R.I.A.A. sensitivity 2.5mV into 68K (can be equalised to suit special requirements).

Special

150mV into 250K flat response for maximum output when driven into A51

Radio Tape Auxiliary

25dB on disc input is infinite on radio, aux. and tape inputs.
Aux, disc, also with 20dB (10x) overload with appropriate setting of volume control—better than 0.1% (mainly second harmonic) at a rated output (0.25% at 1.5 volts output).

Overload Capabilities

Total Harmonic Distortion (at 1 kHz)

Frequency response (relative to 1 kHz, flat or relative to R.I.A.A. as appropriate)
Signal to noise ratio (30 phon weighting)
Interchannel crosstalk

Control Knobs

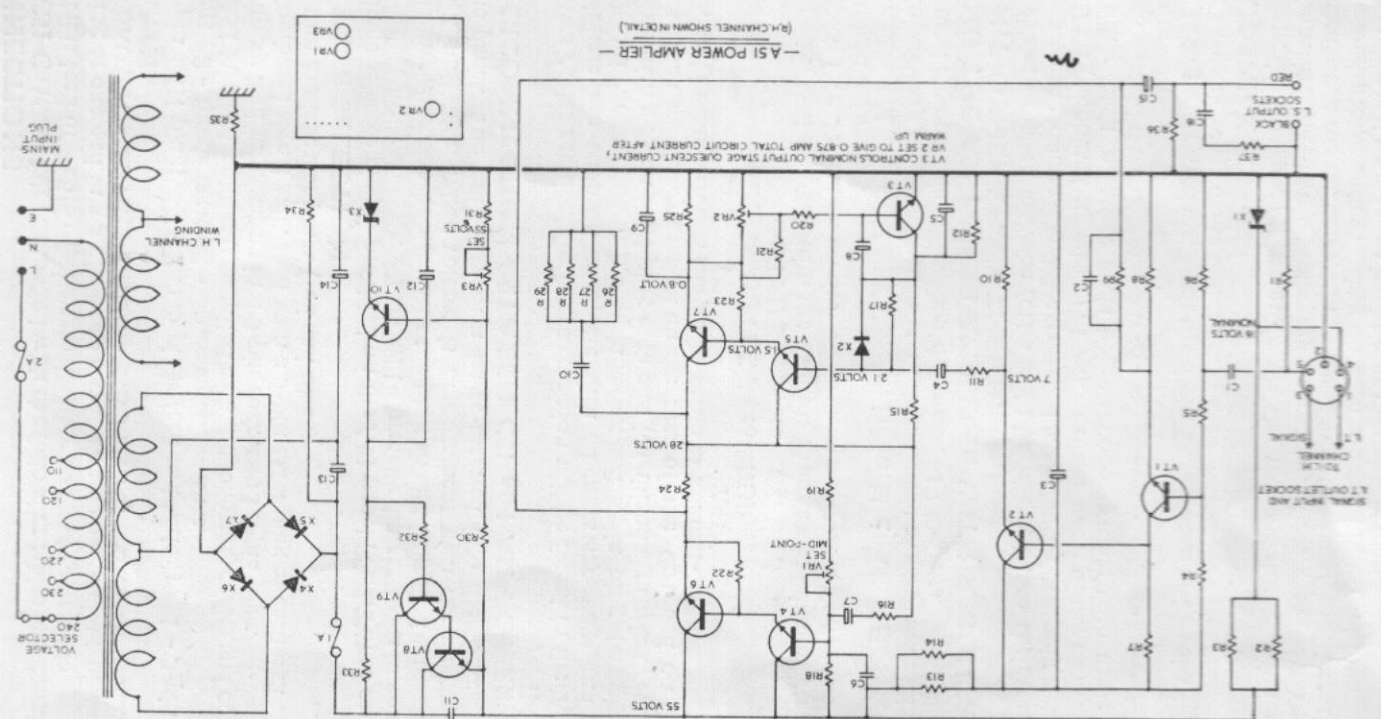
Bass ± 14 dB at 40Hz
Treble ± 10 dB at 10kHz
Volume Logarithmic (Channel balance ± 1 dB maintained to 50dB attenuation)
Balance ± 6 dB for 180° rotation, either channel eliminated at limits of rotation.

Push buttons to select

Inputs
Rumble Filter
High frequency filter
H.F. Filter Slope
Function
Quiet

Power Size Weight Mounting

16 volts at 13mA., obtained from A51 Power Amplifier
11" x 3 3/4" x 6 3/4" (280 x 95 x 170mm).
6 lbs. 3 oz. (2.9 Kg).
Free standing or panel mounting with clamps supplied



R31 1K
C5 100p
80
V10
DC109
R29
R30 8.2K

USING THE C51 CONTROL UNIT WITH POWER AMPLIFIERS OTHER THAN THE A51

Power requirements for the C51 are:-

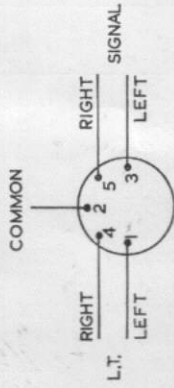
L.T. + 16 volts \pm 5% @ 13 mA per channel.

Ripple voltage not greater than 50 millivolts peak to peak.

To avoid hum loops, the 16 volt supply should be isolated from earth, or the negative rail connected to earth through not less than 100 ohms. The negative rail is connected to earth inside the C51.

Connections should be made as follows:-

1. The mains lead supplied with the Control Unit should be connected to the MAINS INPUT socket on the C51, allowing switching via the volume control/on-off switch.
2. The signal and L.T. leads from the power amplifier should be connected to the 5-pin DIN plug supplied, which should be wired as illustrated viewing from the inside of the plug, i.e. at the solder pin end.
3. Power to the main amplifier may be taken from the MAINS OUTLET socket on the C51 Control Unit using the 3-pin plug supplied.



INPUTS

All input sockets are clearly marked on the rear panel of the Control Unit, five inputs being available as follows:-
SPECIAL DISC RADIO AUX (phono sockets) and TAPE (5-pin DIN socket).

The 5-pin DIN plug used for TAPE should be wired according to DIN standards as shown, viewing from the inside of the plug, i.e. at the solder tag end.

EQUALISATION

It is possible to alter the feedback characteristic of the amplifier and hence the equalisation by means of modifying the linkage between the 8 pins (A to H) on the C51 printed circuit board, which are:

—	Pin A
—	Pin B
—	Pin C
—	Pin D
—	Pin E
—	Pin F
—	Pin G
—	Pin H

The C51 is normally supplied equalised to RIAA on both inputs, i.e. A-H linked.

For RIAA on disc and flat response on special - link A-B and D-F

For flat response on disc and RIAA on special - link B-D and A-F

For flat response on both - link D-H

Virtually any equalisation characteristic required is possible, e.g. for tape head on SPECIAL, a suitable circuit is connected between E and F, probably also using ground connection G.

For other recording characteristics a modified version of R8, R9, C3, C4 is connected between E and B.

Full information is available on request for specific requirements.

INPUT COMPENSATION

This facility is available on the SPECIAL input and supplies correct matching for certain cartridges or microphones etc. through an adaptor on the rear panel. Standard adaptors are currently available for the following:

Ceramic cartridge (Connoisseur SCU2 in particular)

Shure V.15 II cartridge

Miniconic cartridge

Microphone 2.5mV

Microphone 25mV

A D.C. Source is available at the special adaptor socket for supplying those cartridges which require an external power supply (Miniconic).

require equalisation to "flat" on SPECIAL

Remove A-H link, connect A-B and D-F

RIAA is retained on DISC

OPERATION

Control facilities are provided by means of four knobs and ten push buttons on the front panel of the C51 Control Unit. From left to right the knobs are: BASS - TREBLE - BALANCE - VOLUME with ON/OFF switch

Push buttons:

DISC button in

AUX button in

DISC & AUX buttons in

DISC & AUX buttons out

TAPE button in

L.F. button in

7K button in

10K button in

7K & 10K buttons in

STEEP button in

STEEP button out

QUIET button in

Inputs

- selects disc input for magnetic cartridge

- selects auxiliary input

- selects radio (stereo or mono)

- selects special input (see also Equalisation and Input Compensation)

- selects pre-recorded tape or tape monitor

Filters

- low frequency filter (rumble)

- roll off at 7kHz

- roll off at 10kHz

- roll off at 4kHz

- high frequency filter slope steep (18dB per octave)

- high frequency filter slope gradual (6dB per octave)

- mid frequencies attenuated 16dB at 1 kHz and response corrected according to equal loudness curve

Function

- left hand input to both amplifiers

- right hand input to both amplifiers

- left & right inputs mixed to both amplifiers (mono)

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SPECIFICATION—A51

(all levels quoted ± 1 dB) unless otherwise stated).

Power output : 25 watts RMS per channel (50 watts RMS both channels simultaneous operation) at clipping level into 12 ohm load

Total harmonic distortion (measured at 1kHz into 15 ohms) At 20 watts RMS per channel—typically 0.5% At 1 watt RMS per channel—better than 0.01%

Frequency and power response ± 0.5 dB 30Hz—20kHz

± 1.0 dB 20Hz—30kHz

Rise time: 5 microseconds

Signal to noise ratio 90dB

(10Kohm source)

Sensitivity: 600 millivolts

Input impedance: 200K ohms

Output impedance: 0.25 ohms

Load stability: Unconditional

Power consumption: 100 watts

Size: $13\frac{1}{2}'' \times 8\frac{1}{2}'' \times 10''$ (343 x 216 x 254 mm)

Weight: 22 lbs (10 Kg)

INSTALLATION

The C51 Control Unit is suitable for use either free standing on a shelf or for mounting in a cabinet (vertical or horizontal position).

When shelf mounting, the four screws in the base should be removed and the small feet supplied substituted, utilising the screws taken from the base.

It is advisable to fit one foot at a time leaving the remaining screws intact in order to prevent any undue movement of the base panel.

Instructions for cabinet mounting are as follows :-

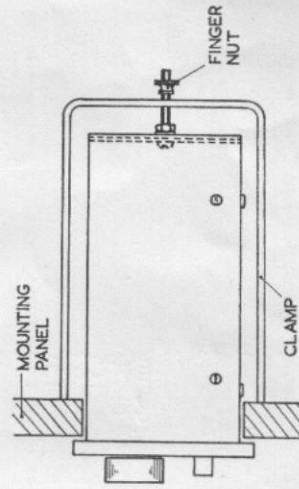
1. Cut aperture in panel $10\frac{7}{8}'' \times 3\frac{1}{4}''$.
2. Remove the outer cover by unscrewing the four chrome securing screws located at the sides.
3. Insert the $4BA \times 1\frac{1}{4}''$ screws provided into the two central holes in the rear flanges so the screws project rearwards. Secure firmly by means of the spring washers and nuts provided.

4. Replace the cover.

5. Insert the control unit through the aperture in the mounting panel.

6. Place the U shaped clamps over the projecting screws at each end and tighten up against the inside of the mounting panel with the knurled finger nuts provided.

The A51 Power Amplifier will normally be sited in the bottom of the equipment cabinet, and preferably as remote as possible from the pick-up cartridge and control unit to minimise picking up stray hum from the mains transformer. Adequate ventilation must be allowed and care taken not to obstruct the heat sinks on the sides of the amplifier



CONNECTIONS

The C51 Control Unit is supplied with the following cables and connectors:
1 - Mains lead of 3 core cable approximately 10 ft. (3 metres) long, terminating at one end in a 3 pin line socket. The colour coding of this lead is BROWN - LIVE; BLUE - NEUTRAL; GREEN/YELLOW - EARTH.

1 - 5-pin DIN plug; 8 - Phono plugs (red and white); 1 - 3-pin mains plug; 2 - Spade tags; 2 - Spare equaliser links.

The A51 Power Amplifier is supplied with the following cables and connectors:

1 - Supply lead terminating in a 3-pin socket and 3-pin plug.

1 - Combined signal/L.T. lead with a 5-pin DIN plug at each end

4 - 4 mm loudspeaker plugs (red and black)

VOLTAGE SELECTION

A voltage selector plug is provided on the A51 panel (VOLTS) to cope with all normal supply voltages. This will normally be set for 240 volts, but should any alteration be necessary the plug should be pulled outwards and rotated until the required voltage is in alignment with the arrow marked on the panel. The plug may then be re-inserted into the socket.

INTERCONNECTION BETWEEN C51 and A51 POWER AMPLIFIER

The two cables required for interconnection will be found in the A51 carton. These are supplied complete with all necessary plugs and sockets attached, i.e. one cable with a 3-pin socket and 3-pin plug (supply lead), and one with a 5-pin DIN plug each end (combined signal/L.T. lead).

Connections are clearly marked on the rear of the C51 and on the A51 panel, and interconnection should be made as follows:-

A51

MAINS OUTLET to SUPPLY

OUTPUT to INPUTS

The mains lead supplied with the Control Unit should be connected to the MAINS INPUT socket on the C51, allowing switching via the volume control/on-off switch.

An auxiliary MAINS OUTLET socket is provided on the C51 for connecting to ancillary equipment such as a turntable or self-powered radio tuner. The total load on this outlet should not exceed 150 watts.

USING THE A51 POWER AMPLIFIER WITH A CONTROL UNIT OTHER THAN THE C51

The cables supplied with the A51 should be plugged into their respective sockets on the power amplifier panel, i.e. SUPPLY (supply lead) and INPUTS (combined signal/L.T. lead). In the event of the connectors on the other ends of these leads being non-compatible with those on the chosen control unit, they will have to be removed and the correct types substituted.

The L.T. power available from the 5 pin DIN socket is 16 volts @ 20mA each channel, zener diode stabilised.

LOUDSPEAKERS

Loudspeaker connections are made via the red and black 4 mm sockets. Mains twin flex (14/0076 preferably colour coded for ease of phasing) is recommended for the connecting wire. Do not connect together the two black loudspeaker sockets—they do both connect to "earth" internally but further external connection could cause instability loops.