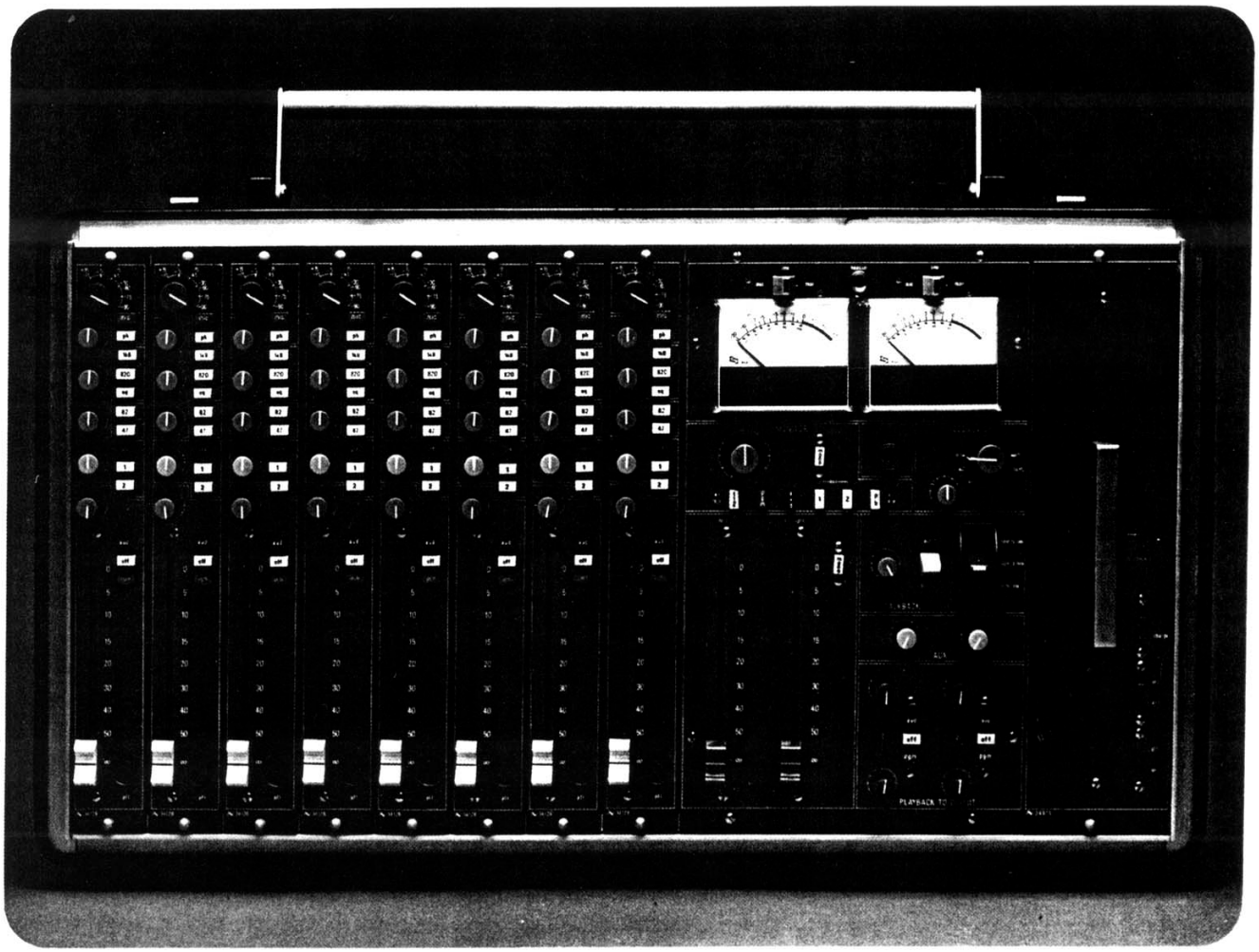
Neve

542 Range
6-8 Channel 2 Group
Audio Consoles



Introduction

The NEVE 542's comprise a range of small, compact audio mixing consoles designed for professional recording or broadcast applications.

With 6 or 8 input channels, depending on configuration, and two playback inputs, the consoles provide two main stereo programme outputs with a mono facility, two auxiliary outputs and a comprehensive stereo/mono monitoring system on associated headset or external loudspeakers.

Throughout, the consoles are fully modular in concept and construction utilising the latest integrated circuit technology in conjunction with established and well proven audio processing techniques. This design philosophy, together with conservatively rated components, gives a no compromise performance under stringent operating conditions and installations.

Available in four basic configurations the consoles are housed in strong, rugged and durable cases, tastefully styled and finished to complement and blend with the installation decor.

5422	8 Channel 2 Group 'Suitcase' Portable Console
5422-R	6 Channel 2 Group 'Rack Mounted' Console
5432	8 Channel 2 Group 'Drop Thro' Console
5442	8 Channel 2 Group 'Table Top' Console

Features

System Extension

The 5422, 5432 and 5442 consoles provide for basic 8 channel 2 group broadcast installation and the 5422-R a 6 channel 2 group installation. The relevant circuits on each of these consoles are prewired to a multipin connector where this facility in conjunction with optionally available connection leads, allow two or more consoles in any console combination, to be coupled together to extend the system to any number of input channels.

Independent Powering

The 34613 Internal Battery Unit comprises a system of rechargeable nickel cadmium cells and in the fully charged state is capable of maintaining rated performance for a typical period of 4 hours or more. The battery unit, fitted as standard equipment on the 5422 suitcase portable console, is optionally available on the 5432, 5442 studio consoles.

Continuous Performance

The PS12100 External Power Supply is provided for 19 ins (48.3cms) rack mounting, with the 5422-R, 5432 and 5442 consoles, and as a free standing unit with carrying handle for the 5422 suitcase to maintain maximum mobility.

The p.s.u. from a mains supply of 90-250 volts, 50-60Hz, ac, provides the following dc supplies allowing continuous performance.

(a) ±15 volts d.c.
(b) +48 volts d.c. for phantom powering of capacitor microphones.
(c) +36 volts, 120mA constant current to re-charge the 34613 Internal Battery Unit when fitted.

Input Channels

All input channel connectors are wired for phantom powering of capacitor microphones controlled by a master ON/OFF switch.

Channel Amplifier — Equalisers

The 34128 Channel Amplifier — Equalisers used on all consoles, are interchangeable and provide the following operating parameters and characteristics.

(a) balanced and floating inputs via a high grade transformer.

(b) microphone-line input selection with sensitivity settings variable in 15dB steps between:
  (i) mic: -90dB and -15dB
  (ii) line: -30dB and + 15dB

(c) Mic I/P headroom: greater than 40dB.

(d) comprehensive equalisation, with equalisation bypass, comprising:-
  (i) low frequency shelving giving ±15dB (max'm) cut and boost at 50Hz sloping to 0dB at 1kHz
  (ii) presence giving ±15dB (max'm) cut and boost at pre-selectable mid band frequencies of 820Hz, 1.8kHz and 3.9kHz.
  (iii) high frequency shelving giving ±15dB (max'm) cut and boost at 15kHz sloping to 0dB at 1kHz.

(e) programme and audition output controls.
The level of the equalised or unequalised audio is controlled by a P and G linear fader giving smooth audio taper and is processed through a high pass filter with 12dB/octave roll off at frequencies of 15Hz, 47Hz, 82Hz or 150Hz, a pan potentiometer providing L-R stereo distribution and mutually exclusive switching routing to programme L and R or to

(f) auxiliary outputs 1-2
Two auxiliary outputs are available, pre or post fade with a common level control.

(g) prefade listen
The prefade listen facility is controlled via a non lock pushbutton.

Playback Inputs

The two playback inputs may be used as reverberation returns or as additional high level inputs. Each input has independent level controls and panoramic potentiometers giving stereophonic distribution to programme or audition busses through mutually exclusive switching.

Outputs

Line L-R
Main line-L and line-R stereo outputs are derived from the programme (pgm) L-R busses with the output levels controlled by professional P and G linear faders using conductive plastic track and giving accurately defined smooth audio taper. The audio is routed via a three position switch providing mutually exclusive selection of programme audio, tone signals from the console oscillator or talkback from the console microphone to the main outputs.

Mono Facility

For mono applications a push button routes postfade audio from the pgm-R bus to the pgm-L bus giving a mono output on Line-L. In this mode the pgm-R bus can be used as a submix bus.

Auxiliary Outputs 1-2

Audio on aux 1-2 with individual level controls is routed through a switch providing mutually exclusive selection of auxiliary audio, or talkback from the console microphone to the auxiliary outputs.

Monitor

In conjunction with headset or external amplifier and loudspeaker a comprehensive stereo monitoring system, with a mono facility is incorporated. Signal assignment to monitor left and right (MON-L, MON-R) outputs is by a system of interlocked push buttons providing:-

(a) stereo/mono monitoring of programme busses (postfade), audition busses and main outputs.

(b) individual monitoring of Aux 1 or Aux 2 outputs on both monitor outputs.

(c) Monitoring of Playback 1-2 inputs on respective MON-L, MON-R.

(d) Channel prefade listen on AUD-L.

Talkback

The talkback system incorporates the console microphone and integral amplifier with selection to main and auxiliary outputs. In each case the audio on programme or auxiliary busses is isolated from the respective outputs and the monitoring outputs are automatically dimmed.

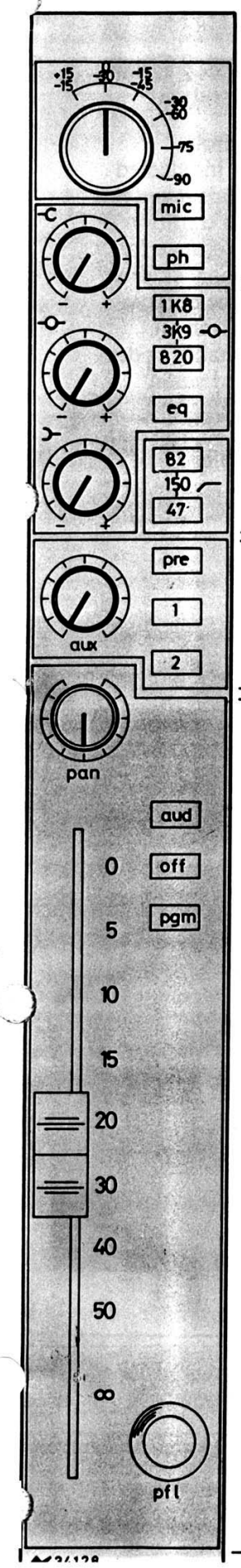
V.U. Meters

Two V.U. meters are fitted as standard and via a 3 position selector switch monitor line, aud or monitor inputs. The meters are calibrated to read 0VU at 4dBu. PPM meters are optionally available.

Tone Signal Generator

An oscillator with pre-selectable frequencies of 40Hz, 400Hz, 1kHz, 10kHz and 15kHz provides tone signals for line up purposes. The tone signals are available as an independent output or can be routed to line outputs.

Channel Amplifier 34128



SENSITIVITY CONTROLS

Outer Ring : Line input levels
Inner Ring : Mic input levels
mic : selected : Mic input
: deselected : Line input
ph : 180 degree phase reversal

HF shelving: ±15dB cut and boost at 15kHz shelving to 0dB at 1kHz

Presence: ±15dB cut and boost at 820Hz, 1.8kHz, 3.9kHz

LF shelving: ±15dB cut and boost at 15 Hz sloping to 0dB at 1kHz

HP filter: 15Hz, 47Hz, 82Hz, 150Hz

AUX OUTPUT CONTROLS

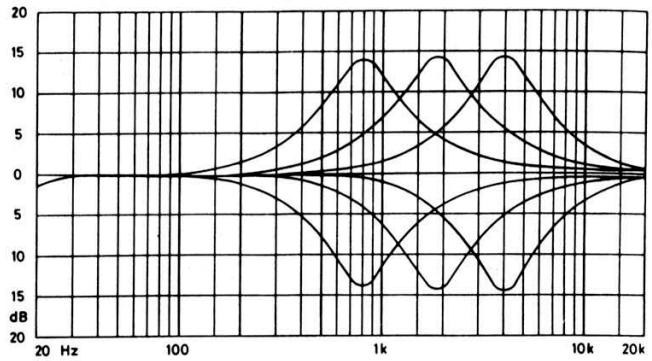
Level Control

pre : 'prefade' selected
'postfade' deselected
1 : pre/post audio to AUX 1
2 : pre/post audio to AUX 2

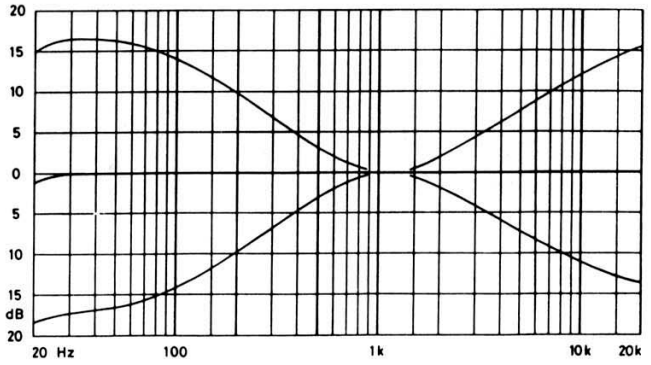
PROGRAMME AND AUDITION OUTPUT CONTROLS

pan : stereo positioning between Aud L-R or Pgm L-R
aud : audio to Aud L-R
off : deselects Aud and Pgm
pgm : audio to Pgm L-R
Channel fader : output level control
pfl : (non lock) prefade audio to Aud-L

Frequency Response Curves

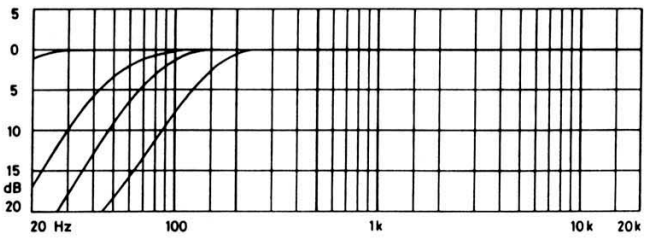


MID FREQUENCIES - PEAKING RESPONSE



LOW FREQUENCIES SHELVING RESPONSE

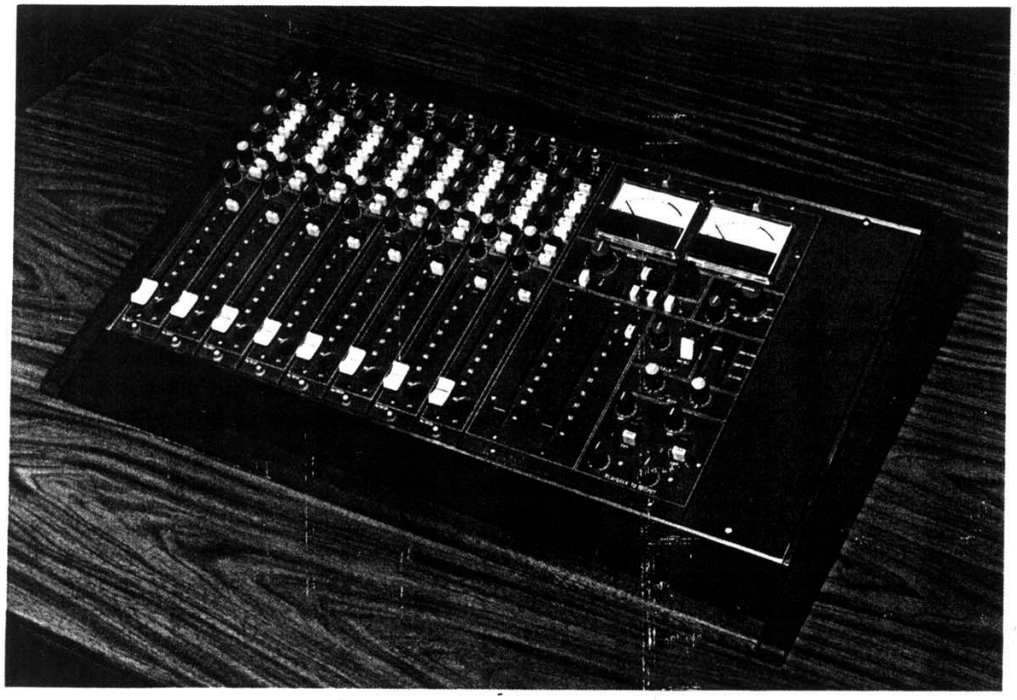
HIGH FREQUENCIES SHELVING RESPONSE



HIGH PASS FILTER

Brief Specification

Microphone	
Equivalent Input Noise (BW 20kHz unweighted)	Better than -125dBu (from 200 ohm source)
Overall gain	90dB
Input Headroom	Greater than 40dB
Input Impedance	1k2 ohm ± 20% (30Hz – 15kH)
Input Balance	Better than 50dB
Line	
Input Impedance	10k Ohm ± 20% (30Hz – 15kH)
Overall	
Maximum Output (Line & Aux)	Greater than 20dBu
Frequency Response (600Ω load)	
30Hz – 15kHz	± 0.5dB
15Hz – 20kHz	+ 0.5 to 1dB
Distortion (+20dBu, 600 ohm load)	
Mic input 30Hz – 15kHz (60dB gain)	Less than 0.05%
Line input 100Hz – 10kHz (15dB gain)	Less than 0.08%
Inter bus Isolation	Better than 70dB
Left-Right Isolation	Better than 60dB
Output Impedance (Line & Aux)	



5432
'Drop Thro'

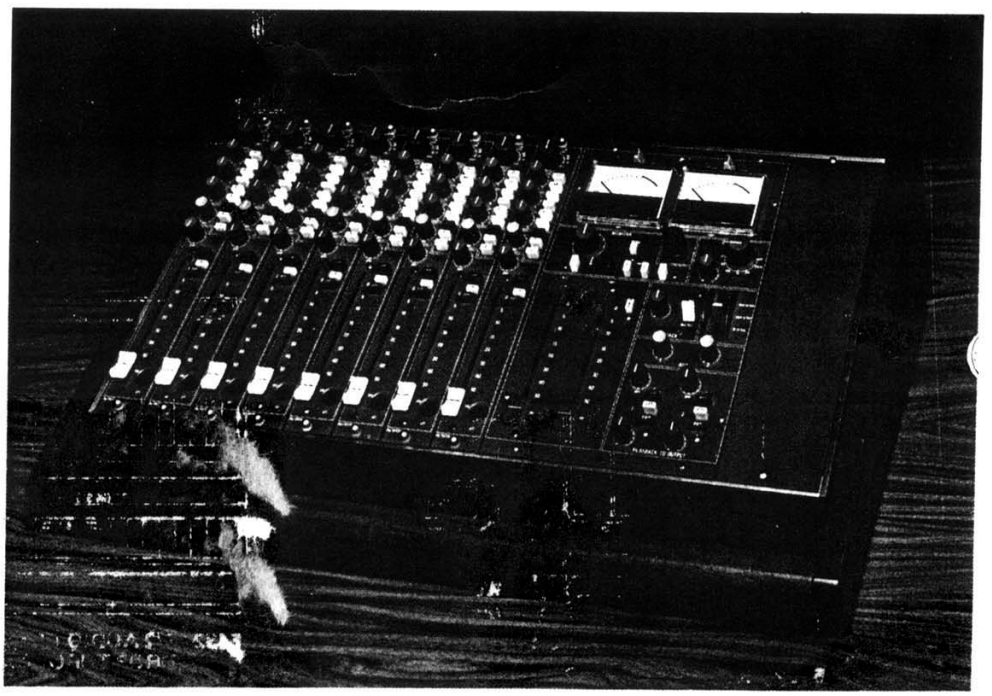
8 Channel, 2 Group Audio Console

This console, finished in selected hardwoods maintains the Neve tradition of design elegance for professional studios. In situ the console recesses into an existing table or desk surface of static installations and presents a clean and low profile.

5442
Table Top

8 Channel, 2 Group Audio Console

This console, finished in selected hardwoods is similar to the 5432 with the exception that it is designed for 'table top' mounting on an existing desk or table.



In keeping with our policy of continuous development, we reserve the right to change the design of any unit forming part of this specification if such a change will, in our opinion, improve the performance or produce any other advantage mutual to the customer and ourselves.

Neve Electronics International Ltd., Cambridge House, Melbourn, Royston, Herts. SG8 6AU, England. Tel: (0763) 60776 (24 hr. Ansaphone facility) Telex: 81381. Cables: Neve Cambridge.

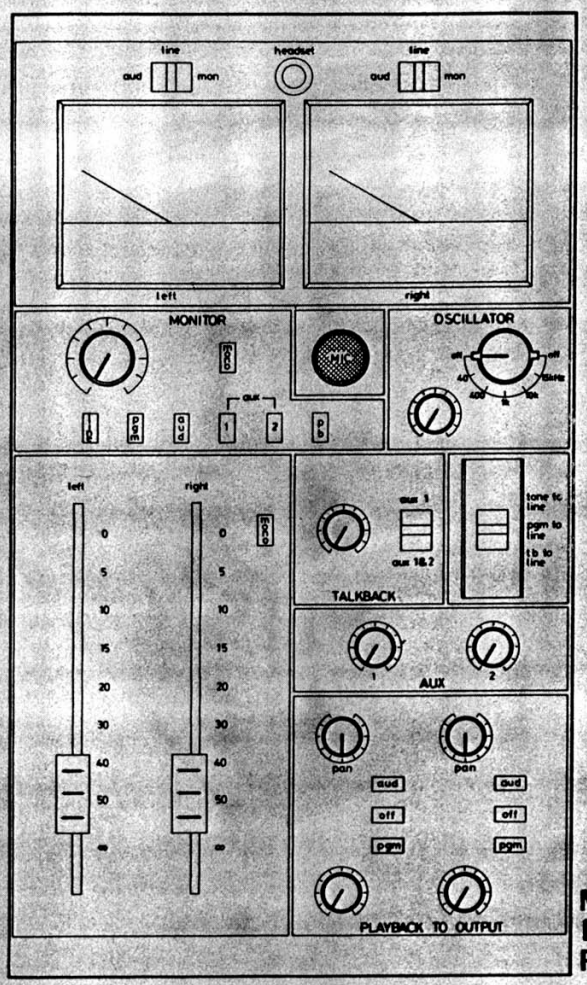
Rubert Neve Incorporated, Berkshire Industrial Park, Bethel, Connecticut 06801, U.S.A. Tel: (203) 744 6230. Telex: 969638

Rupert Neve Incorporated, 7533 Sunset Boulevard, Hollywood, California 90046 Tel (213) 465 4822

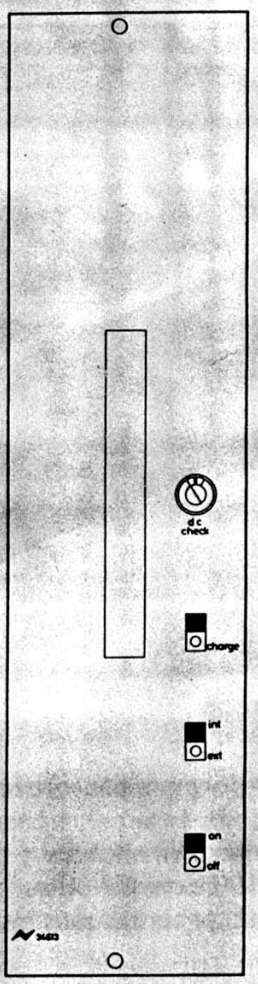
Rupert Neve GmbH, D-6100 Darmstadt, Bismarckstrasse 114, W. Germany. Tel: 6151-87038. Telex 419581

Monitor and Facilities Panel

Power Supply

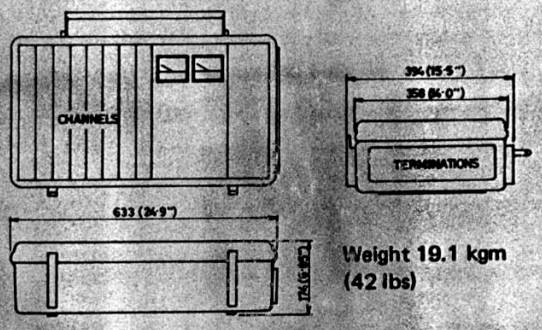


MONITOR AND FACILITIES PANEL



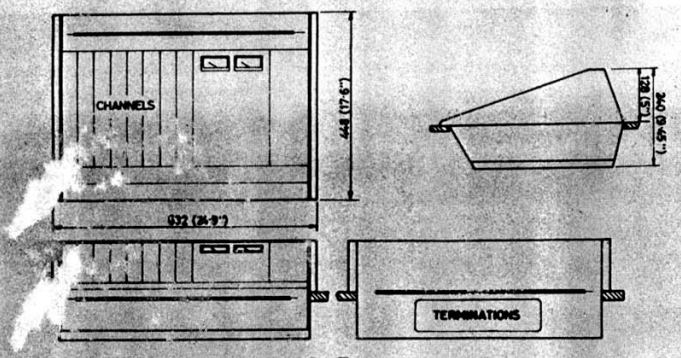
POWER SUPPLY 34613

Dimensions



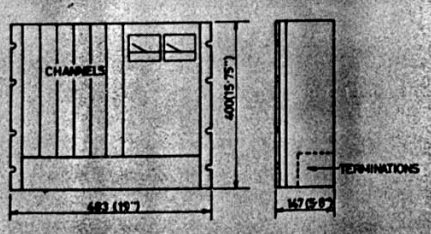
Weight 19.1 kgm (42 lbs)

5422 SUITCASE VERSION

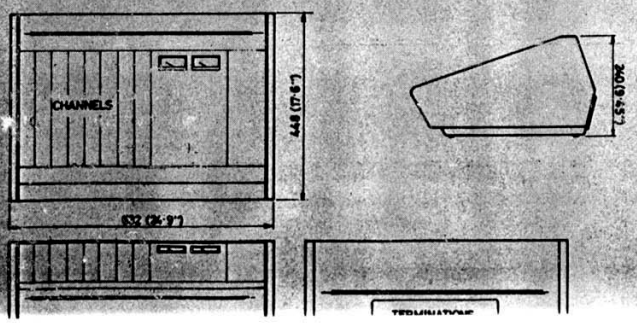


5432 8/2 AUDIO CONSOLE DROP THROUGH VERSION

5442 8/2 PORTABLE TABLE TOP VERSION



5422-R (RACK VERSION)



5422
'Suitcase' Portable

8 Channel, 2 Group
Audio Console

A lightweight, fully portable console for professional mobile applications. Internal re-chargeable p.s.u. maintains rated performance for a typical period of 4 hours. The Neve PS12100 external power supply unit, provided with each console enables continuous performance. Leather carrying case optionally available.

5422-R

6 Channel, 2 Group Audio Console
Designed for standard 19'' rack mounting in studio or outside broadcast vehicles.

Neve

542 Range
6-8 Channel 2 Group
Audio Consoles

Technical Manual

5422 8 CHANNEL 2 GROUP 'SUITCASE' PORTABLE CONSOLE

5422-R 8 CHANNEL 2 GROUP RACK MOUNTED CONSOLE

5432 8 CHANNEL 2 GROUP 'DROP THRO' CONSOLE

5442 8 CHANNEL 2 GROUP 'TABLE TOP' CONSOLE

A8441 5432 8 CHANNEL 2 GROUP 'DROP THRO' CONSOLE

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upert Neve of Canada Limited, 2721 Rena Road, Malton, Ontario L4T 3K1, Canada. Tel: (416) 677-6611. Telex 21 06 983502

542 RANGE

5422, 5422-R, 5432, 5442

HANDBOOK CONTENTS

N.B. The consoles covered by this handbook are supplied with External Power Supply 33643 which replaces PSU PS12100 referred to in the colour section.

Section 1 GENERAL DESCRIPTION

INTRODUCTION

1. The technical data given in this manual applies to the following range of standard consoles described in paras 1-1 to 1-4 with the exceptions stated in the individual descriptions. The consoles provide stereo and mono mixing facilities suitable for broadcast and recording mediums where each type is designed to meet specific installation requirements. Throughout, the consoles are fully modular in concept and construction and are manufactured with maximum usage of standardised components and assemblies.

   All XLR input\output connectors, with the input connectors wired for phantom powering of capacitor microphones, are located on connector panels situated in the positions stated. On all consoles appropriate circuits are wired to a multipin connector located also on the connector panel where this facility, in conjunction with extension lead part number PN60051 allows two or more consoles of any type, to be coupled together to extend the basic system to any number of input channels.

5422 8 Channel 2 Group 'Suitcase' Portable Console

1.1 This console is fully portable in application where the 34613 Internal Power Supply Module (section 5) forms an intrinsic part of the console. The console operates continuously in conjunction with External Power Supply Unit 33643 (section 5).

(a) Mechanical Arrangement

Fig. 1 - Layout drawing (ML40088) - shows dimensioned plan, side and end elevations of the console.

The eight channel amplifiers 34128 are located on the left hand side of the console with the Output and Monitor panel offset to the right of centre. Internal Power Supply Module 34613 occupies the extreme right position.

(i) Dimensions

Height (handle extended)	441 mm (17.4 ins)
Length	633 mm (24.9 ins)
Width (cover fitted)	174 mm (6.85 ins)

(ii) Weight 19.1 kg.(42 lbs) (excludes External PSU 33643)

(b) Connector Panel Assembly

Connector Panel Assy. Pt. No. PN60005 is located on the right hand sidewall of the console. An illustrated diagram identifying individual connectors is located on the underside of the detachable top cover and is shown on Fig.2.

5422-R 6 Channel 2 Group Rack Mounted Console

1.2 This console is designed for standard 19 inch (48.3 cms) rack mounting in studio or outside broadcast vehicles. The console operates continuously in conjunction with the standard 19 inch (48.3 cms) rack mounted External Power Supply Unit 33643.

(a) Mechanical Arrangement
Fig.3 - Layout drawing (MR60076) - shows dimensioned plan and side elevation of the console.

The six channel amplifiers 34128 are located on the left hand side of the console with the Output and Monitor panel occupying the extreme right position.

(i) Dimensions

Height	400 mm (15.75 ins)
Length	483 mm (19.00 ins)
Width	147 mm (5.8 ins)

(b) Connector Panel Assembly
The Connector Panel Assy. is located on the rear wall of the console and an illustrated diagram identifying individual connectors is located adjacent to the panel. An illustrated view of the panel is shown on Fig. 4.

5432 8 Channel 2 Group 'Drop Thro' Console

1.3 This console is designed for studio applications and recesses into a horizontal table top or surface. The console operates continuously in conjunction with the standard 19 ins (48.3 cms) rack mounted External PSU 33643.

(a) Mechanical Arrangement
Fig.5 - Layout drawing (ML40101) - shows plan, side and end elevations of the console.

The eight channel amplifiers 34128 are located on the left hand side of the console with the Output and Monitor panel offset to the right of centre. The extreme right position is covered by blanking panel Part Number PN60049.

When Internal Power Supply Module 34613 is fitted as an option the blanking panel is removed and the module occupies the extreme right position.

(i) Dimensions

Height (overall)		240 mm (9.45 ins)
Length		632 mm (24.9 ins)
Width		448 mm (17.6 ins)
Recess	Length	605 mm (23.82 ins)
	Width	420 mm (16.54 ins)

(b) Connector Panel

Connector Panel Assembly Part Number PN60005 is located on the rear of the console. An illustrated diagram identifying individual connectors is located adjacent to the panel. An illustrated view of the panel is shown on Fig. 2.

5442 8 Channel 2 Group Table Top Console

1.4 This console is designed for studio applications and stands on a table top horizontal surface.

The console operates continuously in conjunction with the standard 19 inch (48.3 cms) rack mounted External PSU 33643.

(a) Mechanical Arrangement

Fig. 6 - Layout drawing (ML40102) - shows plan, side and end elevations of the console.

The eight channel amplifiers 34128 are located on the left hand side of the console with the Output and Monitor panel offset to the right of centre. The extreme right position is covered by blanking panel Part Number PN60049.

When Internal Power Supply Module 34613 is fitted as an option the blanking panel is removed and the module occupies the extreme right position.

(i) Dimensions

Height	240mm (9.45 ins)
Length	632mm (24.9 ins)
Width	448mm (17.6 ins)

(b) Connector Panel

Connector Panel Assembly Part Number PN60005 is located on the rear of the console. An illustrated diagram identifying individual connectors is located adjacent to the panel. An illustrated view of the panel is shown on Fig. 2.

FUNCTIONAL DESCRIPTION

2. Block diagram EB10881 is applicable to all consoles and shows the signal routing from the inputs, through the associated controls and processing circuits, to the outputs.

Channel Amplifier 34128

2.1 The channel amplifiers 34128 are described in detail in section 2. Each incorporates phase reversal, sensitivity controls (mic/line) and comprehensive equalisation comprising presence and HF/LF cut and boost which can be switched in or out. The channel fader with white control knob forms an integral part of the module and controls the output level via a high pass filter with selectable roll off frequencies, a pan control providing stereo distribution and mutually exclusive switching routing the processed audio signals to either programme or audition mixing busses. The audio signals, pre or post fade, are also routed via individual control switches to two auxiliary mixing busses and a pre-fade listen switch routes the signal to the audition L (left) mixing bus.

Playback 1, Playback 2

2.2 The two playback inputs can be used in association with a tape machine or for reverberation returns. Each playback channel includes individual level controls, a pan control providing stereophonic distribution and mutually exclusive switching routing the processed signal to either program or audition mixing busses.

Output and Monitor Panel

2.3 The Output and Monitor Panel described in detail in Section 3 is ergonomically designed with the various controls arranged in groups corresponding to the processing circuits of the associated printed circuit board BA683.

The controls are individually identified and are concerned with signal level and routing between the mixing busses and line, auxiliary and monitoring outputs.

Two VU meters located at the top of the panel provide indications of signal levels of line, audition and monitoring outputs via a three position selector switch.

Internal Power Supply Module 34613

2.4 The internal supply module 34613 fitted to the 5422 console as standard equipment and optionally available on the 5432 and 5442 consoles comprises a system of re-chargeable cells which, in the fully charged state, provide regulated supplies of $\pm$15 volts dc capable of maintaining optimum performance for periods up to and exceeding 4 hours. Full details are given in section 5.

External Power Supply 33643

2.5 External Power Supply 33643 provides the ±15V dc regulated supply for continuous console operation, together with the +48V dc phantom power supply for capacitor microphones and an additional 120mA constant current source for recharging the 34613 Internal Power Supply Module where fitted. Full details are given in Section 5.

Phantom Power

2.6 The +48V dc phantom power supply is provided by external PSU 33643 and is controlled by a master ON/OFF switch located on the termination panel.

The supply appears on all channels simultaneously, irrespective of the setting of the MIC/LINE switch on individual channel amplifiers. Appropriate action should be taken if an unbalanced line input is to be connected. Transformer coupled line inputs are not affected.

SYSTEM EXTENSION

3. On all consoles Pgm L-R, Aux 1-2, and MON L-R mixing busses are wired to individual pins of the 15 way Painton socket mounted on the console connector panel.

When the console is used as a single unit the 15 way socket must be terminated by blanking plug assembly PL21104, attached to the console. This wiring arrangement, in conjunction with Extension Lead Part Number PN60051 provides facilities enabling two or more consoles of any type to be coupled together to extend the basic system to any number of input channels.

(a) Extension Lead PN60051 is shown on Fig. 7 where the cable assembly is formed to allow interconnection of two consoles. Cable ends are individually identified to correspond to the mating connector on the console connector panel.

Interconnecting Procedure

3.1 A typical system of two consoles is shown in Fig. 8. For convenience designate the consoles A and B respectively.

(a) Console B
Connect the cable ends of Extension Lead PN60051 marked **LINE L, LINE R, AUX 1, AUX 2, MON L** and **MON R** to the corresponding output connectors of the console connector panel.

(b) Console A
Remove blanking plug PL21104 from the console connector panel.

Connect the 15 way Painton plug of Extension Lead PN60051 to the 15 way connector panel socket.

Connect the two **PB1, PB2** connectors of Extension Lead PN60051 to the corresponding connectors on the console connector panel.

Control Settings

3.2 Set the controls to the following positions:

(a) Console B

Output faders:	OdB
Auxiliary Levels:	Maximum
Monitor selected to:	Audition

(b) Console A

Playback Level Control:	Maximum
Playback 1 pan control:	Fully Left
Playback 2 pan control:	Fully Right

Operation

3.3 With the consoles interconnected and set up as described in paras 3.1 and 3.2:

(a) Channel Inputs. Use console A as master.

Line and auxiliary signals from channels 1 to 8 from console B will be mixed with the audio signals from channels 1 to 8 of console A without loss of signal level.

Audition and pfl signals from console B will be 2.5dB below the audition and pfl signals of console A.

(b) Playback Inputs: Use Console B as master.

Playback to line signals will be mixed without loss of signal level.

Playback to audition signal levels will be 2.5dB below the audition level on console A.

To monitor playback directly, select playback on both consoles. The Monitor output level will be 5dB below the input level.

SUB-FITTED CONSOLES

4. When consoles are provided with less than the established number of 34128 Channel Amplifiers:

(a) Blanking Plug CN10300 is provided to mate with the channel amplifier position and must be fitted at all times.

(b) The channel amplifier position on the front of the console is fitted with a blanking panel. Part Number MN20126/1.

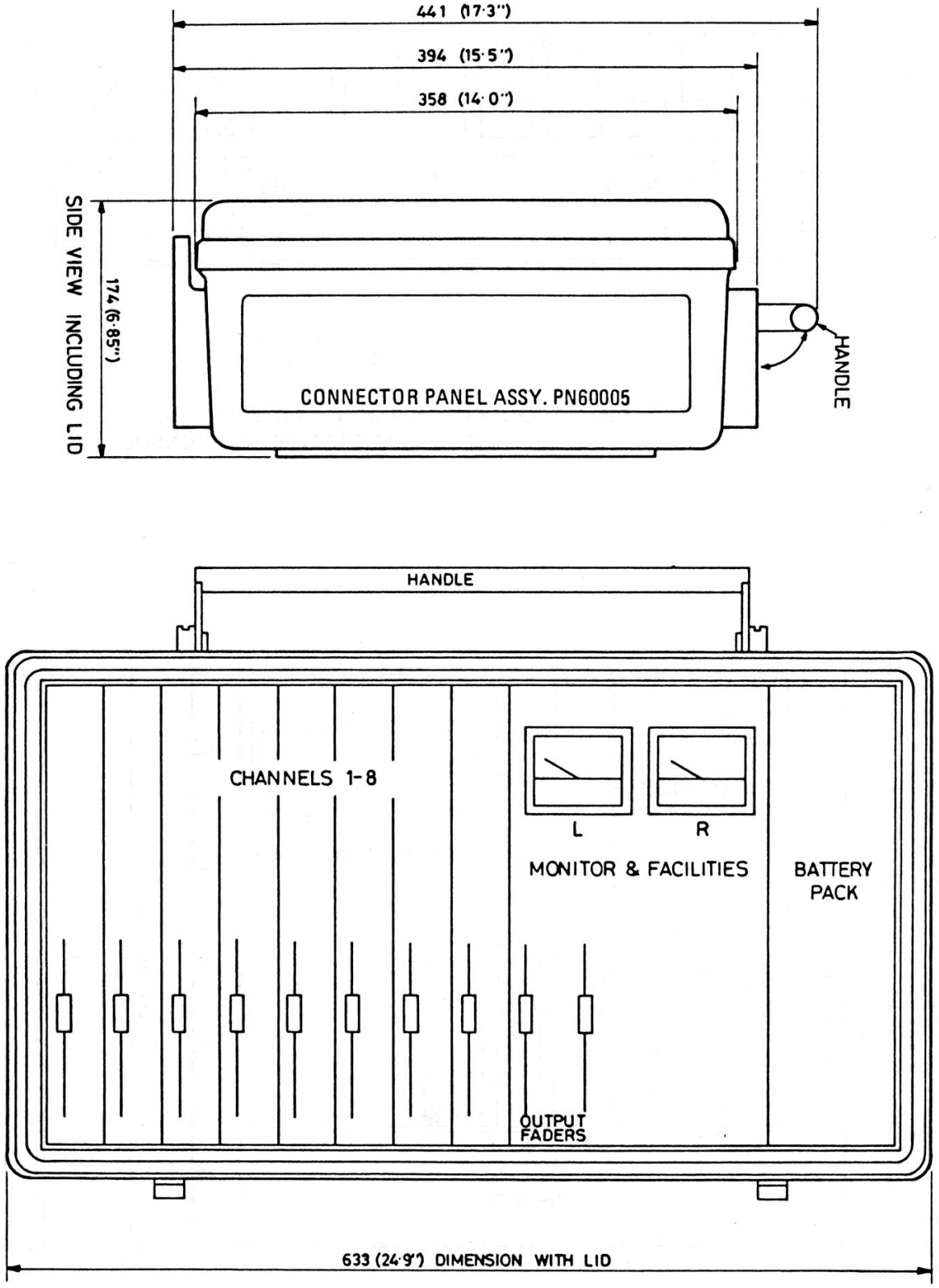


FIG. 1 5422 CONSOLE LAYOUT (ML40088)

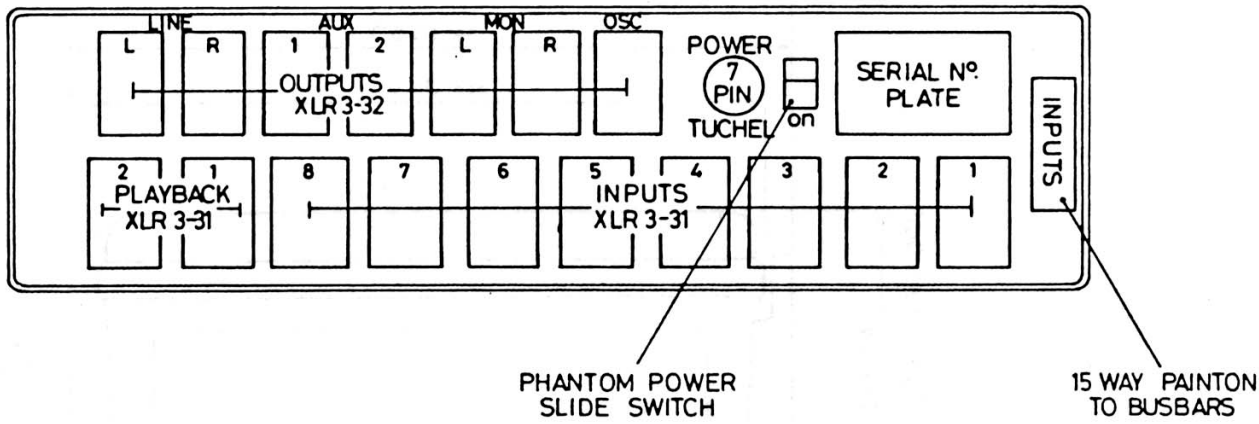


FIG. 2 CONNECTOR PANEL ASSEMBLY PN60005 FITTED TO 5422, 5432 and 5442 CONSOLES

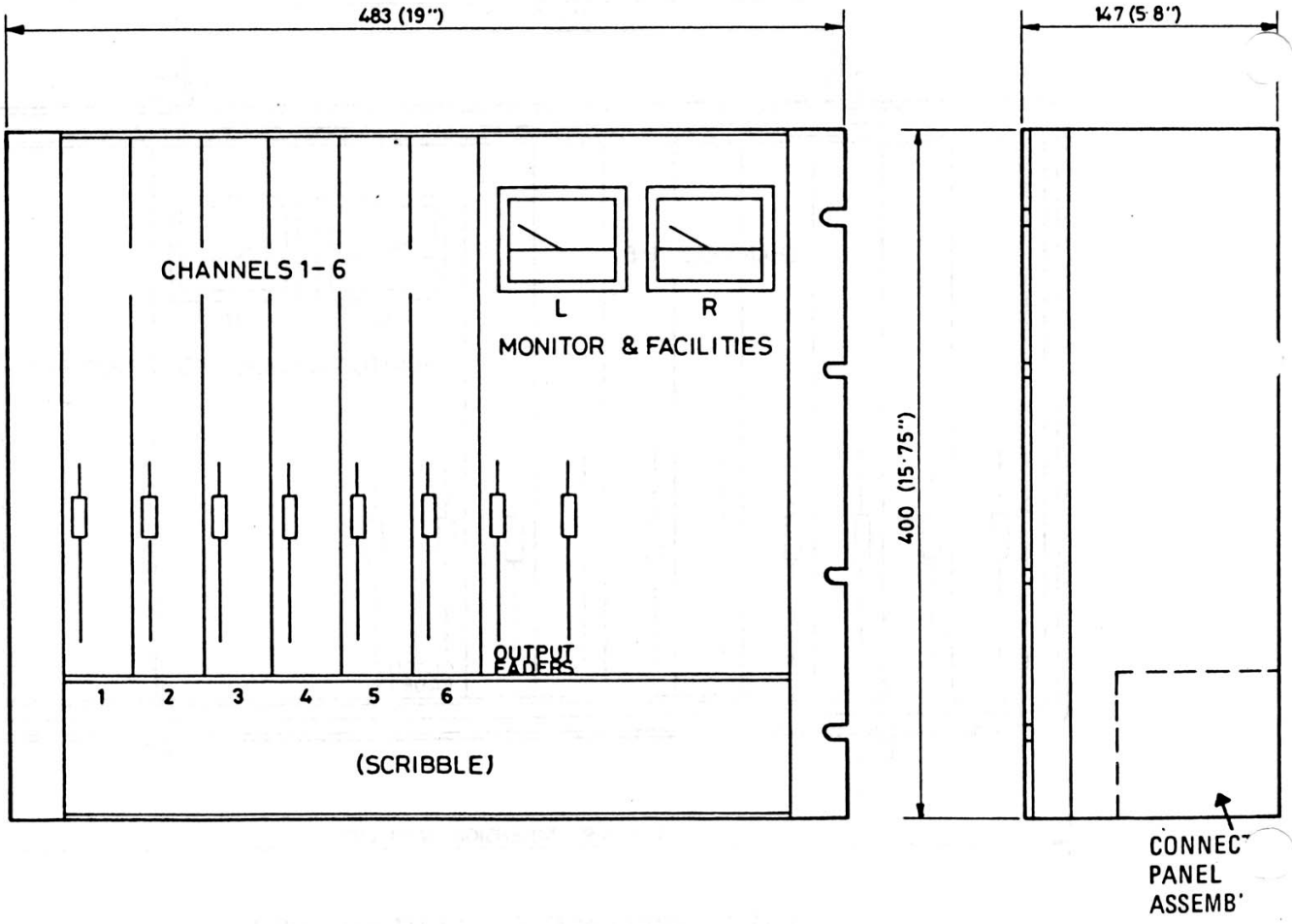


Fig. 3 5422 — R CONSOLE LAYOUT (MR60076)

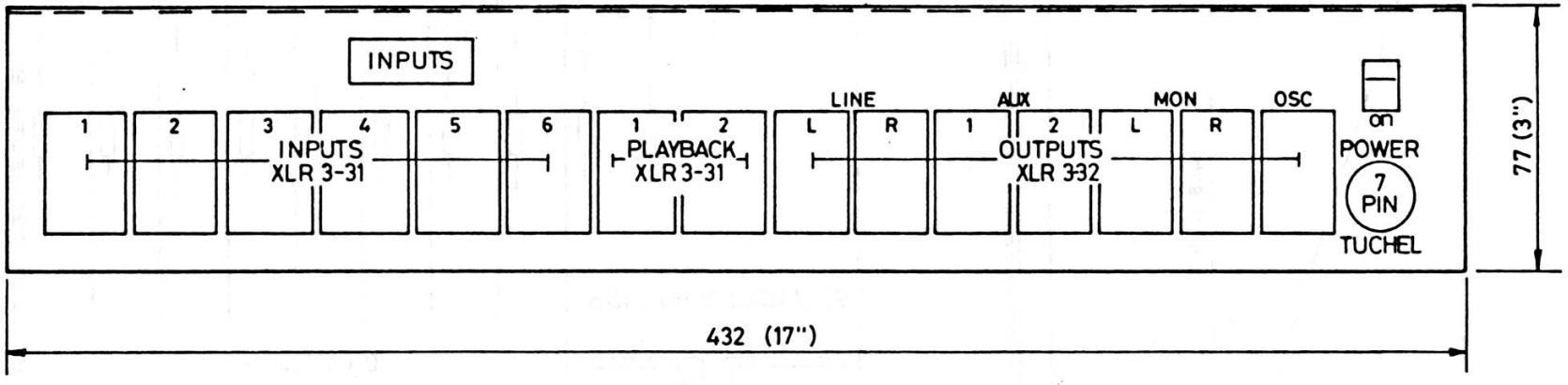


FIG. 4 5422-R CONNECTOR PANEL ASSEMBLY

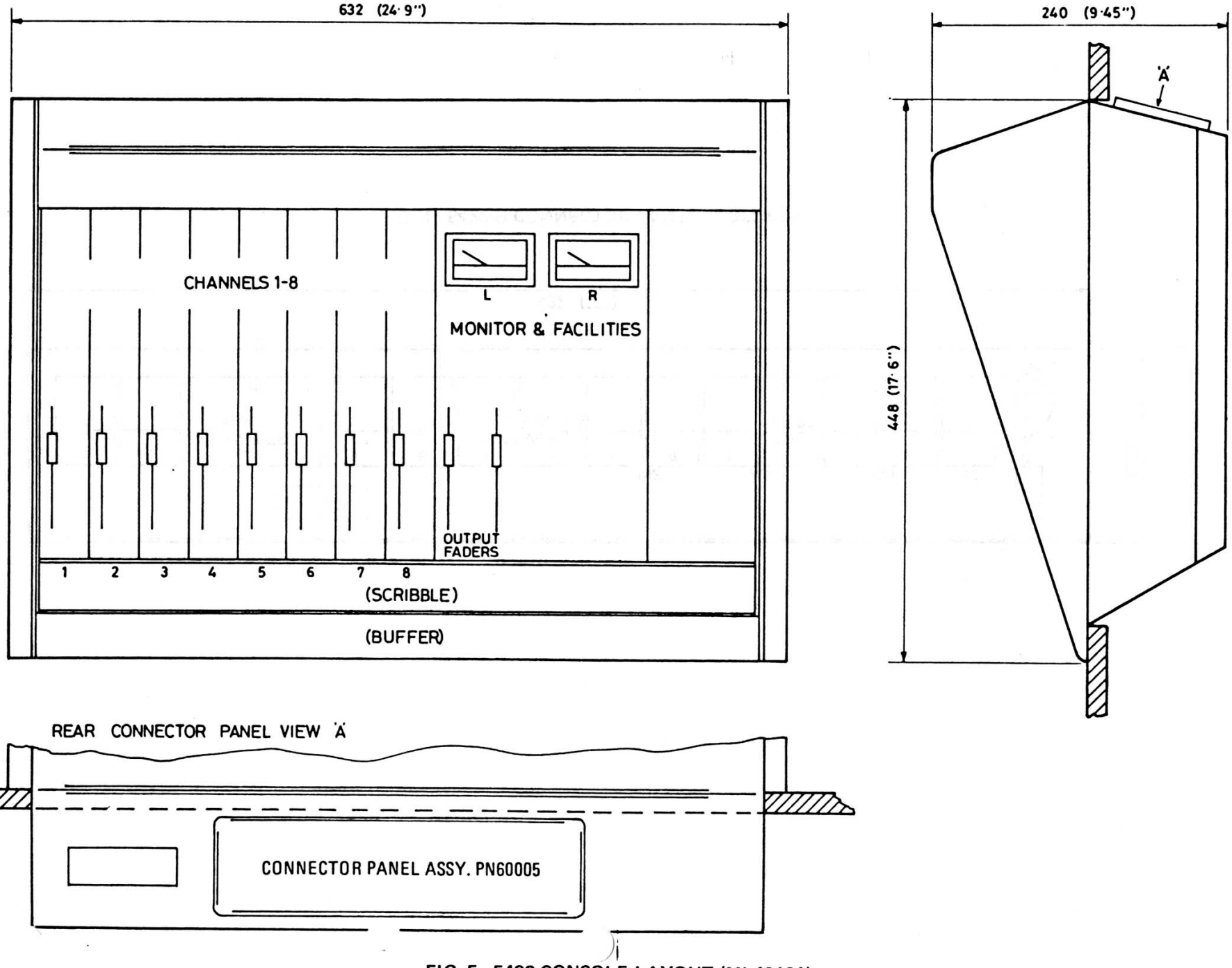


FIG. 5 5432 CONSOLE LAYOUT (ML40101)

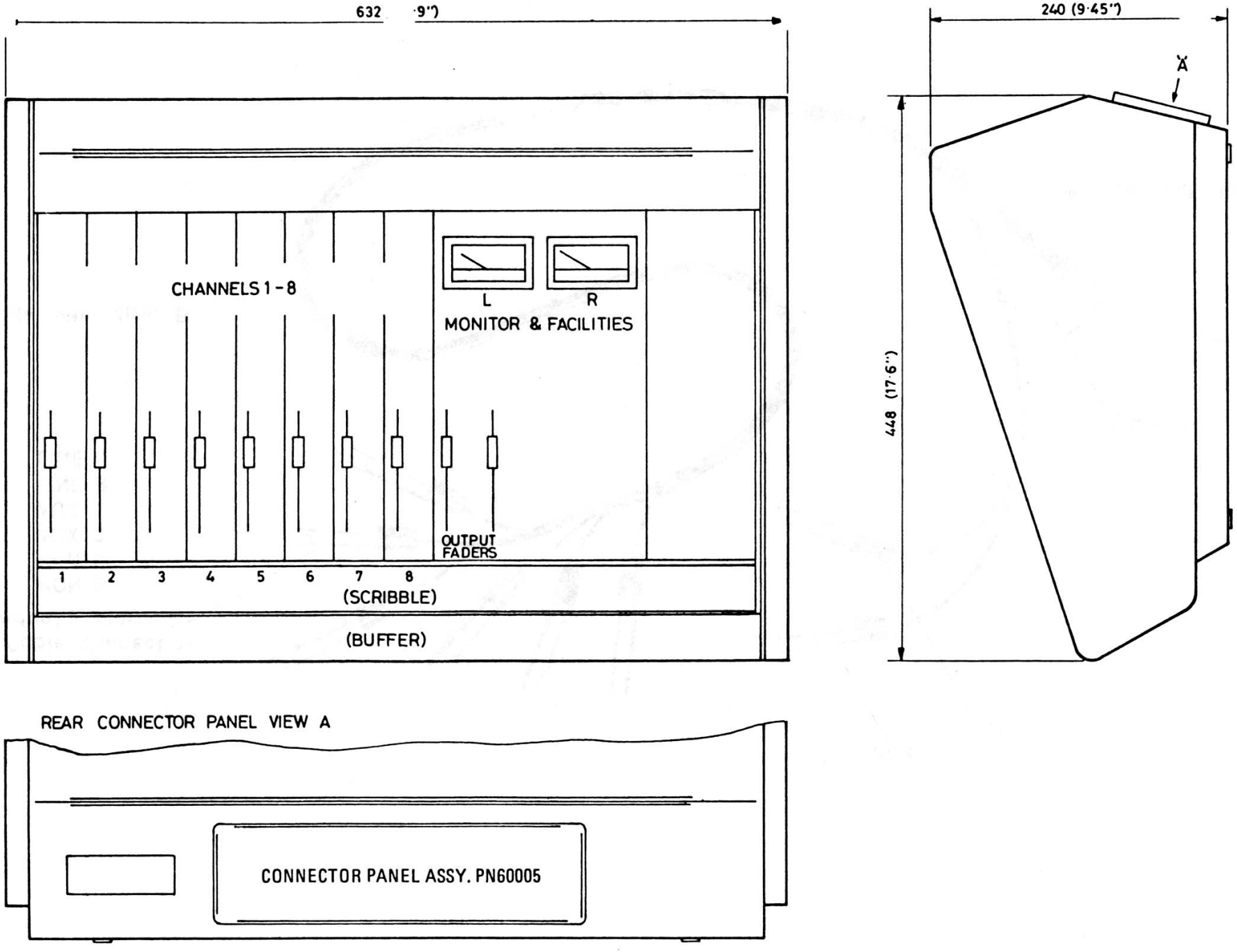


Fig. 6 5442 CONSOLE LAYOUT (ML40102)

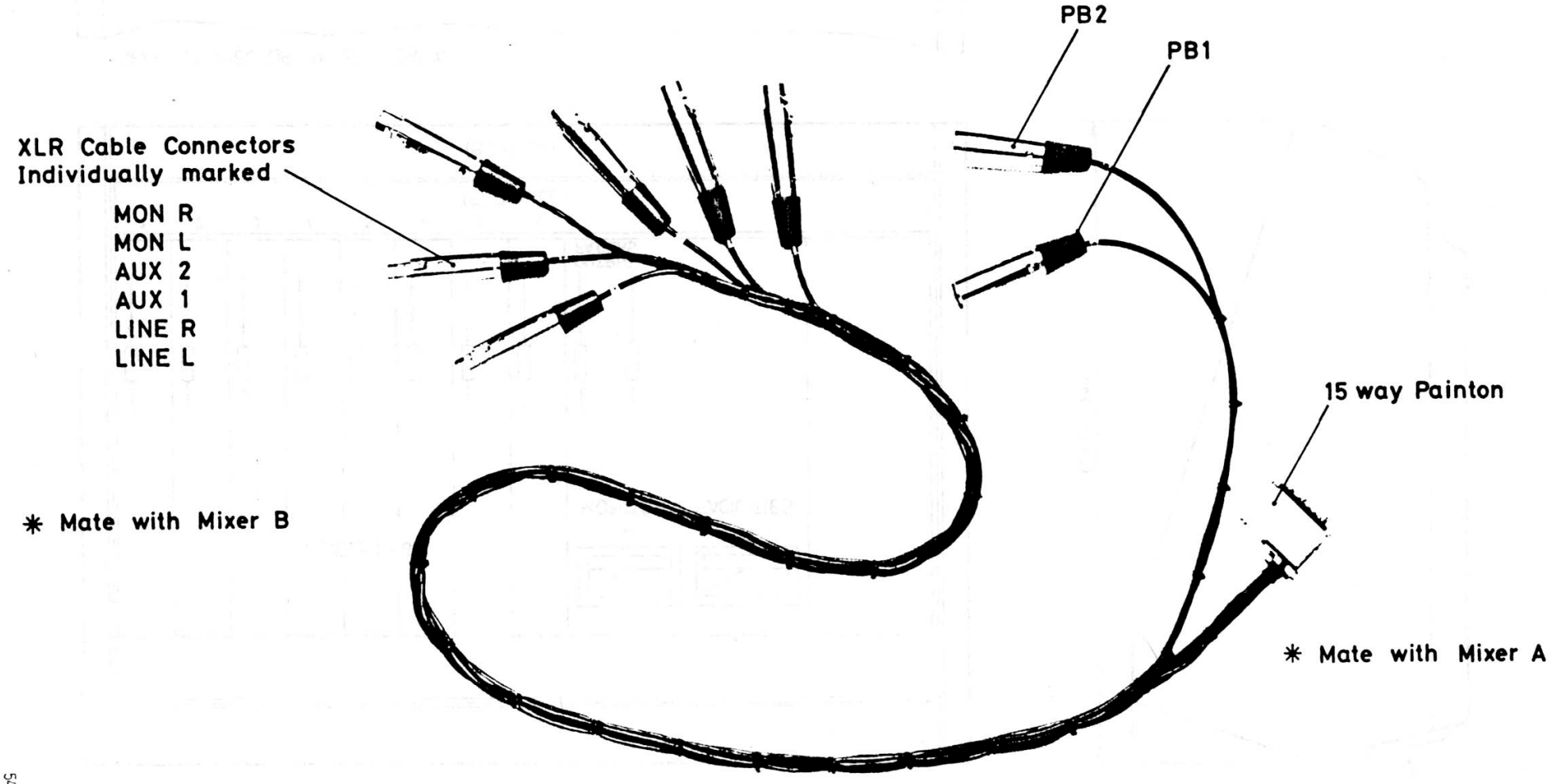


FIG. 7 EXTENSION LEAD PT. NO. PN6005

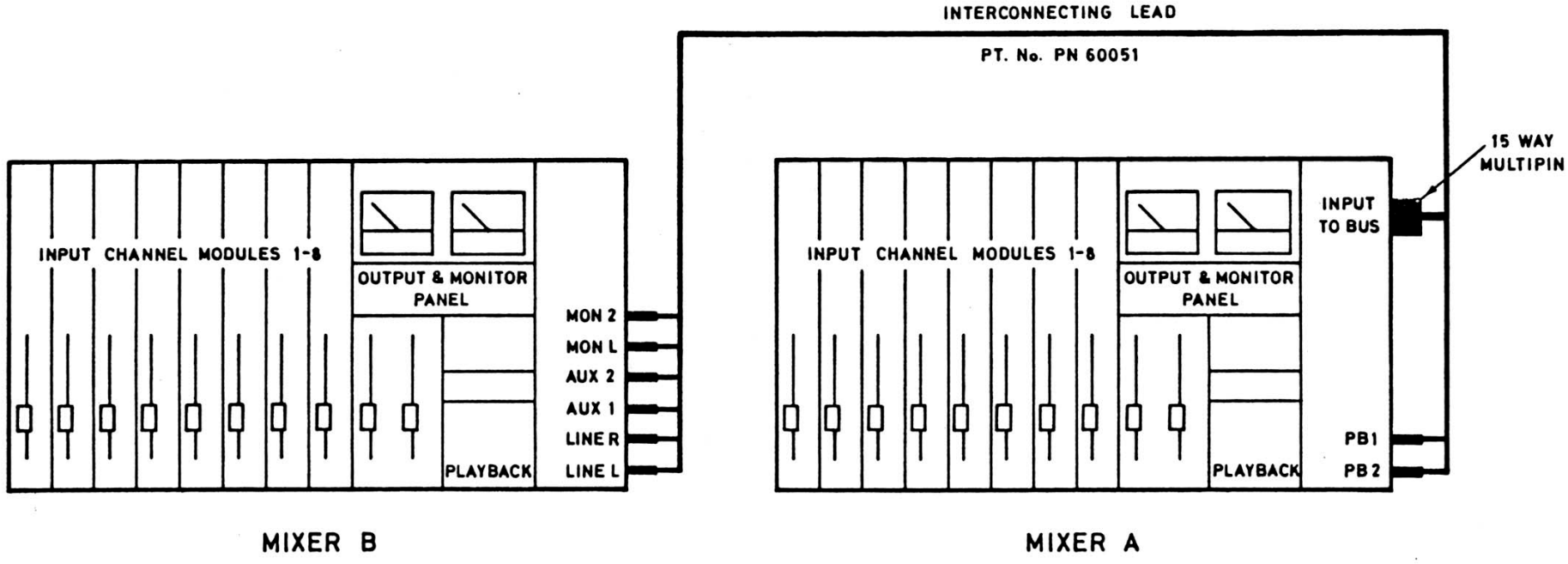
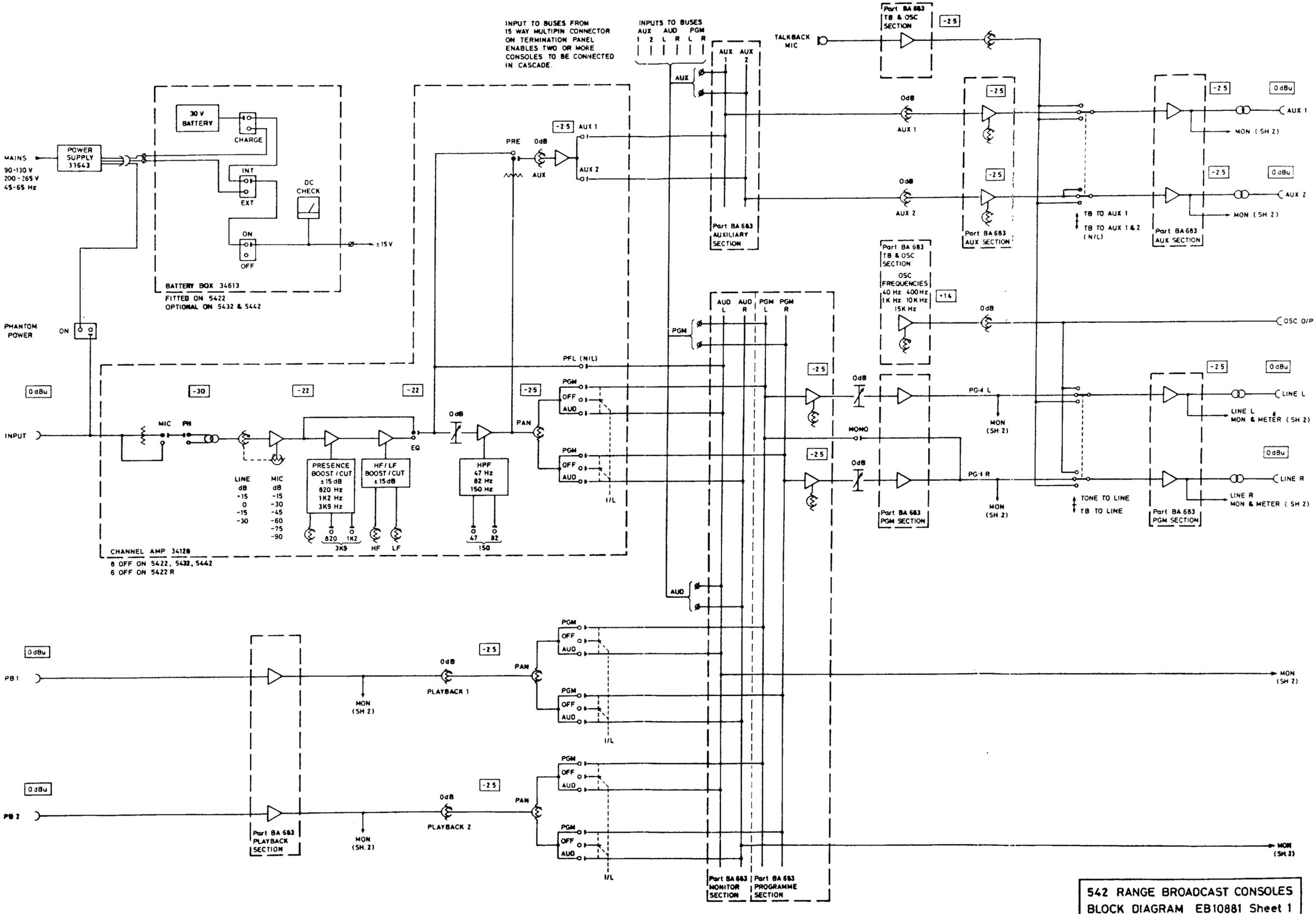
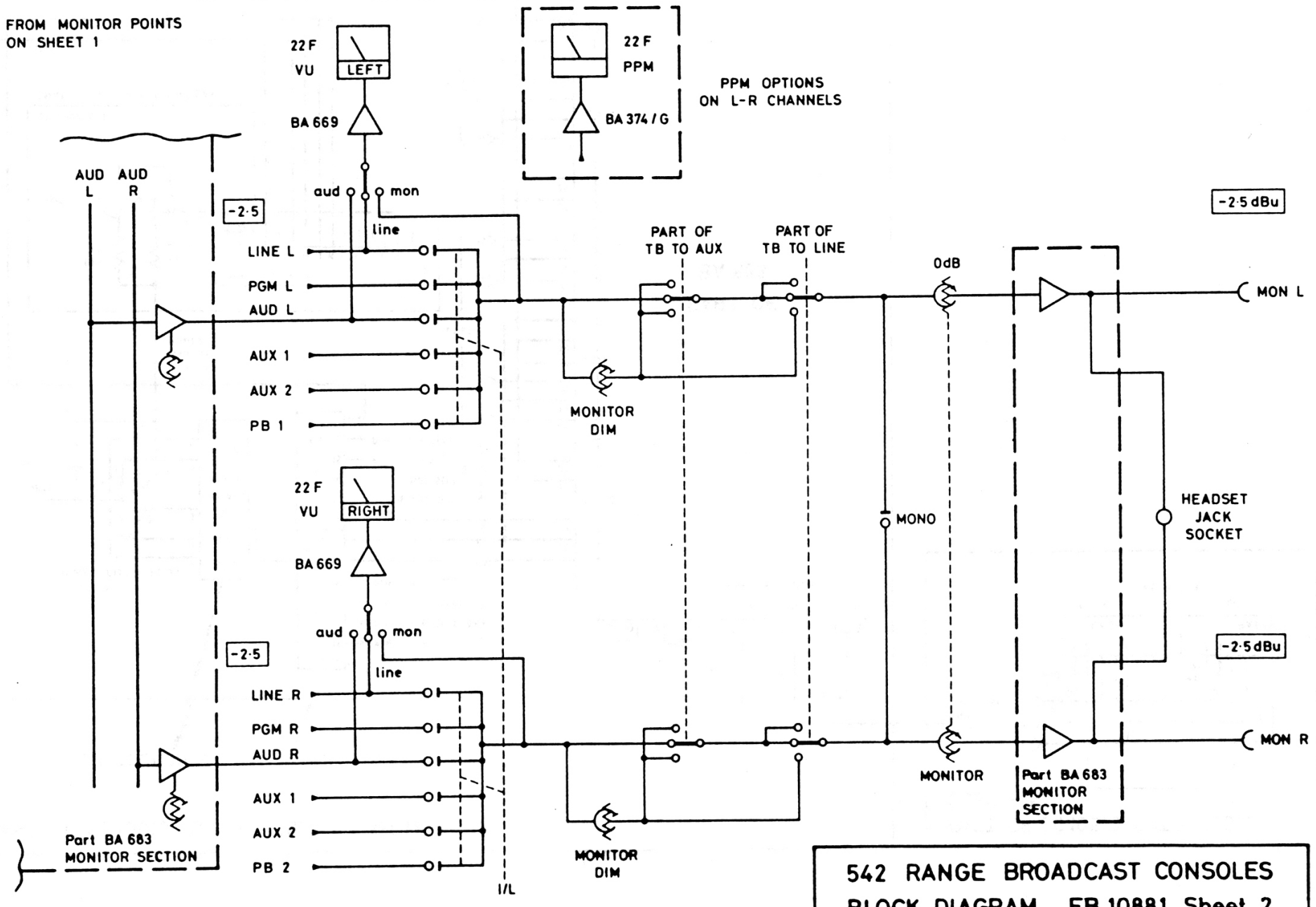


FIG. 8 INTERCONNECTED 5422 CONSOLES



542 RANGE BROADCAST CONSOLES
BLOCK DIAGRAM EB10881 Sheet 1



542 RANGE BROADCAST CONSOLES
BLOCK DIAGRAM EB 10881 Sheet 2

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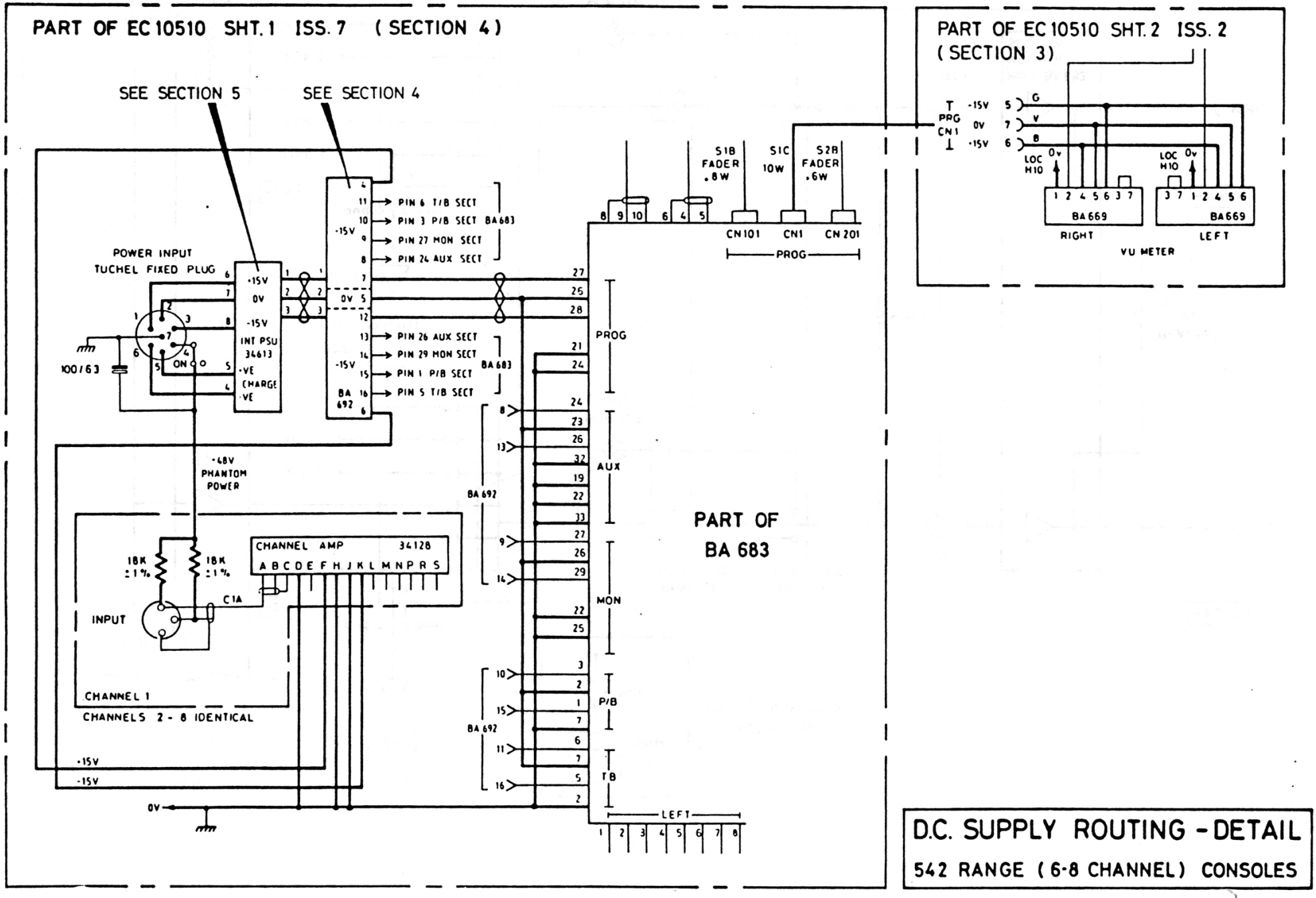


D.C. SUPPLY ROUTING - DETAIL

542 RANGE (6-8 CHANNEL) CONSOLES

542 RANGE

Section 2 **34128 CHANNEL AMPLIFIER**

GENERAL DESCRIPTION

CONTENTS

LIST OF ILLUSTRATIONS

FOLD OUT PAGE 14 FOR REFERENCE TO FRONT PANEL LAYOUT

GENERAL DESCRIPTION

1. The 34128 Channel Amplifier is fully modular in construction and concept and incorporates printed circuit board BA635. The module contains the processing circuits and controls directly concerned with the initial processing of audio signals from high level (line) or low level (microphone) sources.

   The front panel layout of the module is shown on ML34128 where the manually operated controls are arranged in groups with the channel fader occupying the lower part of the module. Each group is identified by a symbol designating the function of the group and within each group, the various controls are identified by colour coded caps or alpha-numeric characters. The component reference shown adjacent to the control, identifies the component with respect to the circuit diagram EH10076. The layout of printed circuit board BA635 is shown on Drawing No. EW10635 with each component identified by silk screened characters.

   All input-output connections of the channel amplifiers are located on the rear edge of the p.c.b. and are shown on Fig.1. With the module in situ the rear connectors mate with associated sockets.

CONTROLS

2. The controls mounted on the front panel of the module have the following functions:

'Mic' push button S2

2.1 The two position push button switch S2 operates in conjunction with sensitivity switch S1.

(a) Line (high level) - de-selected (unlocked)

(b) Mic. (low level) - selected (locked down)

'ph' push button S3

2.2 Provides 180 degree phase reversal of the audio signal at the input to the transformer of the amplifier processing circuits.

Sensitivity switch S1

2.3 This is a 6 position rotary switch operating in conjunction with the 'mic' push button S2.

(a) For high level input signals the 'mic' push button S2 is deselected and sensitivity switch S1 is set to the position representing the level of input signal. Four pre-selectable input levels are provided variable in 15 dB steps between +15dB and -30dB. The levels are defined on the outer peripheral ring of characters of the control.

(b) For low level microphone signals the 'mic' push button S2 is selected and sensitivity switch S1 is set to the position representing the level of the input signal. Six pre-selectable input levels are provided variable in 15 dB steps between -15dB and -90dB. The levels are defined on the inner peripheral ring of characters of the control.

The input levels defined in (a) and (b) are with respect to the optimum level of 0 dBu.

Equalisation

2.4 The equalisation controls comprise presence, low and high frequency response.

2.4.1 Presence RV6, push buttons S4 and S5

Rotary level control (RV6) in conjunction with push buttons S4 and S5 provide ±15dB cut and boost (relative to the mid position of the control) centred on the following preselectable frequencies. Typical response curves are shown on Fig. 2.

(a)	S4, S5 de-selected	
(b)	S4 (820) Selected	820Hz
(c)	S5 (1K8) Selected	1K8Hz
(d)	S4 (820),S5 (1K8) selected	3K9Hz

2.4.2 High and Low Frequency cut and boost controls RV8 and RV7.

These frequency response controls allow gradual accentuation or reduction of the audio signals at upper and lower frequencies. Typical response curves are shown on Fig. 3.

(a) RV7 Low frequency control

RV7 is a rotary level control giving ±15dB cut and boost relative to the mid position of the control. The control becomes effective at 1kHz and movement of the control gives proportionate cut and boost reaching ±15dB at 50Hz.

(b) RV8 High frequency control

RV8 is a rotary level control giving ±15dB cut and boost relative to the mid position of the control. The control becomes effective at 1kHz and movement of the control gives proportionate cut and boost reaching ±15dB at 15kHz.

2.4.3 'eq' pushbutton S6

The 'eq' (equalisation) push button S6 provides overriding control of the equalisation circuits defined in 2.4.1 and 2.4.2.

(a)	'eq' selected	equalisation circuits operative
(b)	'eq' S6 de-selected	equalisation circuits by-passed

H.P.F. control push buttons S8, S9

2.5 Push buttons S8 (47), S9 (82) either individually or in conjunction with each other provide 12dB/octave roll off at the following pre-selectable frequencies. Typical response curves are shown on Fig. 4.

(a)	S8, S9	de-selected	15Hz
(b)	S8 (47)	selected	47Hz
(c)	S9 (82)	selected	82Hz
(d)	S8, S9	selected	150Hz

Auxiliary Output Controls

2.6 Auxiliary output levels Aux 1 and Aux 2 are controlled by rotary control RV11 and push button 'pre' (S7), Aux 1 (S12) and Aux 2 (S13).

(a) Prefade output:- With the 'pre' push button S7 selected (locked down) prefade audio (pre channel fader control RV10) is routed via the rotary level control RV11 and the selector push buttons to the auxiliary outputs.

(b) Postfade output:- With the 'pre' push button S7 de-selected post-fade audio (post channel fader RV10) is routed via the selector push buttons to the auxiliary outputs. In this mode, the output level is controlled by both the rotary level control RV11 and channel fader RV10, with push buttons S8, S9 providing 12dB/octave roll off at pre-selectable frequencies of 15 Hz, 47Hz, 82Hz and 150Hz.

(c) Selector push buttons S12 and S13:- These push buttons individually route pre or post fade audio to the respective auxiliary outputs when selected (locked down). When de-selected the audio signal is isolated from the outputs.

Programme and Audition Outputs

2.7 The programme and audition audio output levels are controlled by channel fader RV10 with rotary panning control RV8 providing stereo distribution between left and right output terminals. Push buttons S8, S9 provide 12dB/octave roll off at pre-selectable frequencies of 15Hz, 47Hz, 82Hz and 150Hz.

The programme outputs Pgm-L, Pgm-R and audition outputs Aud-L, Aud-R are controlled by push buttons S11, S10 respectively. The push buttons provide mutually exclusive switching allowing programme or audition outputs to be selected. The mechanical interlock includes a centrally located 'off' push button. When selected this push button automatically disengages both 'pgm' and 'aud' push buttons to isolate the audio from the output.

p.f.l. push button S14

2.8 The p.f.l. non-locking push button S14 when selected (held down) routes pre-fade audio to the Aud-L bus via the p.f.l. output.

CIRCUIT DESCRIPTION

3. The circuit diagram of the channel amplifier, including p.c.b. BA635 is shown on Drawing No. EH10076. All controls, with the exception of preset potentiometers RV1, RV2 and RV3 mounted on the p.c.b. and used to establish the operating characteristics of the amplifying circuits, are located on the front panel.

Input\Output edge connectors on the p.c.b. are defined by alphabetic characters and pin connectors by numerals.

Input Circuit

3.1 Balanced audio from line (high level) or microphone (low level) signal sources are input on connectors A and B via 'mic' and 'ph' push buttons S2 and S3 and are routed to the primary of the transformer.

The two position push button S2 is used in conjunction with sensitivity control S1 to match the input signal to the operating characteristics of IC1. For line signal sources S2 is de-selected and a resistive pad of 10.2 K ohm formed of R1, R2 and R3 with a 30dB loss is inserted between input and transformer. For microphone sources S2 is selected (locked down) and the resistive pad is by-passed. The 'ph' push button S3 transposes the connnections to the transformer to provide 180 degree phase reversal.

The transformer provides balanced to unbalanced conversion with a gain of 12dB and the secondary output via S1 of the sensitivity control switch is coupled to the non inverting input of audio amplifier IC1 via capacitor C39.

Sensitivity Control Circuit

3.2 To maintain optimum performance of the channel amplifier over a wide range of signal sources at various levels, the gain of amplifier IC1 is controlled by sensitivity switch S1 in conjunction with 'mic' push button S2.

Sensitivity switch S1 is a two layer rotary switch (S1a and S1b) and matches the gain of the amplifier to the level of input signal. For high level signals S1 is de-selected inserting the 10.2K resistive pad between input and transformer and S1a introduces further selective resistive attenuation into the input path to prevent overloading of the amplifier and therefore distortion. The input levels which can be selected are -30dB, -15dB, 0dB and +10dB.

For low level signals S2 is selected to bypass the resistive pad and S1b provides selective resistive attenuation into the feedback path of the amplifier to give pre-selectable gain.

The input levels available vary in 15dB steps between -15dB and -90dB below the nominal input level of 0dBu.

The output of the amplifier via R9 and capacitor C38 is coupled to equalisation control switch S6 and via capacitor C8 and R10 is coupled to amplifier IC2 of the equalisation control circuit.

Equalisation Control Circuit

3.3 The equalisation control circuits comprise audio amplifiers IC2 and IC3 connected in cascade each with individual gain and frequency response controls.

3.3.1 Presence Control:- The presence control circuit comprises audio amplifier IC2 the gain of which is controlled by potentiometer RV6 and the frequency response characteristics by R.L.C. filters introduced into the amplifier feedback path by push buttons S4 and S5.

By selection of S4 and S5 or both ±15dB variation of the output is obtained by adjusting RV6 at peaking frequencies of 820 Hz, 1K8Hz and 3K9Hz. The output of the amplifier via R16 and C15 is coupled to audio amplifier IC3 of the Hf, Lf control circuit.

3.3.2 High and Low Frequency Response Circuit:- Audio amplifier IC3 in conjunction with potentiometer RV7 and RV9 each of which forms part of the amplifier feedback CR network paths of the amplifier, provides gain compensation at the lower and upper ends of the frequency spectrum. At the lower frequencies RV7 is effective and initiates the cut and boost characteristics at 1KHz and reaches ±15dB at 50Hz. At the upper frequencies, RV9 is effective and initiates the cut and boost characterisics at 1kHz and reaches ±15dB at 15kHz. The output of the amplifier, via equalisation control switch S6, is routed to programme, audition, prefade listen and auxiliary outputs through the associated processing and switching circuits.

3.3.3 Equalisation Control S6:- The 'eq' push button S6 provides overriding control of the equalisation circuits of para 3.3.1 and 3.3.2. When selected (locked down) the equalisation circuits are operative and when de-selected the circuits are by-passed.

Auxiliary Output Control Circuit

3.4 Audio amplifier IC4, the gain of which is controlled by RV11, processes either prefade or postfade audio and the signals are routed to auxiliary output Aux 1 and Aux 2 via push buttons S12 and S13 respectively. In the prefade mode (pre-channel fader RV10) push button S7 is selected and the audio is routed to the outputs with the output level directly controlled by RV11. In the postfade mode (post channel fader RV10) the audio output level is dependent on channel fader RV10 and also on RV11 with roll off frequencies selected by S8 and S9.

Programme and Audition Output Controls

3.5 Equalised or unequalised audio, depending on the position of S6, is routed via the channel fader RV10 and high pass CR filters, which can be selected in or out, to the input of audio amplifier IC5. RV10 controls the output level of the amplifier and S8, S9 introduce the filters into the amplifier input circuit to give selectable roll off of -12dB/octave at frequencies of 17Hz, 47Hz and 150Hz. The amplifier output is routed via panning potentiometer RV8 to the 'pgm' and 'aud' push buttons S11 and S10.

The 'pgm' push button S11 and 'aud' push button S10 are mutually exclusive and route the audio signal to PGM-L, PGM-R or AUD-L, AUD-R output terminals. The push buttons are mechanically interlocked with an 'off' push button located between them. This push button when selected disengages both S11 and S10 to isolate the audio from output terminals.

p.f.l. push button S14

3.6 The p.f.l. non locking push button S14 when selected routes equalised or unequalised audio pre-channel fader RV10 to the p.f.l. (prefade listen) output terminal.

SETTING UP PROCEDURE

4. Prior to despatch the consoles are subjected to stringent test procedures to meet the specified operating characteristics defined in the associated test report.

In the event that it becomes necessary to check or reset the operating parameters of the input sensitivity stage of the channel amplifier, the following procedure should be followed:-

Test Procedure

4.1 (a) Remove the channel amplifier from the mixer and reconnect using extension lead (Spares kit, Part No. PL20240).

(b) De-select 'mic' push button S2 (mic input selected).

(c) De-select 'eq' push button S6 (equalisation by-passed).

(d) Set sensitivity control S1 to the OdB position.

(e) Set the signal input level to OdBu at 1kHz.

(f) Verify the signal level at pin 17 on p.c.b. BA635 (top of channel fader RV10) is -22dBu. If necessary adjust RV1.

(g) Set channel fader RV10 to minimum attenuation (0 position on scale).

(h) Verify the signal level at Pgm L and R output terminals is -2.5dBu. If necessary adjust RV3.

(i) Set auxiliary output level control RV11 to minimum attenuation (fully clockwise).

(j) Verify the signal level at Aux 1 and 2 output terminals is -2.5dBu. If necessary adjust RV2.

REAR CONNECTOR 34128

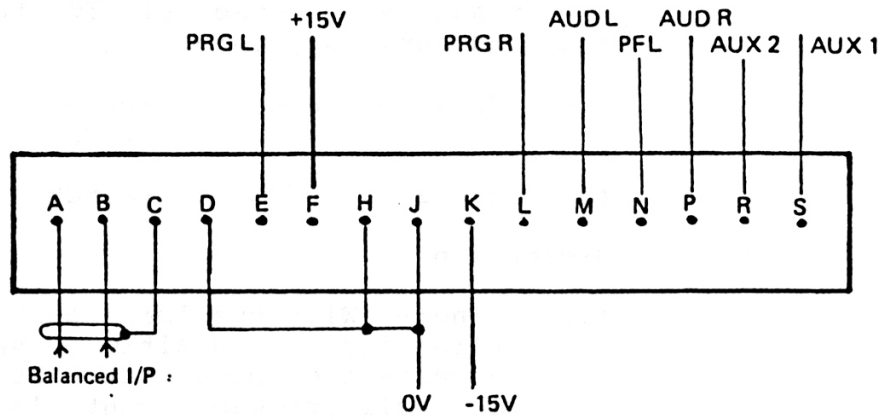
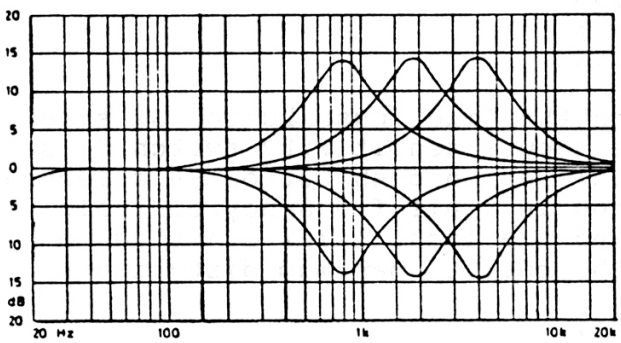


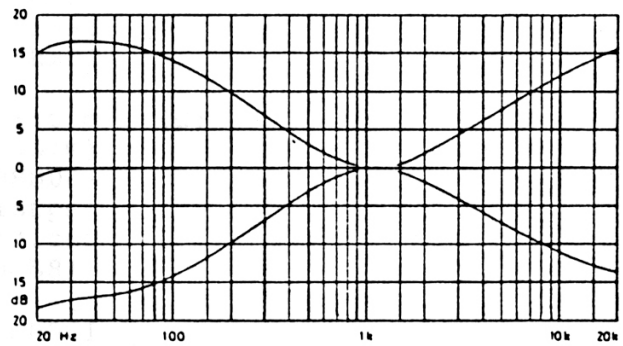
Figure 1

Frequency Response Curves



MID FREQUENCIES - PEAKING RESPONSE

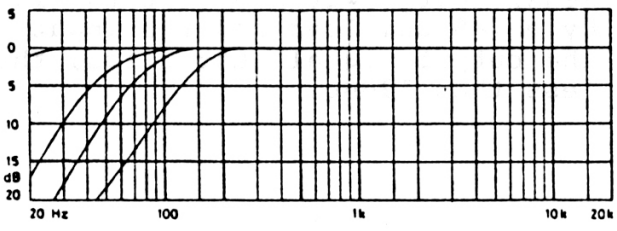
Figure 2



LOW FREQUENCIES SHELVING RESPONSE

HIGH FREQUENCIES SHELVING RESPONSE

Figure 3



HIGH PASS FILTER

Figure 4

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34128 CHANNEL AMPLIFIER

SPECIFICATION

1. Frequency response

With the 'mic' push button S2 de-selected (line input), sensitivity switch S1 set to OdB, Channel Fader RV10 set to 0, RV11 set fully clockwise and a 1kHz signal set to +2.5dBu applied to the input to give OdBu at the output, the frequency response relative to the value measured at pgm, and aux. outputs:-

(a)	25Hz	OdBu	+0.5dB -1.0dB
(b)	20kHz	OdBu	±0.5dB

2. Distortion

(a) line:- With the 'mic' push button S2 de-selected (line input), sensitivity switch S1 set to -15dB, equalisation push button S6 selected (equalisation in), all frequency controls flat (mid position) and the input level adjusted to give +18dBu at the output maximum distortion:-

100Hz	0.05%
1kHz	0.02%
10kHz	0.02%

(b) mic:- With the 'mic' push button S2 selected (microphone input) sensitivity switch S1 set to -60dBu, equalisation push button S6 selected (equalisation in), all frequency controls flat (mid position) and the input level adjusted to give +18dBu at the output, maximum distortion:-

100Hz	0.02%
1kHz	0.02%
10kHz	0.02%

3. Maximum output

With the 'mic' push button S2 de-selected (line input) sensitivity switch S1 set to -15dB, the output terminated by a 7K5 ohm load and the input signal increased until the output signal just clips, the maximum output:- not less than 19dBu.

4. Crosstalk

(a) Pgm - Aud, Aux Outputs
With the input signal at frequencies of 100Hz, 1kHz and 10kHz set to give +10dB at the program output terminals, crosstalk measured at audition and auxiliary outputs:- not greater than -80dB.

(b) Audition, Auxiliary - Pgm
With an input signal at frequencies of 100Hz, 1kHz and 10kHz set to give +10dBu at the audition or auxiliary outputs, crosstalk measured at the program outputs:- not greater than -80dB.

5. Noise

With the 'mic' push button S2 selected, input terminated with 200 ohms, equalisation push button S6 de-selected (equalisation out) push buttons S8 and S9 de-selected (high pass filter out) and sensitivity switch set to -90 (gain 87.5dB) the noise measured at the output:- equal to or less than -37.5dBu.

6. High frequency control

With the 'mic' push button S2 de-selected (line input), sensitivity switch S1 set to OdB and a 15kHz signal applied to the input and adjusted to give OdBu at the output:-

(a)	Maximum boost by adjusting RV9	+15dB	$\pm$20%
(b)	Maximum cut by adjusting RV9	-15dB	$\pm$20%

7. Low frequency control

With the 'mic' push button S2 de-selected (line input), sensitivity switch S1 set to OdB and a 50Hz signal applied to the input and adjusted to give OdB at the output:-

(a)	Maximum boost by adjusting RV7	+15dB	$\pm$20%
(b)	Maximum cut by adjusting RV7	-15dB	$\pm$20%

8. Presence

Maximum boost and cut obtained by adjusting RV6 at the preselectable frequencies of 820Hz, 1k8Hz and 3k9Hz (S8, S9): $\pm$15dB $\pm$20%.

9. Input headroom

With sensitivity switch S1 set to -30dB, an input signal of -30dBu applied to the input and channel fader RV10 adjusted to give -30dBu the input level can be increased by 40dB before clipping occurs giving an equivalent headroom of 40dB.

10. Input current

Quiescent input current: 27mA. (nominal).

PARTS LIST

Ref	Description	Part No.
R1, 2, 25	Resistor TR4 5K1 ohms	RA005K1
R27, 31, 39	Resistor TR4 5K1 ohms	RA005K1
R43,44	Resistor TR4 5K1 ohms	RA005K1
R3	Resistor TR4 430 ohms	RA430R0
R4	Resistor TR4 2K0 ohms	RA002K0
R5, 9, 16	Resistor TR4 22 ohms	RA022R0
R24	Resistor TR4 22 ohms	RA022R0
R6, 8	Resistor TR4 39K ohms	RA039K0
R7, 45	Resistor TR4 12K ohms	RA012K0
R10, 14, 22	Resistor TR4 7K5 ohms	RA007K5
R11, 12, 13	Resistor ISKRA 4M7 ohms	RH004M7
R15, 30, 37	Resistor TR4 1K5 ohms	RA001K5
R17, 21	Resistor TR4 6K8 ohms	RA006K8
R18	Resistor TR4 470 ohms	RA470R0
R19	A.O.T.	
R20, 33	Resistor TR4 10K ohms	RA010K0
R23	Resistor TR4 680 ohms	RA680R0
R26/42	Resistor TR4 750 ohms	RA750R0
R28	Resistor TR4 4K7 ohms	RA004K7
R29	Resistor TR4 2K7 ohms	RA002K7
R32, 38	Resistor TR4 220 ohms	RA220R0
R34	Resistor TR4 24K ohms	RA024K0
R35	Resistor TR4 6K2 ohms	RA006K2
R36	Resistor TR5 330K ohms	RB330K0
R40, 41	Resistor TR4 1K6 ohms	RA001K6
R46	Resistor TR4 100K ohms	RA100K0
R50	Resistor TR4 12K ohms	RA012K0
R51	Resistor TR4 10K ohms	RA010K0
R52	Resistor TR4 5K6 ohms	RA005K6
R53	Resistor TR4 620 ohms	RA620R0
R54	Resistor TR4 110 ohms	RA110R0
R55	Resistor TR4 3K0 ohms	RA003K0
RV1	Preset pot. 10K Linear	PT15026
RV2, 3	Preset pot. 1K Linear	PT11009
RV6, 9, 11	Rotary Pot linear 10K	PT15028
RV7	Rotary Pot linear 47K	PT19010
RV8a, b	Rotary Pot 10K + 10K	PT45013
RV10	Fader 1100 series 600 ohms	FD10009
R56, 57	Resistor BTT 10 ohms	RD010R0

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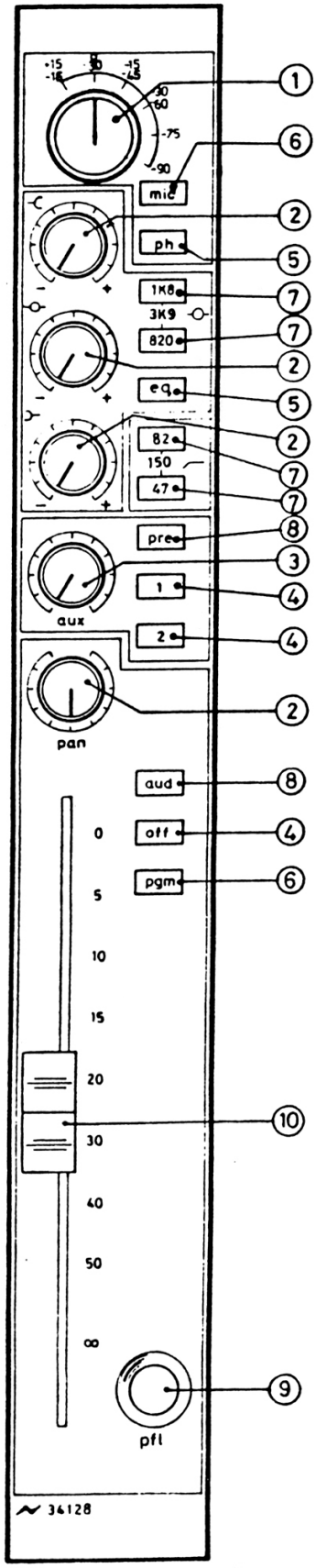
Ref	Description	Part No.
C1	Capacitor, Suflex 220 pF	CA12200
C2, 3	Capacitor 330 µF, 4V	CA63300
C4	Capacitor Suflex 100 pF	CA11000
C5	Capacitor Suflex 18 pF	CA10180
C6, 7, 13	Capacitor Tant 10 µF, 25V	CA60101
C14, 23, 24	Capacitor Tant 10 µF, 25V	CA60101
C30, 31, 35	Capacitor Tant 10 µF, 25V	CA60101
C36	Capacitor Tant 10 µF, 25V	CA60101
C8	Capacitor Tant 47 µF, 16V	CA60471
C9	Capacitor Tant 56 nF, Siemens	CA20560
C10	Capacitor Tant 27 nF, Siemens	CA20270
C11	Capacitor Tant 12 nF, Siemens	CA20120
C12, 22	Capacitor Suflex 22 pF	CA10220
C29, 34	Capacitor Suflex 22 pF	CA10220
C15, 39, 40	Capacitor Tant 3.3µF, 25V	CA60030
C16, 17, 19	Capacitor Siemens 22 nF	CA20222
C21	Capacitor Siemens 22 nF	CA20222
C25, 27, 32	Capacitor Mullard 100 µF, 4V	CA61000
C33, 37, 38	Capacitor Mullard 100 µF, 4V	CA61000
C18, 20	Capacitor Suflex 3.3 nF	CA20031
C26, 28	Capacitor Siemens 470 nF	CA24703
S1a, b	Rotary Sw. 2P 12W	SR14605
For S2	Isostat Spacer	MU21139/7
For S3	Isostat Spacer	MU21139/3
For S4	Isostat spacer	MU21139/1
T1	Transformer EM20014	TF10014
L1	Inductor VT23127	IN12018
IC1-5	Operational Amp	IC20007
	Knobs and Caps	
	Isostat Cap 10 mm black, round	KA10013
	Fader knob, narrow, white	KA11024
	13 mm dia. knob	MK20055/1
	18 dia. smooth knob	MK20056/4
	13 dia. knob cap light blue	MD20063/1
	13 dia. knob cap med. blue	MD20063/2
	18 dia. knob cap dark blue	MD20069/3
	Engraved Caps	
	Isostat cap 10 mm grey '1'	MG65001/B
	Isostat cap 10 mm grey '2'	MG65002/B
	Isostat cap 10 mm white '47'	MG63047/B
	Isostat cap 10 mm white '82'	MG63082/B
	Isostat cap 10 mm grey 'off'	MG65389/B
	Isostat cap 10 mm grey 'eq'	MG65396/R
	Isostat cap 10 mm grey 'ph'	MG65397/R
	Isostat cap 10 mm black 'pre'	MG64557/W
	Isostat cap 10 mm white '820'	MG63820/B
	Isostat cap 10 mm black 'aud'	MG64595/W
	Isostat cap 10 mm red 'mic'	MG66597/W
	Isostat cap 10 mm red 'pgm'	MG66596/W
	Isostat cap 10 mm white '1K8"	MG63598/B
S14	Isostat Sw. 1B 2P N/L	SW20000
S2-S9	Isostat Sw. 10B 2P P/P	SW20182
S12, S13	Isostat Sw. 10B 2P P/P	SW20182
S10, S11	3B 2P O 2P I/L	SW20042



(1) ROTARY SENSITIVITY CONTROL SWITCH S1 : Outer ring line input levels
Inner ring microphone input levels

(6) 'mic' push button S2 : Selected (locked down) microphone input
de-selected (unlocked) Line input

(2) ROTARY LEVEL CONTROL RV9. High Frequency Cut and Boost (± 15dB)

(5) 'ph' push button S3. Phase Reversal

(7) 1K8 push button S5.

(7) 820 push button S4

(2) ROTARY LEVEL CONTROL RV6

(5) eq push button S6

EQUALISATION CONTROLS
RV6 provides ± 15dB Cut and Boost at preselectable frequencies:-

S4, S5 de-selected		
S4	selected	820Hz
S5	selected	1K8Hz
S4, S5 selected		3K9Hz

eq push button - selected bypasses equalisation

(2) ROTARY LEVEL CONTROL RV7. Low frequency Cut and Boost (± 15dB)
Roll off controls. S8, S9 de-selected 15Hz
S8 selected 47Hz
S9 selected 82Hz
S8, S9 selected 150Hz

(7) 82 push button S9

(7) 47 push button S8

(8) 'pre' push button S7

(3) ROTARY LEVEL CONTROL RV11

(4) '1' push button S12

(4) '2' push button S13

AUXILIARY OUTPUT CONTROLS
RV11 controls auxiliary output level with S7 de-selected (prefade)
RV11 and RV10 (Channel) fader control auxiliary output levels with S7 selected (post fade)
Push buttons S12, S13 independently route pre or post fade audio to Aux 1 and Aux 2 outputs

(2) RV8 pan potentiometer

(8) 'aud' push button S10

(4) 'off' push button

(6) pgm push button S11

PROGRAMME AND AUDITION OUTPUT CONTROLS
Channel Fader RV10 controls output levels at programme and audition outputs
RV8 provides stereo distribution between Pgm L and R and Aud L and R
Aud push button S10 routes audio to Aud L and R outputs
Pgm push button S11 routes audio to Pgm L and R outputs

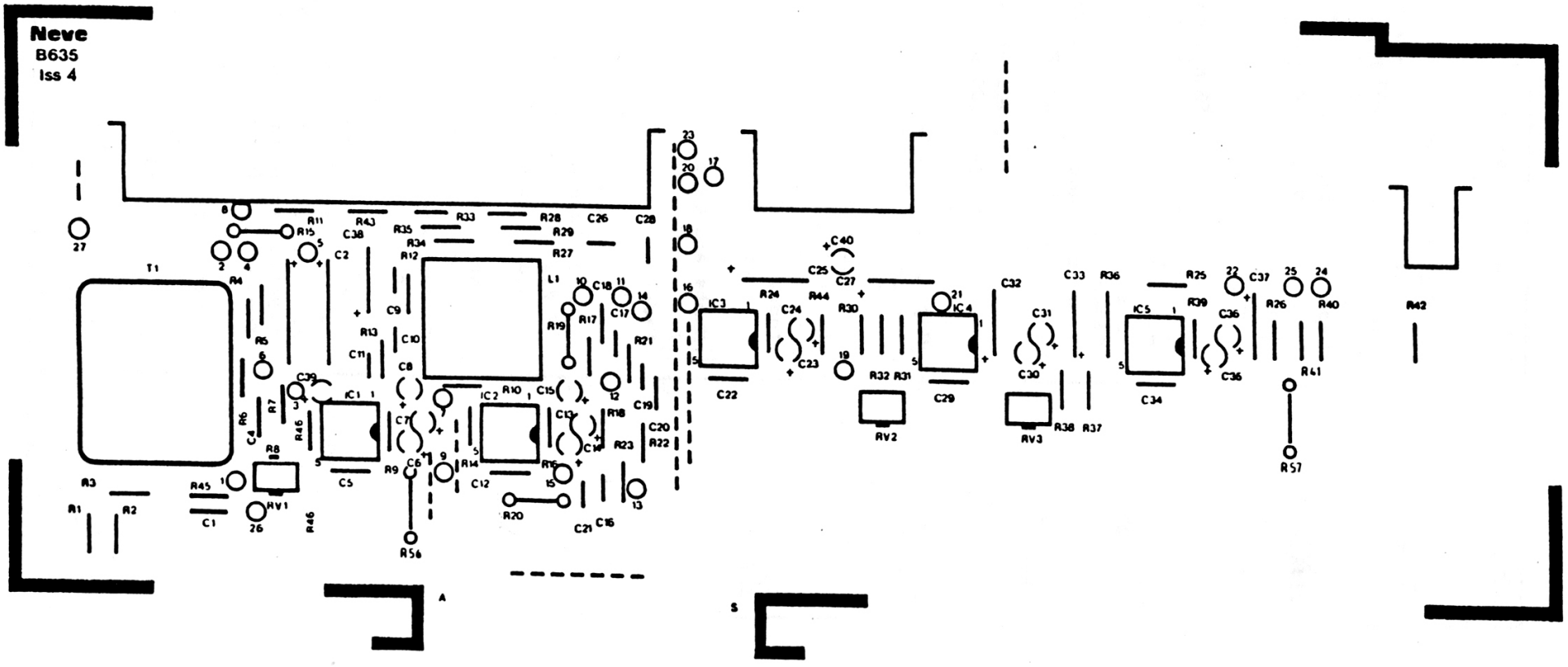
(10) Channel Fader RV10

(9) 'pfl' push button S14

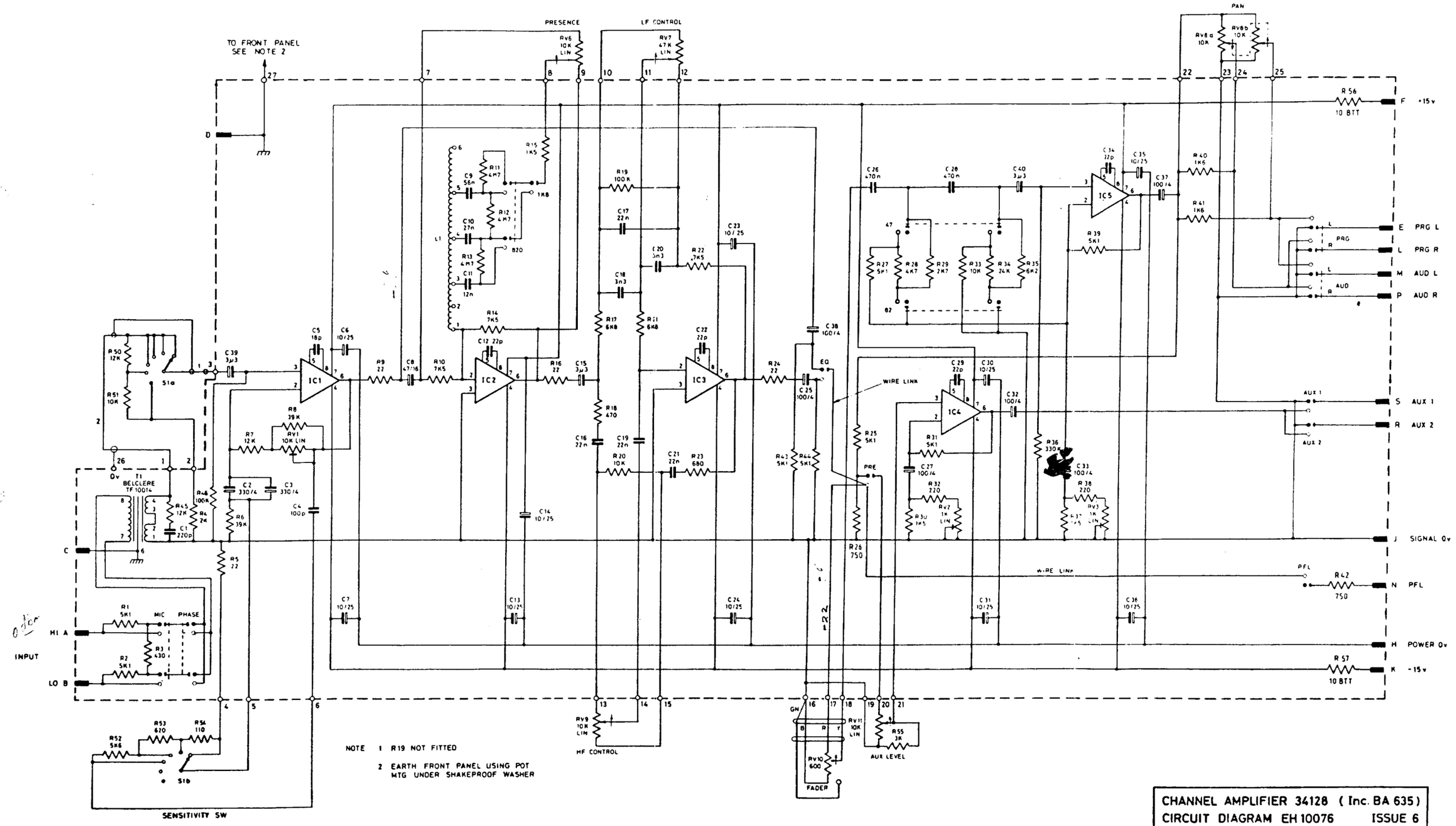
pfl push button (non lock) routes prefade audio (pre Channel Fader RV10) to pfl output

ITEM	DETAIL
(1)	18 DIA. KNOB. DARK BLUE INSERT
(2)	13 DIA. KNOB. MED BLUE INSERT
(3)	13 DIA. KNOB. PALE BLUE INSERT
(4)	PUSHBUTTON (ISOSTAT 10mm CAP) - GREY/BLACK
(5)	PUSHBUTTON (ISOSTAT 10mm CAP) - GREY/RED
(6)	PUSHBUTTON (ISOSTAT 10mm CAP) - RED/WHITE
(7)	PUSHBUTTON (ISOSTAT 10mm CAP) - WHITE/BLACK
(8)	PUSHBUTTON (ISOSTAT 10mm CAP) - BLACK/WHITE
(9)	PUSHBUTTON (ISOSTAT 10mm DIA. CAP) BLACK (IN BEVELLED RECESS)
(10)	NARROW FADER KNOB - WHITE

CHANNEL MODULE FRONT PANEL LAYOUT
(ML 34128 Issue 3)



EW 10635
COMPONENT LAYOUT DIAGRAM
BA 635



CHANNEL AMPLIFIER 34128 (Inc. BA 635)
CIRCUIT DIAGRAM EH 10076 ISSUE 6

542 RANGE

Section 3 OUTPUT AND MONITOR PANEL

CONTENTS

ILLUSTRATIONS

FOLD OUT PAGE 8 FOR REFERENCE TO FRONT PANEL LAYOUT

GENERAL

1. The Output and Monitor Panel contains the controls, switches and V.U. meters associated with the processing circuits of the consoles. The panel location is shown on the appropriate layout drawing in Section 1 and the front panel layout, arranged in the various sections, on drawing number ML50095 applicable to all consoles.

   Circuit diagram EC10510, sheet 2, shows the internal wiring of the panel with connections to components external to the panel. In general, the panel controls operate in conjunction with the audio processing circuits of the associated printed circuit board BA683 described in detail in section 4. The following descriptions of the panel controls are therefore with respect to operational effects only.

OUTPUT FADERS

2. The 'left' and 'right', Penny and Giles output faders located on the lower left hand side of the panel independently control the main **LINE-L, LINE-R** output signal levels. The fader control knobs are coloured red to distinguish them from the channel faders. The faders are connected pre Talkback-to-Line, Tone-to-Line switch and if either switch is selected the pgm (programme) audio is isolated from the Line outputs.

MONO CONTROL

3. The 'mono' push button, located on the upper right of the 'right' output fader, when selected mixes post fade audio from the **PGM-R** bus to pre-fade **PGM-L** bus to provide a mono output on **PGM-L.** **PGM-R** can be used as a sub-mix.

AUX (AUXILIARY) SECTION

4. The Aux (auxiliary) section contains two rotary level controls which independently control the Aux 1 and Aux 2 output signal levels.

PLAYBACK TO OUTPUT SECTION

5. The Playback to Output section contains two sets of controls arranged in vertical columns and associated with Playback 1 and Playback 2 inputs respectively.

   (a) Rotary level control
   Sets the level of playback audio signal.

   (b) Pan Control
   Provides panoramic positioning of the playback audio signal between the selected stereo busses (Pgm-L, Pgm-R or Aud-L, Aud-R).

(c) Pushbutton Switches
The three push button switches associated with each playback input signal, when selected, provide the following mutually exclusive signal routing.

(i) **OFF:** isolates the playback signals from Pgm and Aud busses.

(ii) **AUD:** routes Playback 1 and Playback 2 signals to AUD-L and AUD-R busses respectively.

(iii) **PGM:** routes Playback 1 and Playback 2 signals to Pgm-L, Pgm-R mixing busses respectively.

MONITOR SECTION

6. The Monitor section contains a ganged rotary level control, a 'mono' push button and six individually identified push button switches providing mutually exclusive routing of various audio signals to the **MON-L, MON-R** outputs. Monitor outputs are unbalanced and 2.5dB below line level.

(a) Rotary Level Control
Sets the level of the monitor output signal.

(b) 'mono'
The 'mono' push button is connected pre monitor output level control and when selected mixes the audio signals on **MON-L** and **MON-R** bus to provide mono outputs on **MON-L** and **MON-R.** Note, however that the V.U. meters continue to indicate the incoming stereo programme. See para 7 (c).

(c) Pushbutton Controls
The six interlocked push buttons, when selected, provide the following signal routing to the **MON-L, MON-R** outputs. In each case the audio signals are routed to the pre monitor dim, talkback to auxiliary, talkback to line and monitor level controls and the selected audio remains under the control of these facilities.

(i) Line: **LINE-L, LINE-R** output signals routed to **MON-L, MON-R** outputs respectively.

(ii) Pgm: **PGM-L** (programme left), **PGM-R** (programme right) Audio signals, pre 'talkback-to-line', 'tone-to-line' control switch, routed to **MON-L** and **MON-R** outputs, respectively.

(iii) Aud: **AUD-L** (audition left), **AUD-R** (audition right).
Postfade audio from the Channel Amplifiers with the aud pb selected is routed to **MON-L, MON-R**

respectively. Prefade audio with the pfl push button on the Channel Amplifiers selected routed via **AUD-L** to **MON-L.**

(iv) Aux 1: **AUX 1** audio output routed to **MON-L** and **MON-R** outputs.

(v) Aux 2: **AUX 2** audio output routed to **MON-L** and **MON-R** outputs.

(vi) p.b.: **PLAYBACK 1** and **PLAYBACK 2** audio inputs, pre-level and pan controls. routed to **MON-L, MON-R** outputs respectively.

V.U.METERS

7. The V.U. meters are designated 'left' and 'right' corresponding to the bus selected. The upper scale of the meters represents the audio level in VU where the O point corresponds to O VU.

Normal calibration +4dBu = OVU.

The indication is dependent on the three position switch located directly above the meters.

(a) Line
With the switch set to 'line' (centre) the meters indicate audio levels of **LINE-L, LINE-R** outputs respectively.

(b) Aud
With the switch set to 'aud' (left) the meters indicate the audio levels of **AUD-L, AUD-R.**

(c) Mon
With the switch set to 'mon' (right) the meters indicate the signal levels entering the monitor section, as selected by the six interlocked monitor push buttons. The meter indications are not affected by Monitor Dim, Mono or Monitor Output Level settings.

The V.U. meters are driven by V.U. Buffer Amplifier Board BA669 - see Section 4 for details.

P.P.M. METERS (OPTION)

P.P.M. meters are available as an alternative to the standard V.U. meters. The meter selection switches perform as for V.U. versions. The P.P.M. meters are driven by printed circuit board BA374/G - see Section 4 for details.

TALKBACK SECTION

8. The Talkback section provides switching facilities routing audio from the panel microphone to Line and Aux outputs via a rotary level control.

(a) Aux 1
When 'Aux 1' is selected audio on Aux 1 bus is isolated from the Aux 1 output, **MON-L** and **MON-R** outputs are automatically dimmed and 'talkback' audio is routed to the Aux 1 output.

(b) Aux 1-2
When 'aux 1 and 2' is selected audio from Aux 1 and Aux 2 busses is isolated from respective Aux 1, Aux 2 outputs, **MON-L** and **MON-R** outputs are automatically dimmed and talkback audio is routed to both Aux 1 and Aux 2 outputs.

(c) tb-to-line
When the 'tb-to-line' switch is selected post-fade audio of Pgm-L, Pgm-R is isolated from respective **LINE-L, LINE-R** outputs, the **MON-L** and **MON-R** outputs are automatically dimmed and talkback audio is routed to **LINE-L** and **LINE-R** outputs.

OSCILLATOR SECTION

9. The oscillator section contains a rotary level control and a rotary control switch with seven operating positons. With the switch set to off the oscillator is inoperative. The oscillator output is unbalanced and the remaining five positions select tone signals of 40, 400, 1K, 10K and 15kHz. The tone signals are routed to the oscillator output connector on the connector panel and when the 'tone-to-line' switch is selected Pgm-L, Pgm-R audio is isolated from the line outputs and the selected tone signal is routed to **LINE-L, LINE-R** outputs.

MICROPHONE

10. The console microphone, in conjunction with the talkback section controls, provides talkback facilities to **LINE-L, LINE-R** or **AUX 1** or **AUX 1** and **AUX 2** outputs.

HEADSET SOCKET

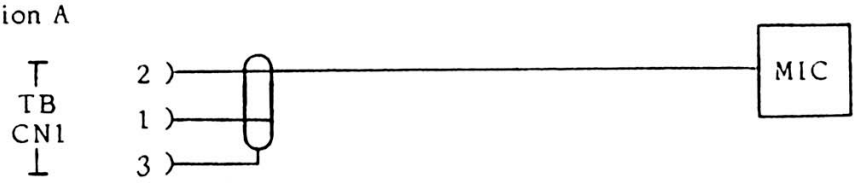
11. The headset jack socket is centrally located on the top of the panel. This facility provides headset monitoring of the selected monitor outputs in mono or stereo, depending on the setting of the 'Mono' push button. The headset signal level is controlled by the Monitor Rotary Level Control.

Addendum to Section 3

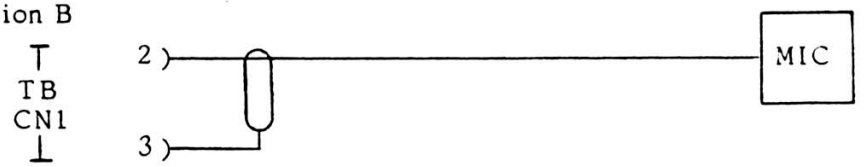
CONSOLE TALKBACK MICROPHONE

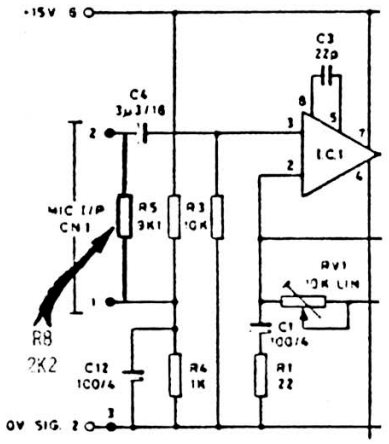
One of two versions of Microphone Assembly PL21103 may be fitted to 542 range consoles, as follows:

Version A

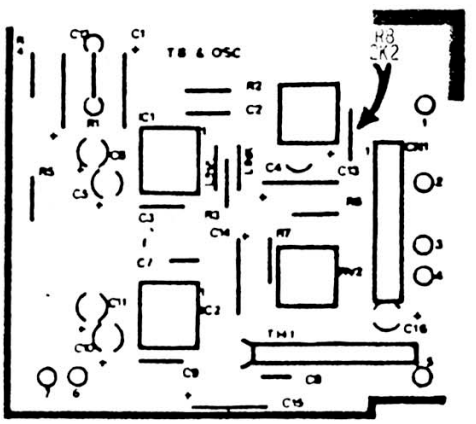


Version B





Part of EX10683 Sht 1



Part of EW10683

Note: Version B, with single screened lead, has 2K2 ohm resistor R8 added to BA683 TB & OSC Section as shown.
R8 must be fitted in all cases where assembly version A is replaced by version B.

OUTPUT AND MONITOR PANEL

PARTS LIST PN600006

Ref	Description	Part No.
Potentiometers		
	Pot SFER P11 1K Lin	*PT11012*
	Pot SFER P11 10K Lin	*PT15028*
	Pot SFER P11 10K + 10K Lin	*PT45013*
	Pot Plessey 'M' 1K Lin preset	*PT11002*
Resistors		
	TR4 360 ohms	*RA360R0*
	TR4 510 ohms	*RA510R0*
	TR4 1K0 ohms	*RA001K0*
	TR4 1K6 ohms	*RA001K6*
	TR4 5K1 ohms	*RA005K1*
Switches		
	Isostat 1B, 4P, P/P	*SW20001*
	Isostat 1B, 2P, P/P	*SW20000*
	Isostat 3B, 2P, O 2P I/L CD10	*SW20042*
	Isostat 6B, 4P I/L CD15	*SW20101*
	Keyswitch 4NL/4NL	*SW40062*
	Keyswitch 4CL/4NL	*SW40063*
	Keyswitch 4CL/4CL	*SW40064*
Fader	*P & G 1120 10K*	*FD10008*
SUB-ASSEMBLIES		
	VU Meter R22F 'A' Scale	*IM10002*
	*VU Amp Board**	*PL10669*
	*PPM Amp & Meter (option)**	*PL10374/G*
	Sw. Assembly	*PL20239*
	Microphone Assembly	*PL21103*
	Jack Socket	*CN35002*
Knobs and Caps		
	Fader knob narrow red	*KA11021*
	Keyswitch cap ivory	*KA14006*
	Keyswitch cap Red/ivory	*KA14010*
	Keyswitch cap Grey/red	*KA14015*
	Knob 13 dia smooth	*MK20055/1*
	Knob 18 dia smooth	*MK20056/1*
	Knob 18 dia bar	*MK20057/4*

**See Section 4 for details*

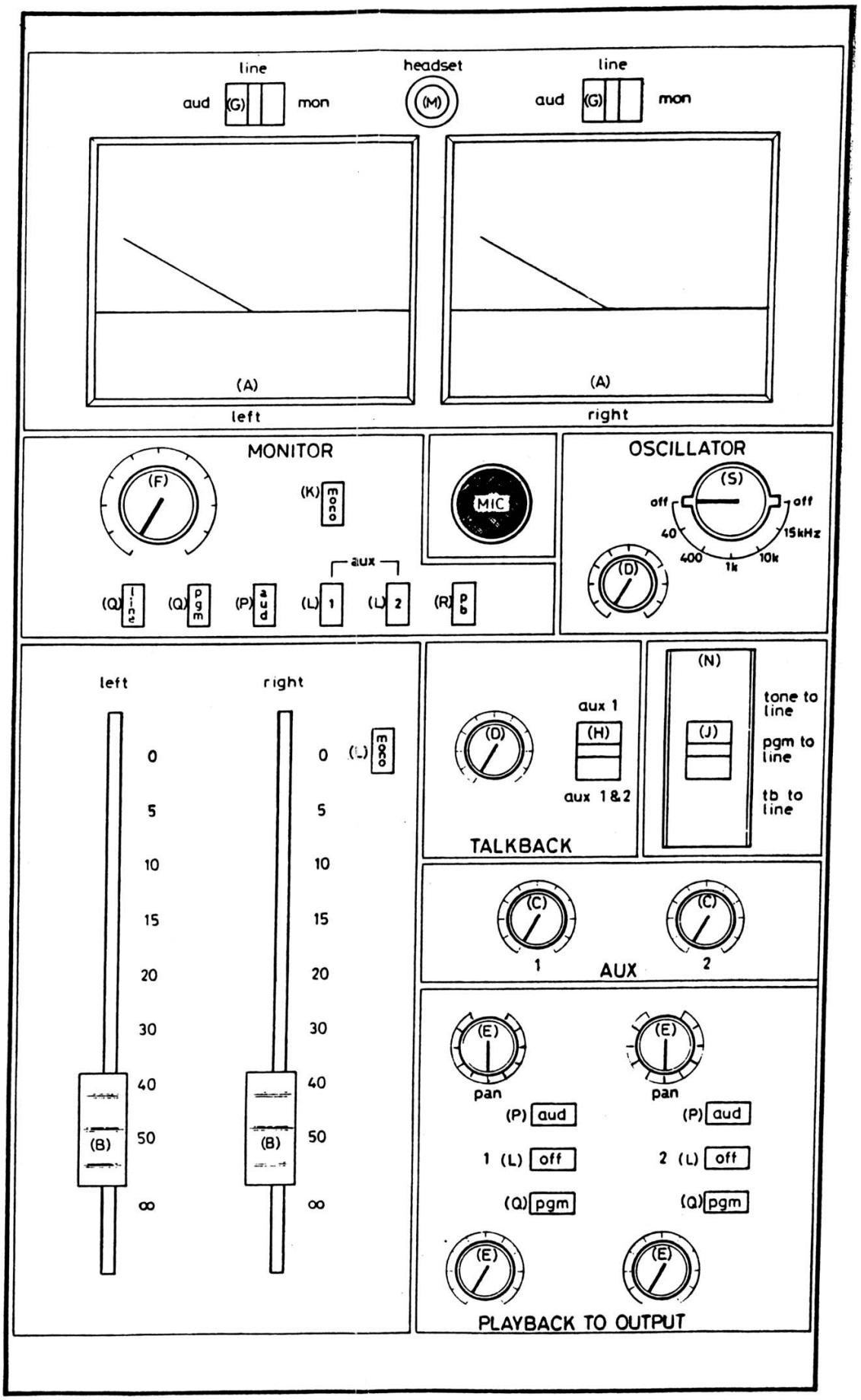
OUTPUT AND MONITOR PANEL

PARTS LIST continued

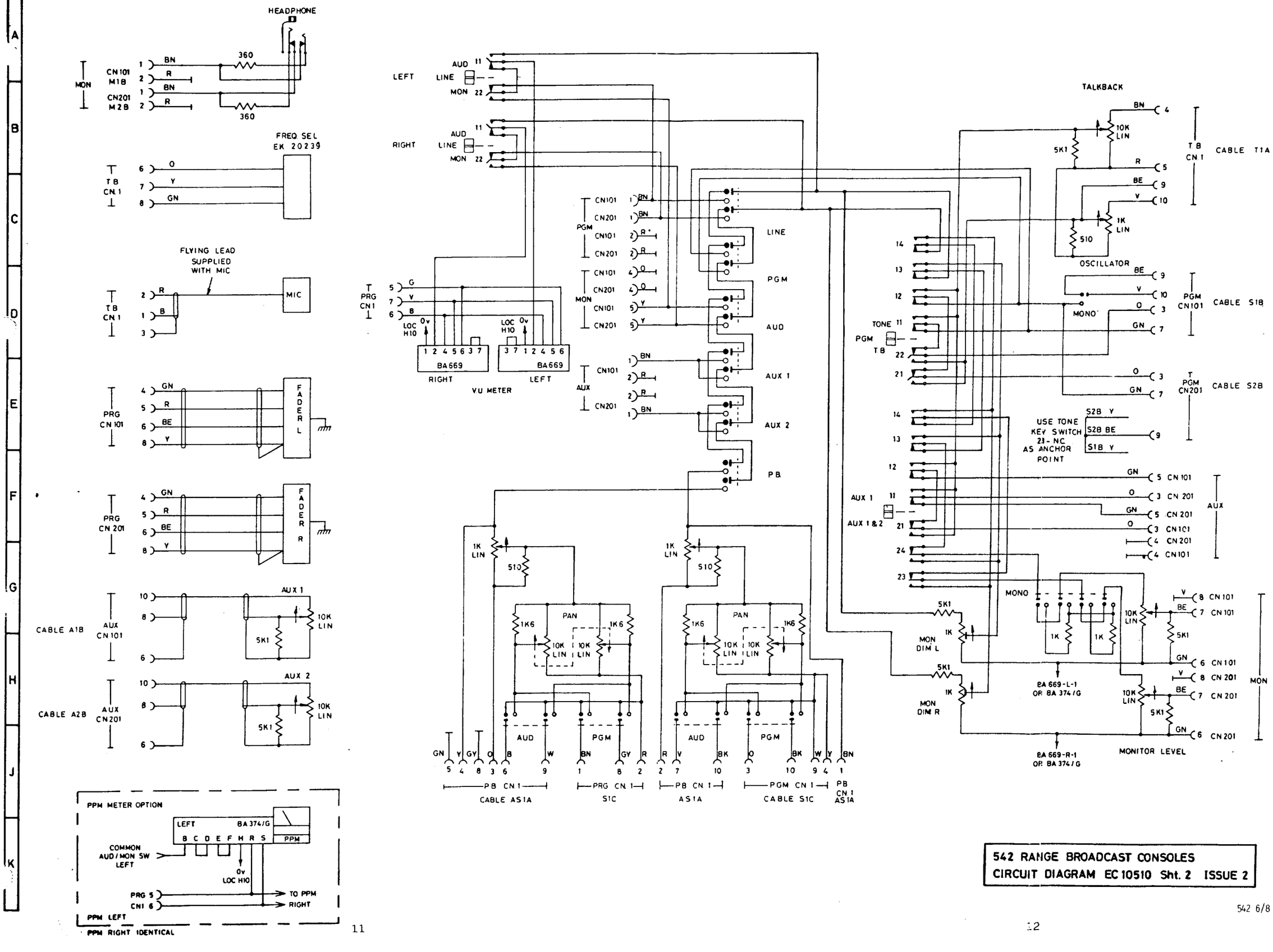
Ref	*Description*	*Part No.*
Knobs and Caps		
	Knob cap 13 dia L/Blue	*MD20063/1*
	Knob cap 13 dia Med/Blue	*MD20063/2*
	Knob cap 13 dia Dark/Blue	*MD20063/3*
	Knob cap 18 dia	*MD20069/2*
Engraved Caps (isostat)		
'pb'	*10 mm white*	*MG53422/R*
'aud'	*10 mm black*	*MG54595/W*
'1'	*10 mm grey*	*MG55001/B*
'2'	*10 mm grey*	*MG55002/B*
'mono'	*10 mm grey*	*MG55413/B*
'mono'	*10 mm grey*	*MG55413/R*
'pgm'	*10 mm red*	*MG56596/W*
'line'	*10 mm red*	*MG56602/W*
'aud'	*10 mm black*	*MG64595/W*
'off'	*10 mm grey*	*MG65389/B*
'pgm'	*10 mm red*	*MG66596/W*

KEY TO ML50095

ITEM	DETAIL
A	METER (SIFAM 22F FRONT PANEL MOUNTED) VU
B	FADER KNOB (P. & G. NARROW) - RED.
C	13 mm. DIA. KNOB - LIGHT BLUE INSERT.
D	" " " - MEDIUM BLUE INSERT.
E	" " " - DARK BLUE INSERT.
F	18mm DIA. KNOB - MEDIUM BLUE INSERT.
G	KEYSWITCH CAP - GREY/RED.
H	" " - IVORY. (NON-LOCKING)
J	" " - RED/IVORY (LOCKING UP, NON-LOCKING DOWN)
K	PUSH BUTTON (ISOSTAT 10mm) - GREY/RED.
L	" " " " - GREY/BLACK.
M	JACK SOCKET (STANDARD G.P.O.)
N	KEYSWITCH GUARD.
P	PUSH BUTTON (ISOSTAT 10mm) BLACK/WHITE.
Q	" " " " RED/WHITE.
R	" " " " WHITE/RED.
S	18mm BAR KNOB - MEDIUM BLUE INSERT.



OUTPUTS & MONITOR PANEL
(ML 50095 Issue 5)



542 RANGE BROADCAST CONSOLES
CIRCUIT DIAGRAM EC 10510 Sht. 2 ISSUE 2

542 RANGE

Section 4 PRINTED CIRCUIT BOARDS

CONTENTS

*Note: BA374/G version fitted as option to 542 range consoles

542 RANGE

BA683 INFORMATION

CONTENTS

LIST OF ILLUSTRATIONS

BA683 INFORMATION

GENERAL

1. The BA683 printed circuit (motherboard) assembly is located beneath the Output and Monitor panel of the consoles and contains the functional components used in the mixing processes.

   The board layout is shown on drawing number EW10683 and effectively comprises six separate sections. Where applicable, within each section, all components are uniquely identified using 100-200 numbering to distinguish between components associated with left and right channels, respectively.

   Diagram EC10510, sheet 1, shows the schematic arrangement of the board connectors with respect to all other components and control devices extraneous to the board, where the d.c. supplies, derived either from the internal battery unit 34613 or external p.s.u. 33643 on 5422, 5432 and 5442 consoles or external p.s.u. on the 5422-R, are located on the left hand side.

   Interconnections between the board and the Output and Monitor panel are shown on EC10510, sheet 2.

CIRCUIT DESCRIPTIONS

2. Circuit diagram EX10683, sheet 1, shows the processing circuits arranged in the six sections corresponding to layout drawing EW10683 of the Output and Monitor panel. Open circles represent Cambion or DIL pins interconnecting the board to frame mounted components and solid circles represent Molex plug/socket interconnecting the board to the Output and Monitor panel. The following circuit descriptions are with respect to corresponding pins defined in brackets. The circuits operate in conjunction with the control devices of the Output and Monitor panel and reference should be made to Section 3 to obtain the operational function of the controls.

PGM (PROGRAMME) SECTION

3. The PGM (programme) section processes the audio information from the 34128 channel amplifiers and the playback section. In each case the audio signals are input to the mixing bus via 6K8 summing resistors. IC101 is an audio amplifier, where RV101 in the feedback circuit with the PGM 'L' output fader set to the OdB position , is adjusted during manufacture to set the output level of the section to -2.5dB for an input level of -2.5dB. The amplifier output via CN101 pins 5 (send), 4, 6 and 8 (return) is routed through the Pgm 'L' fader to unity gain audio amplifier IC102 used as a buffer. The output of this amplifier via CN101 pin 7 is routed to the three position keyswitch 'tone-to-line' and 'tb-to-line' on the Monitor panel. Depending on the selected position of the keyswitch a tone signal, programme audio or talkback audio is input to amplifier IC103 with unity gain. The amplifier drives the line output transformer via pins 25, 33 and via CN101 pin 1 the output signal is also routed to the Monitor section of the facilities panel. The transformer provides impedance matching with a 2.5dB gain.

MONO

4. When the 'mono' push button, located to the upper 'right' output fader, is selected, post fade audio from IC201 of the right channel processing circuit is routed through the switch and via CN101, pin 10 and the 6K8 summing resistor R111 is connected to the Pgm 'L' mixing bus giving a mono output on **LINE 'L'**. The Pgm 'R' can be used as a submix.

AUX 1, AUX 2 (AUXILIARY) SECTION

5. The Aux (auxiliary) section processes audio information from the channel amplifiers to provide Aux 1 and Aux 2 outputs.

   The audio from the channel amplifiers is input via 6K8 ohm summing resistors to the Aux 1 mixing bus and via CN101 pins 10 (send), 6, 8 (return) is routed to the rotary level control on the facilities panel and to audio amplifier IC101, RV101 in the amplifier feedback circuit is adjusted during manufacture to set the output level of the section to -2.5dB for an input level of -2.5dB. The amplifier output via CN101 pins 5 (send), 4 and 3 (return) is routed to the three position Aux 1, Off, Aux 1 and 2, keyswitch on the 'Talkback' section of the facilities panel. Depending on the selected position of this switch:

(a) Normal (centre). Audio from the Aux 1 mixing bus is input to IC102.

(b) Aux 1 (up). Audio from the facilities panel microphone is input to IC102.

(c) Aux 1 and Aux 2 (down). Audio from the facilities panel microphone is routed to both IC101 and IC201 amplifiers of Aux 1, Aux 2 outputs.

N.B.:- With the switch in either the Aux 1 or Aux 2 positions in addition to routing the microphone audio signals to the output amplifiers the switch also automatically dims the Monitor outputs.

IC102 is a unity gain amplifier and drives the primary of the line output transformer via pins 27, 31 and via CN101 pin 1 routes the signal to the monitor section. The transformer provides impedance matching.

PLAYBACK SECTION

6. This section processes playback audio in conjunction with the **PLAYBACK TO OUTPUT** controls located on the facilities panel.

Balanced playback audio signals input on pins 5 and 4 are coupled via networks C1, C2, R1 and C3, C4, R2 respectively to audio amplifier IC1 providing balanced to unbalanced conversion with R1, R7 and R2, R5 establishing the gain at -2.5dB. The amplifier output via CN1 pin 1, 2 is routed to the rotary level control, pan controls and three push button switches located on the Playback to Output section of the facilities panel. The push butons provide the following mutually exclusive signal routing:-

(a) OFF
When selected, this push button isolates Playback 1 audio from the busses.

(b) PGM (Program)
When selected this push button routes Playback 1 audio via the associated level and pan controls to the PGM 'L' mixing bus of the Programme section.

(c) AUD (Audition)
When selected, this push button routes Playback audio via the associated level and pan controls and pins 5, 4, to Aud 'L' and Aud 'R' mixing busses of the Monitor section.

MONITOR SECTION

7. The monitor section processes and routes audio information from various sources to the **MON-L, MON-R** outputs. Audio from the channel amplifiers, post fade with the Aud (audition) push button selected and prefade with the P.F.L. (prefade listen) push buttons selected (p.f.l. to Aud-L bus only) is connected to the Aud-L, Aud-R mixing bus through 6K8 summing resistors. Similarly, Playback 1 audio with the Aud push button of the Playback section is connected to the mixing bus.

With a signal level of OdBu at the input to the channel amplifier RV101 is adjusted during manufacture to give -2.5dBu at pin 5 (send). The amplifier output via CN101 pins 5 (send), 6, is routed to the monitor section of the facilities panel containing a rotary level control, a 'mono' push button, and six push buttons providing mutually exclusive signal routing of audio signals to the Mon-L output. The audio signal from the monitor section is returned on CN101 pin 7 (return) to unity gain audio amplifier IC102 providing the Mon L output on pins 30, 28 and via CN101 pins 1, 8 is wired to the headphones jack socket on the upper centre of the facilities panel.

The mutually exclusive signal routing to the Monitor L, R outputs is described in Section 3 and is repeated for convenience.

(a) **LINE**
When selected post fade, post talkback-to-line, tone-to-line switch audio is routed to Mon-L output.

(b) **PGM**
When selected post fade, pre talkback-to-line, tone-to-line switch audio is routed to Mon L.

(c) **AUD**
When selected audio from Aud (audition) L, R busses routed to Mon-L.

(d) **AUX 1**
When selected Aux 1 output is routed to Mon L and Mon R outputs.

(e) **AUX 2**
When selected Aux 2 output routed to Mon L and Mon R outputs.

(f) **PBI**
When selected pre level and pan control Playback 1 audio routed to Mon L output.

Mono

7.1 The 'mono' push button on the Monitor and Facilities panel electrically interconnects **MON-L** and **MON-R** signal paths at points located post tb-to-line switch and prior to the ganged rotary level control.

When the push button is deselected the **MON-L** and **MON-R** circuits are electrically isolated.

When selected the push button effectively provides facilities mixing the audio on both channels. The mixed signal via the rotary level control is routed via the BA683 pcb processing circuits to provide a mono output on **MON-L** and **MON-R** and headset.

Monitor Dim

7.2 The Monitor Dim control potentiometer is located on the rear of the monitor section and during manufacture is preset to dim the Mon-L, Mon-R outputs by 20dB when either the Talkback-to-Aux or Talkback-to-Line switch of the Talkback section is selected.

TALKBACK SECTION

8. The 'Talkback' section processes audio information from the facilities panel microphone.

The microphone audio signal via CN1 pin 2, is input to audio amplifier IC1 with a gain of 57.5dB set by RV1 during manufacture. The amplifier output via CN1 pin 4 is routed to a rotary level control and two 3 position keyswitches on the talkback section providing the following signal routing:

(a) Talkback to Aux 1 bus.

(b) Talkback to Aux 1 and Aux 2 busses.

(c) Talkback to Line-L, Line-R.

With the switches in the normal (centre) position talkback audio is isolated from the busses. When the switches are selected the **MON-L, MON-R,** outputs are automatically dimmed.

OSCILLATOR SECTION

9. The oscillator section in conjunction with the rotary frequency selector switch and level control on the Monitor Panel front panel provides preselectable tone signals of 40Hz, 400Hz, 1kHz, 10kHz and 15kHz.

Operational amplifier IC2 is connected in the configuration of a Wien bridge oscillator where the frequency characteristics are established by fixed capacitors C7, C8 in conjunction with resistive elements introduced by the selector switch via pins 6 and 7.

The output of the oscillator is coupled via capacitor C15 and pin 10 to the level control. From the level control the signal is routed to the tone-to-line switch and is returned on pin 9. From pin 4 the controlled signal at the selected frequency is routed to the XLR output connector.

BA683 PRINTED CIRCUIT BOARD

PARTS LIST

Ref	Description	Part No
PROGRAM SECTION		
Capacitors		
C6, C11, C102, C202	Suflex 22pF 63V	CA10220
C10, C104, C204	Suflex 47pF 63V	CA10470
C114, C214	Mullard 100 nF	CA21000
C9, C15, C101, C201	Mullard 100 µF 4V	CA61000
C5, C7, C8, C12, C13 C103, C203	Tant. 10 µF 25V	CA60101
Resistors		
R116, R123, R124	TR4 10 ohms	RA010R0
R216	TR4 10 ohms	RA010R0
R117, R118, R217, R218	TR4 22 ohms	RA022R0
R113, R114, R213, R214	TR4 68 ohms	RA068R0
R121, R221	TR4 560 ohms	RA560R0
R112, R212	TR4 620 ohms	RA620R0
R120, R220	TR4 1K0 ohms	RA001K0
R125, R225	TR4 1K2 ohms	RA001K2
R122, R222	TR4 1K8 ohms	RA001K8
R119, R219	TR4 3K3 ohms	RA003K3
R115, R215	TR4 3K6 ohms	RA003K6
R101-R111, R201-R210	TR4 6K8 ohms	RA006K8
R126, R226	TR4 9K1 ohms	RA009K1
RV101, RV201	Pot. A.Bradley 5K Lin	PT13205
Op. Amps.		
IC101, 102, 103	Mullard 8 lead DIL	IC20007
IC201, 202, 203	Mullard 8 lead DIL	IC20007
Sockets		
6	Cambion skt 8 way DIL	CN20162
3	Molex plug 10 way	CN10203
AUX 1 - 2 SECTION		
Capacitors		
C102, C108, C202, C208	Suflex 22 pF	CA10220
C104, C107, C204, C207	Suflex 47 pF 63V	CA10470
C111, C211	Mullard 100 nF	CA21000
C101, C106, C112	Mullard 100 µF, 4V	CA61000
C201, C206, C212	Mullard 100 µF, 4V	CA61000
C103, C105, C109, C110	Tant 10 µF, 25V	CA60101
C203, C205, C209, C210	Tant 10 µF, 25V	CA60101

Ref	Description	Part No
Resistors		
R118, R119, R218, R219	TR4 10 ohms	RA010R0
R111, R112, R211, R212	TR4 68 ohms	RA068R0
R116, R216	TR4 560 ohms	RA560R0
R110, R210	TR4 620 ohms	RA620R0
R115, R215	TR4 1K0 ohms	RA001K0
R120, R220	TR4 1K2 ohms	RA001K2
R117, R217	TR4 1K8 ohms	RA001K8
R114, R214	TR4 3K3 ohms	RA003K3
R113, R213	TR4 3K6 ohms	RA003K6
R101-R108,R201-R208	TR4 6K8 ohms	RA006K8
R109, R209	TR4 9K1 ohms	RA009K1
RV101, RV201	Pot.A.Bradley 5K Line	PT13205
Op. Amps		
IC101,102,201,202	Mullard 8 lead DIL	IC20007
Plug/Socket		
For I/C	Cambion Skt 8 way DIL	CN20162
Skt 101, 201	Cambion Skt 16 way DIL	CN20322
2	Molex Plug 10 way	CN10203
MONITOR SECTION		
Capacitors		
C102, C106, C202, C206	Suflex 22pF 63V	CA10220
C104, C204	Suflex 47 pF 63V	CA10470
C103, C105, C107, C108	TANT 10 µF 25V	CA60101
C203, C205, C207, C208	TANT 10 µF 25V	CA60101
C101, C201	Mullard 100 µF 4V	CA61000
C109, C209	Mullard 100 µF 25V	CA61002
Resistors		
R116, R117, R216, R217	TR4 22 ohms	RA022R0
R112, R113, R118	TR4 68 ohms	RA068R0
R212, R213, R218	TR4 68 ohms	RA068R0
R114, R214	TR4 3K6 ohms	RA003K6
R101-R110,R201-R210	TR4 6K8 ohms	RA006K8
R120, R220	TR4 9K1 ohms	RA009K1
R115, R119, R215, R219	TR4 10K ohms	RA010K0
RV101, RV201	Pot A.Bradley 5K Lin	PT13205
Op. Amps		
IC101, IC102, IC201, IC202	Mullard 8 Lead DIL	IC20007
Plug/Socket		
4 For I/C	Cambion Skt 8 way DIL	CN20162
2	Molex plug 10 way	CN10203
Skt 101, 201	DIL Socket 16 way	CN20322

Ref	Description	Part No.
TB AND OSC SECTION		
Capacitors		
C3, C9	*Suflex 22 pF 63V*	*CA10220*
C2	*Suflex 100 pF 63V*	*CA11000*
C7, C8	*Siemens 10 nF*	*CA20102*
C4	*TANT 3.3 µF*	*CA60030*
C5, C6, C10, C11	*TANT 10 µF, 25V*	*CA60101*
C16	*TANT 20 µF, 15V*	*CA60224*
C1, C12, C13, C14, C15	*Mullard 100 µF 4V*	*CA61000*
Resistors		
R1	*TR4 22 ohms*	*RA022R0*
R4	*TR4 1K ohms*	*RA001K0*
R3	*TR4 10K ohms*	*RA010K0*
R7	*TR4 5K1 ohms*	*RA005K1*
R2	*TR4 12K ohms*	*RA012K0*
R6, R7	*TR4 5K1 ohms*	*RA005K1*
R5	*TR4 9K1 ohms*	*RA009K1*
RV2	*Pot A.Bradley 5K Lin*	*PT13205*
RV1	*Pot A.Bradley 10K Lin*	*PT15025*
Thermistor	*ITT RA54*	*TH10000*
Op Amp.		
IC1, IC2	*Mullard 8 Lead DIL*	*IC20007*
Plug/Socket		
2 FOR I/C	*Cambion Skt 8 way DIL*	*CN20162*
1	*Molex plug 10 way*	*CN10203*
PLAYBACK SECTION		
Capacitors		
C10, C13	*Suflex 22 pF 63V*	*CA10220*
C9, C11, C12, C14	*TANT 10 µF, 25V*	*CA60101*
C1-C8	*Mullard 22 µF, 63V*	*CA60221*
C15, C16	*Mullard 100 µF, 4V*	*CA61000*
Resistors		
R5, R6	*TR4 4K3 ohms*	*RA004K3*
R2, R4	*TR4 5K6 ohms*	*RA005K6*
R7, R8	*TR4 7K5 ohms*	*RA007K5*
R1, R3	*TR4 10K ohms*	*RA010K0*

Ref	*Description*	*Part No.*
Op Amp		
IC1, IC2	*Mullard 8 Lead DIL*	*IC20007*
Plugs/Socket		
1	*Molex Plug 10 way*	*CN10203*
2	*Cambion Skt 8 way DIL*	*CN20162*

WHEN BATTERY BOX IS NOT FITTED
WIRE BLANKING PLUG AS BELOW

6 1 7 2 8 3

OUTPUT AND FACILITIES PANEL FOR
DETAILS SEE SHEET 2

15 WAY PAINTON
PROG L R | AUX 1 2 | AUD L R
1 2 4 3 | 5 6 8 7 | 9 10 12 11

S1B FADER .8W | S1C 10W | S2B FADER .6W | A1B TS .5W | A2B TS .5W | M1B 7W | M2B 7W | 1S1A 10W | T1A MIC .7W

CN101 CN1 CN201 CN101 CN201 CN101 CN201 CN1 CN1
PROG AUX MON P/B T/B

S1D S2D A1D A2D B1A B2A

PROG L R

PB 1 → S1B
PB 2 → S2B

POWER INPUT
TUCHEL FIXED PLUG
BATTERY BOX 34613
100/63
ON

S2B
B+ 4 → 34128 LOC H1
11 → PIN 6 T/B SECT
10 → PIN 3 P/B SECT
9 → PIN 27 MON SECT
8 → PIN 24 AUX SECT
BA683
7 → 27
OV 5 → 26
12 → 28
B- 13 → PIN 26 AUX SECT
14 → PIN 29 MON SECT
15 → PIN 1 P/B SECT
BA 692 16 → PIN 5 T/B SECT
6 → 34128 LOC H1
BA683

CHANNEL AMP 34128
A B C D E F H J K L M N P R S
18K ±1% 18K ±1%
C1A
IN PUT
CHANNEL 1
CHANNELS 2 - 8 IDENTICAL

BA692
8 13 9 14 10 15 11 16
21 24 24 23 26 32 19 22 33 27 26 29 22 25 3 2 1 7 6 5 2
PROG AUX MON P/B T/B

BA 692 4 L 6
0v

PROG LEFT 1 2 3 4 5 6 7 8 | RIGHT 1 2 3 4 5 6 7 8
SKT 101 SKT 201

AUX 1 LEFT 1 2 3 4 5 6 7 8 | RIGHT 1 2 3 4 5 6 7 8
SKT 101 SKT 201

AUX 2 LEFT 1 2 3 4 5 6 7 8 21 | RIGHT 1 2 3 4 5 6 7 8
SKT 101 SKT 201

MON LEFT 1 2 3 4 5 6 7 8 | RIGHT 1 2 3 4 5 6 7 8
SKT 101 SKT 201

PFL
L1A

BA 683
FOR DETAILS SEE
EX 10683

TF 12015 S1A1 → LINE L
TF 12015 S2A1 → LINE R

PROG L → 30
PROG R → 29

AUX L: 27 → 31 → 28
TF 12015 A1C → AUX 1

AUX R: 29 → 25 → 30
TF 12015 A2C → AUX 2

MON L: 30 → 28
M1C → MON L

MON R: 32 → 31 → 4 → 3 → 1
M2C → MON R

Z1A → OSC

16 WAY FLAT CABLE
ALTERNATE CONDUCTORS CARRY 0v SIG
AS SCREEN ONLY AND ARE NOT
CONNECTED AT REMOTE END.
TYPICAL FOR PROG L & R,
AUX 1 & 2 & MON L & R.

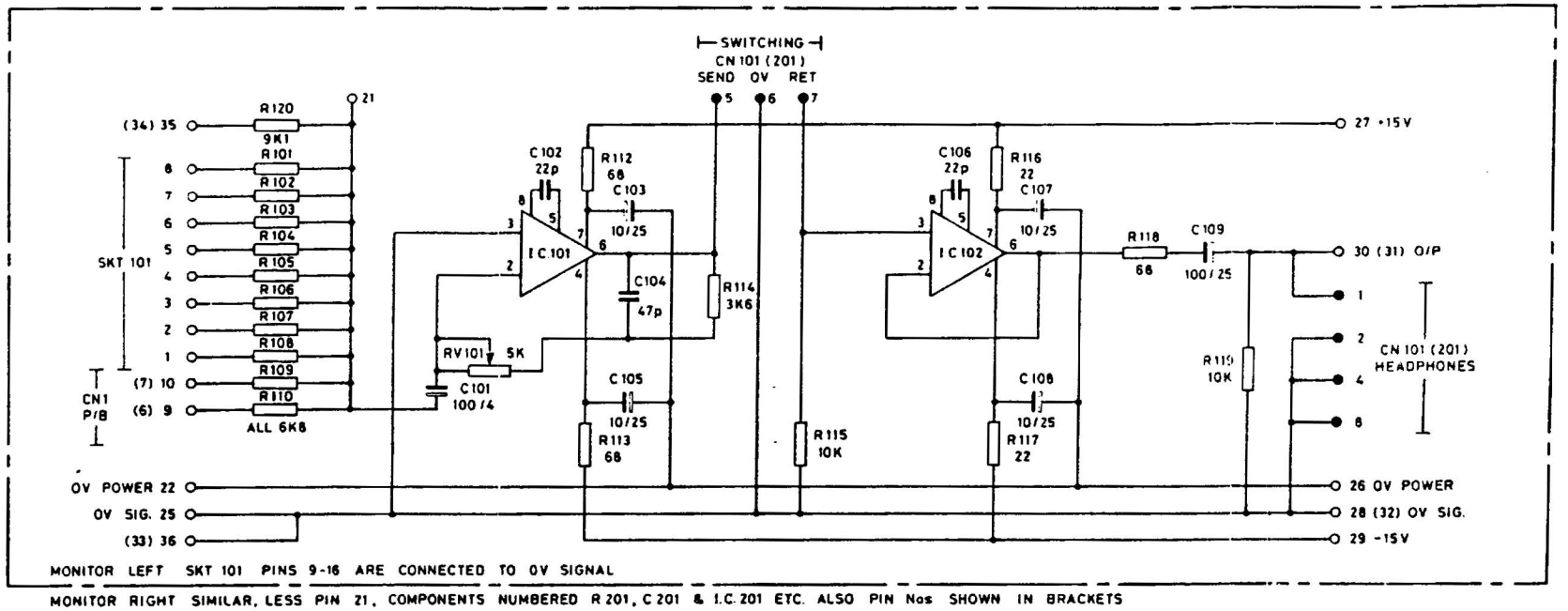
NOTE - 5422 R 6 CHANNELS ONLY TERMINATE UNUSED CHANNEL SIGNAL WIRING TO 0v SIGNAL BUS

BATTERY BOX OPTION NOT AVAILABLE
POWER INPUT HARD WIRED AS FOR
BLANKING PLUG

E J L R S

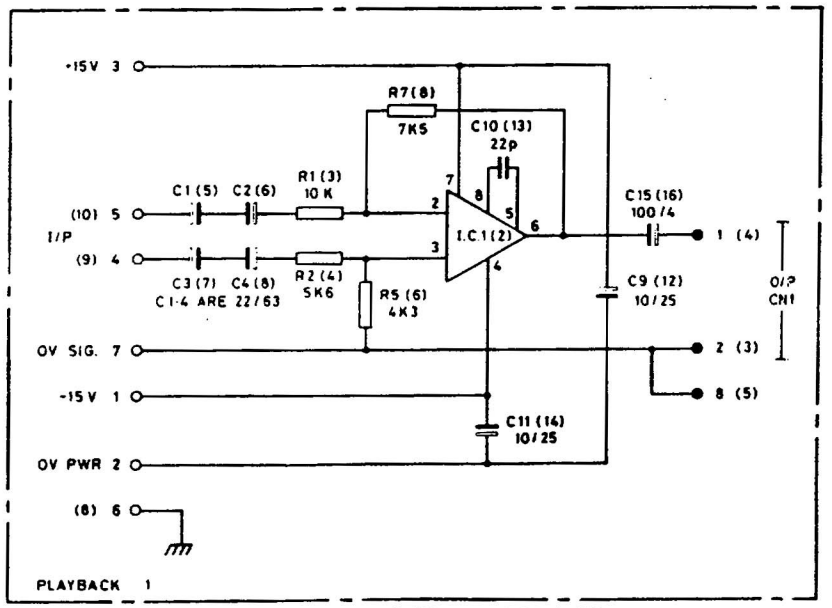
BLANKING PLUG FOR USE WHEN
CHANNEL AMP NOT FITTED

542 RANGE BROADCAST CONSOLES
CIRCUIT DIAGRAM EC 10510 Sht.1 ISSUE 7

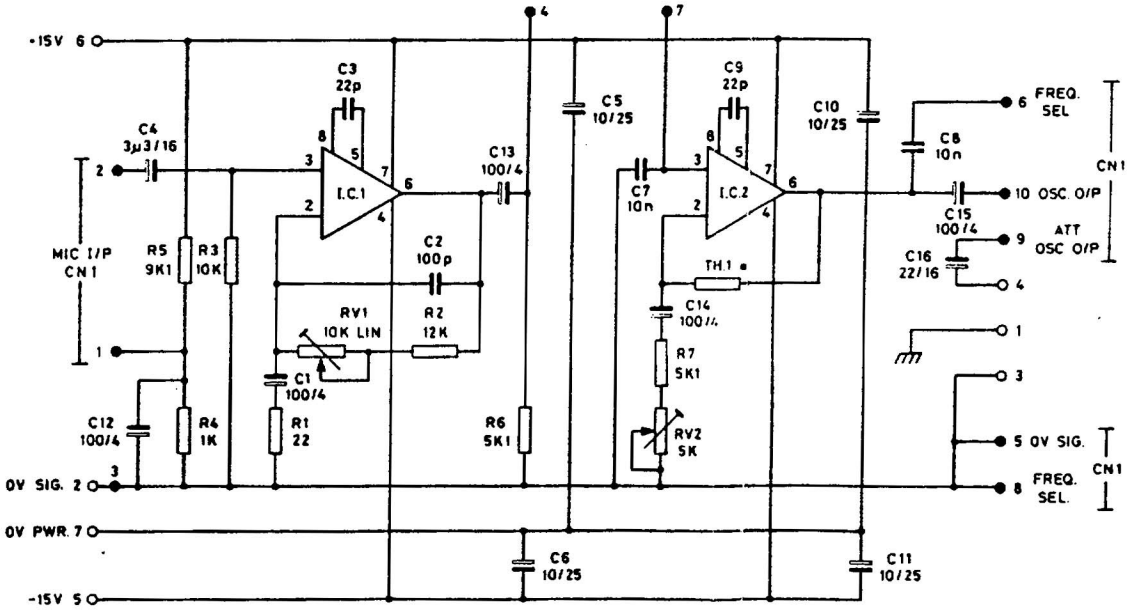


MONITOR LEFT SKT 101 PINS 9-16 ARE CONNECTED TO OV SIGNAL

MONITOR RIGHT SIMILAR, LESS PIN 21, COMPONENTS NUMBERED R 201, C 201 & I.C. 201 ETC. ALSO PIN Nos SHOWN IN BRACKETS



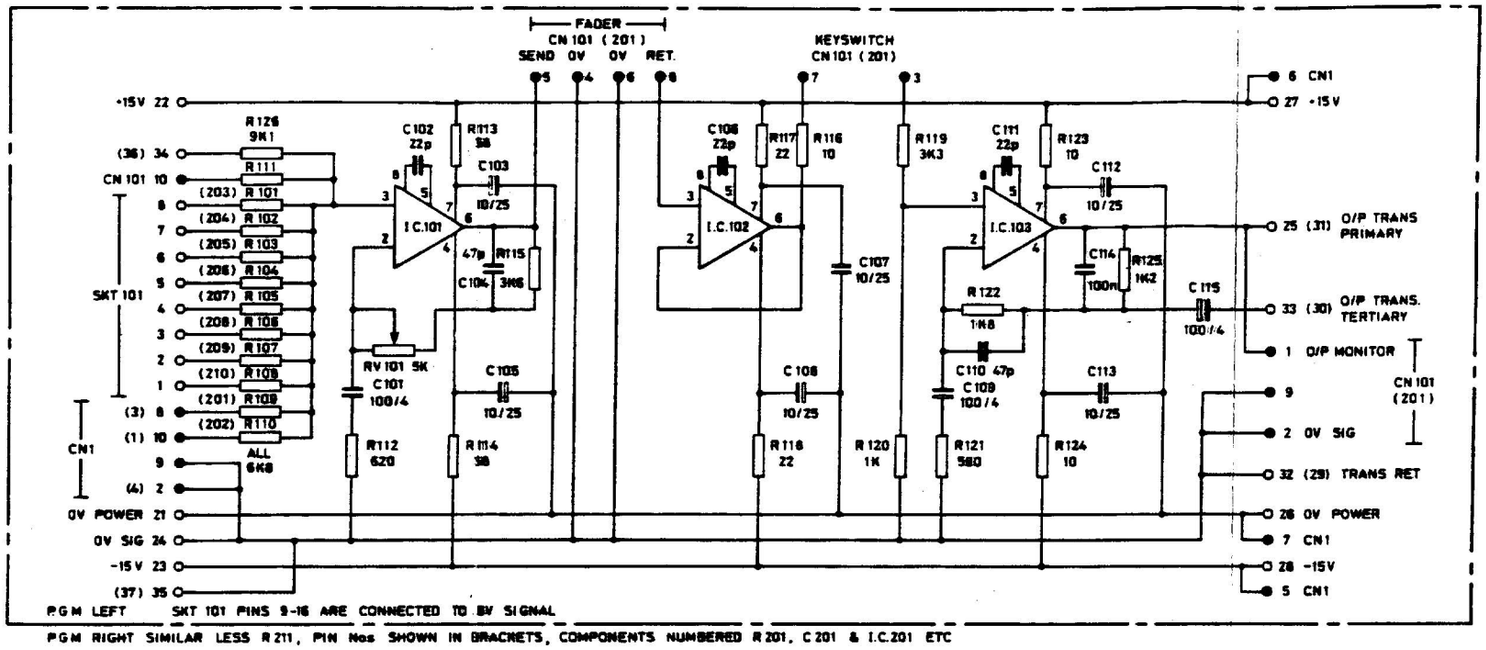
PLAYBACK 2 SIMILAR, COMPONENT Nos & PIN Nos IN BRACKETS



TALKBACK & OSCILLATOR

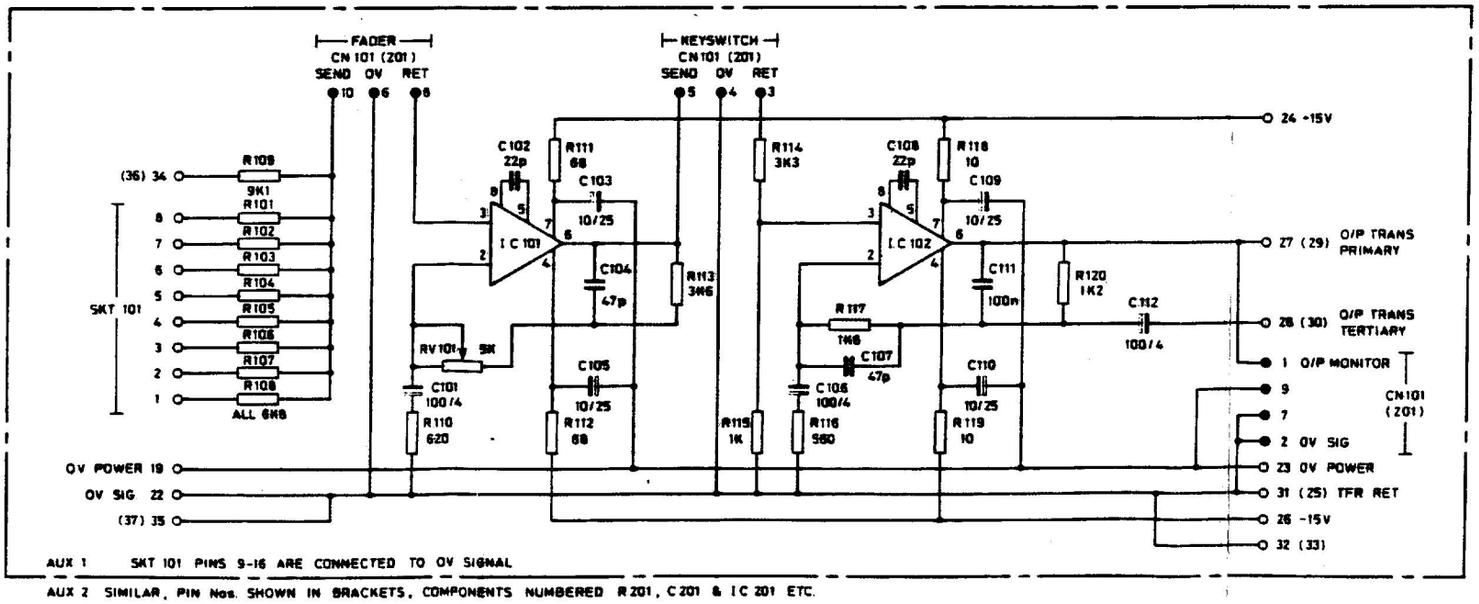
EX 10683 BA 683 Sheet 1

542 6/8 Iss 1 1981



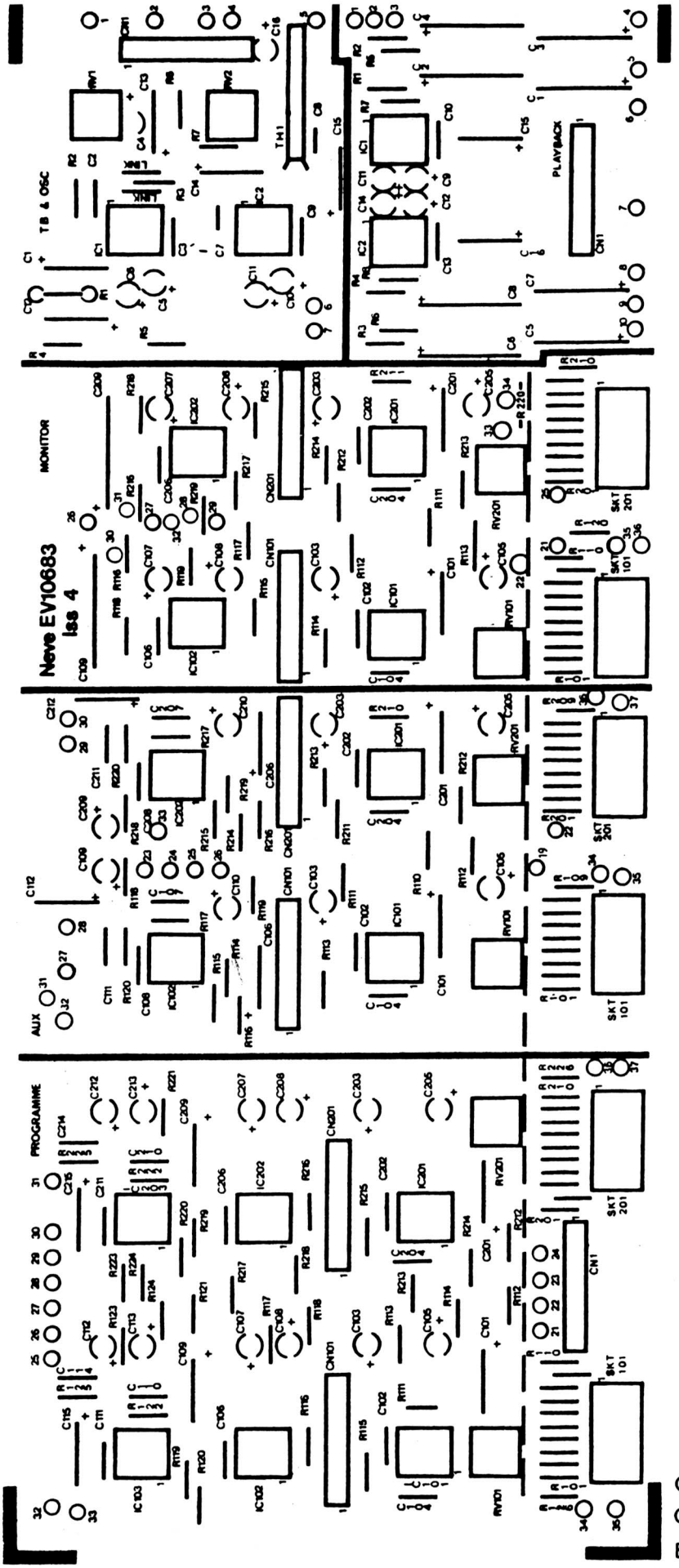
PGM LEFT SKT 101 PINS 9-16 ARE CONNECTED TO 0V SIGNAL

PGM RIGHT SIMILAR LESS R 211, PIN Nos SHOWN IN BRACKETS, COMPONENTS NUMBERED R 201, C 201 & I.C.201 ETC



AUX 1 SKT 101 PINS 9-16 ARE CONNECTED TO 0V SIGNAL

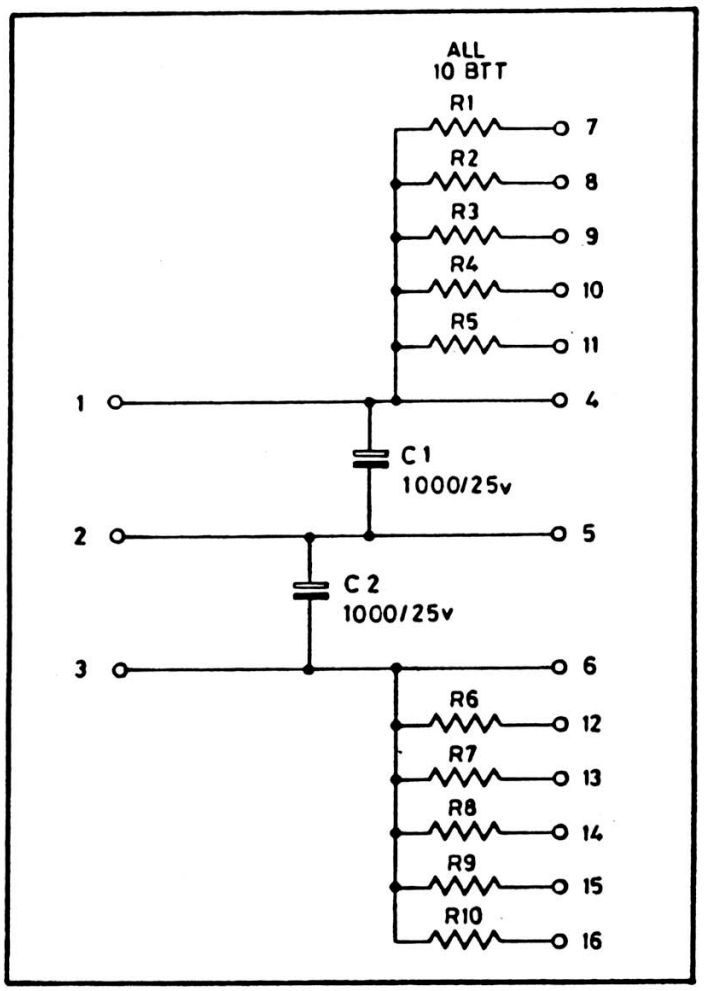
AUX 2 SIMILAR, PIN Nos. SHOWN IN BRACKETS, COMPONENTS NUMBERED R 201, C 201 & I C 201 ETC.



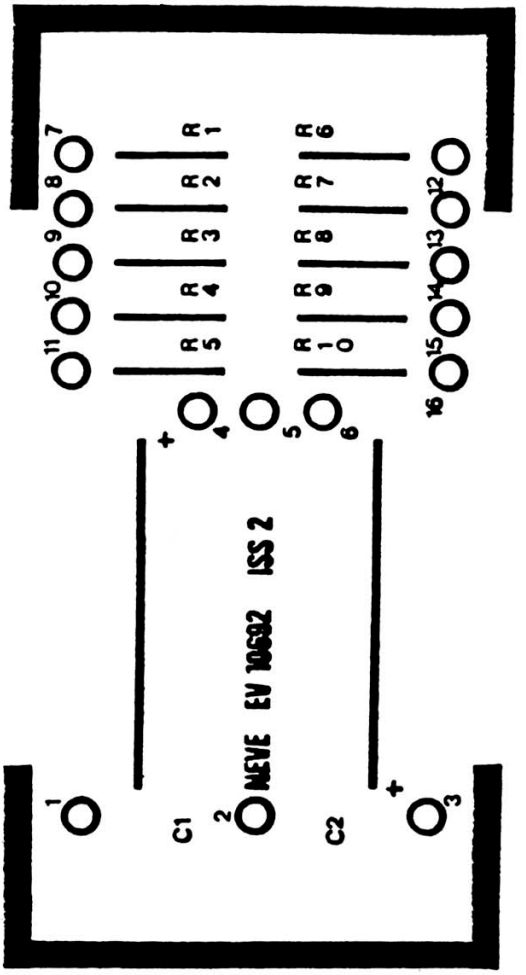
COMPONENT LAYOUT
OUTPUT & MONITOR PCB
EW10683

542 6/8 Iss 1 1981

BA692 INFORMATION



CIRCUIT DIAGRAM - BA692
EX10692



COMPONENT LAYOUT - BA692
EW10692

PARTS LIST

Ref.	Description	Part No.
C1 and 2 R1 - 10	Capacitor ITT 1000uF 25V Resistor BTT 10 ohms	CA71004 RD010R0

BA669 INFORMATION

BA669 V.U. Buffer Amplifier board comprises an IC amplifier with pre-set input sensitivity and gain controls to provide the correct drive characteristics for the panel-mounted V.U. meter.

Power supply requirement is +15V, Ov and -15V and all connections are made via a 7-way edge connector.

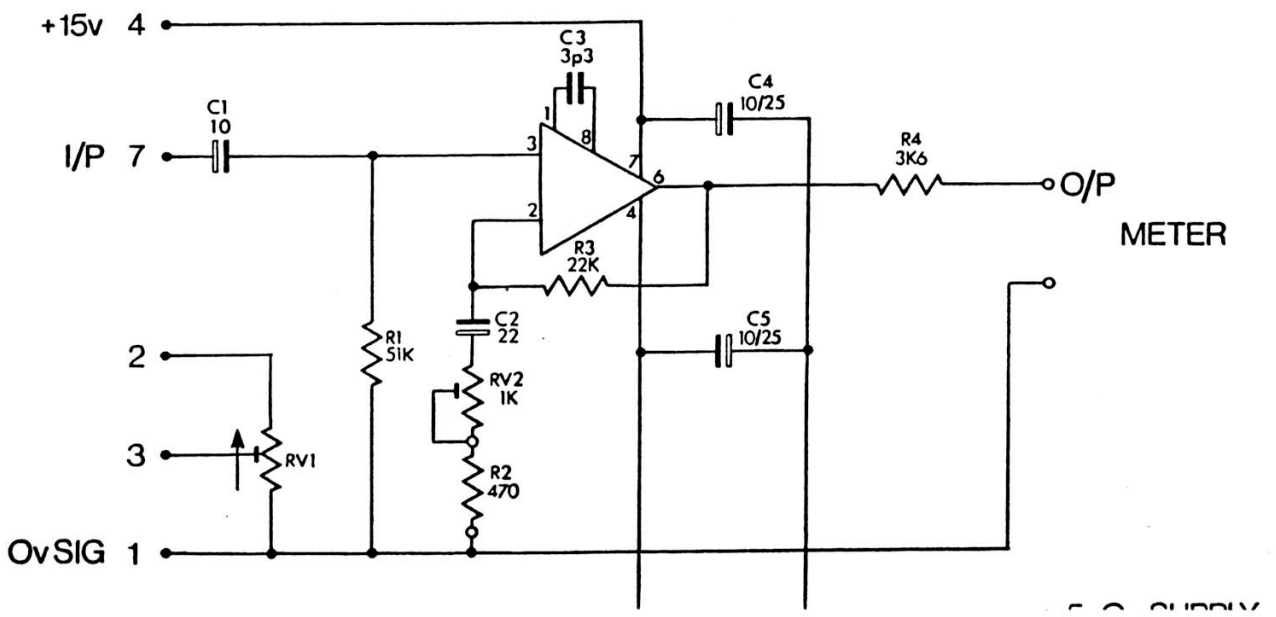
DETAIL

-see EX10669 Circuit Diagram below

The audio input is connected to pin 2 where RV1 pre-sets the input sensitivity of the amplifier. The output from the wiper of RV1 is routed to pin 3 which is then externally linked to pin 7 and, via C1, R1, to the non-inverting input of the amplifier IC. RV2 pre-sets the amount of feedback to the inverting input and hence the gain of the amplifier.

PARTS LIST BA669

Ref.	Description	Part No.
R1	Resistor TR4 51k ohms	RA051K0
R2	Resistor TR4 470 ohms	RA470R0
R3	Resistor TR4 22K ohms	RA022K0
R4	Resistor TR4 3K6 ohms	RA003K6
RV1	Potentiometer 5K Linear	PT13205
RV2	Potentiometer 1K Linear	PT11010
C1, C4, C5	Capacitor Tag 25V 10uF	CA60101
C2	Capacitor Tag 16V 22uF	CA60224
C3	Capacitor Suflex 22pF 63V	CA10220
	Amplifier Texas SN72748P	IC20004



PRINTED CIRCUIT BOARD ASSEMBLY BA374

CONTENTS LIST

BA374 INFORMATION

GENERAL DESCRIPTION

The BA374 P.P.M. Drive Amplifier is contained on a double-sided printed circuit board measuring 3 inches by 2.4 inches (7.5cm x 6cm) fitted with an integral 15-way edge connector. Holes are provided for an alternative method of mounting directly on the terminals of the associated P.P.M. meters (Sifam 22F, R32F and D14) with which it is designed to operate. Using the R32F meter, the assembly meets requirements of BS4298 : 1968.

Facilities are provided for operating from balanced lines at 0dBu or -20dBu, the input impedances being respectively 49K and 8.3K. Up to five slave meters may be driven using individual series and shunt resistors.

Power supply requirement is 30mA at 24V. Integrated circuits are used throughout to ensure good stability and adjustments are provided for scale marks '2' and '6'.

Accidental reversing of the P.C.B. edge connector will not damage the circuit.

Two pre-set potentiometers are mounted on the P.C.B; one for automatically maintaining the logarithmic character of the meter reading at low input readings. The second control gives a means of correction for higher meter readings.

Variations in meter sensitivity can be provided for by changing an identified resistor on the printed circuit boards.

TECHNICAL DESCRIPTION

With 24V applied between S and R the resistor R12 in series with the Zener diodes DZ1, DZ2 provide a regulated 12V reference voltage.

At the input, R1, R2 and R3 form a balanced 20dB pad in which the value of R2 takes into account the input impedance of T1, R4 defines the input impedance of T1 and, in conjunction with C1, provides the specified bass roll-off.

IC1 and IC2 and associated components form a precision full wave rectifier, the operation of which is as follows:-

For positive half-cycles, diode D1 conducts, IC1 acts as an inverting amplifier with a gain of 26.5dB and IC2 acts as a non-inverting amplifier with a gain of 1.1/2 times. The output charges C2 via D4 and R10, the voltage on which is buffered by IC3. The decay time constant is defined by R11, C2. D3 is included to ground the output of IC2 when C2 is discharging. At IC1, R33 and R34 are fitted so as to null-out any offset present in IC1 and are adjusted during factory adjustment.

IC4 is the output amplifier to which progressive feedback is applied to generate the correct quasi-logarithmic transfer characteristic. For small readings (meter reading less than '1') the gain is defined by (R15 // (R16 + R17)) / (R13//R14). As the input is increased, Q1 conducts and clamps the feedback via R16, R17, increasing the gain to R15 / (R13// R14) for the portion of the scale 1 to 2. The exact point at which this occurs is set by RV1 (SET 2). Q2 acts as a temperature controlled 0.8V reference. As the input is increased still further, the emitter of Q3 goes negative with respect to the emitter of Q4,biasing the latter into conduction. An additional feedback current defined by R22 is provided by the collector of Q4 which results in the correct gain for the portion of the scale 3 to 4.

For higher meter readings, additional feedback is successively provided in a similar manner by Q6, Q7 and Q8. The break points are defined by the resistor chain R23, 24, 25 and 26 adjustment being provided by RV2 (SET 6). Resistors R31 and R32 (factory adjusted on test) allow adjustment for variations in meter sensitivity.

TECHNICAL DESCRIPTION

With 24V applied between S and R the resistor R12 in series with the Zener diodes DZ1, DZ2 provide a regulated 12V reference voltage.

At the input, R1, R2 and R3 form a balanced 20dB pad in which the value of R2 takes into account the input impedance of T1, R4 defines the input impedance of T1 and, in conjunction with C1, provides the specified bass roll-off.

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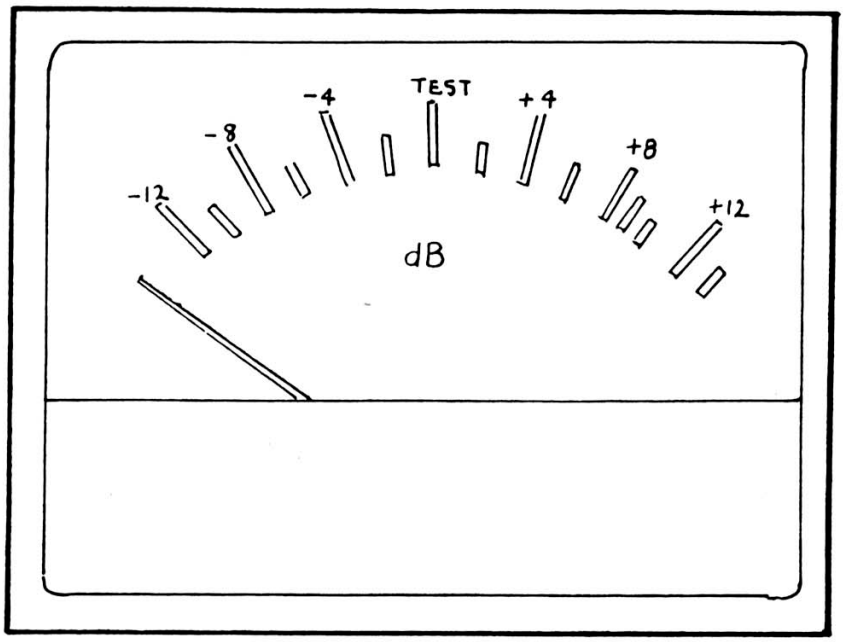
IC4 is the output amplifier to which progressive feedback is applied to generate the correct quasi-logarithmic transfer characteristic. For small readings (meter reading less than '1') the gain is defined by (R15 // (R16 + R17)) / (R13//R14). As the input is increased, Q1 conducts and clamps the feedback via R16, R17, increasing the gain to R15 / (R13// R14) for the portion of the scale 1 to 2. The exact point at which this occurs is set by RV1 (SET 2). Q2 acts as a temperature controlled 0.8V reference. As the input is increased still further, the emitter of Q3 goes negative with respect to the emitter of Q4,biasing the latter into conduction. An additional feedback current defined by R22 is provided by the collector of Q4 which results in the correct gain for the portion of the scale 3 to 4.

For higher meter readings, additional feedback is successively provided in a similar manner by Q6, Q7 and Q8. The break points are defined by the resistor chain R23, 24, 25 and 26 adjustment being provided by RV2 (SET 6). Resistors R31 and R32 (factory adjusted on test) allow adjustment for variations in meter sensitivity.



Scale E -12 dB to +12 dB to European Broadcasting standards

BA374 VERSIONS ACCORDING TO METER TYPE/SCALE

PCB No	METER TYPE	R2 VALUE	METER SCALE
BA374/A	R32F	9K1	B
BA374/B	R22F	9K1	B
BA374/C	R32F	16K	A
BA374/D	R22F	16K	A
BA374/E	R32F	9K1	E
BA374/F	R22F	9K1	E
BA374/G	R22F	20K	B
BA374/H	D14	9K1	B
BA374/J	R22F	56K	A
BA374/K	R22F	20K	E
BA374/L	D14	9K1	A
BA374/M	D14	20K	E
BA374/S	Special Order	9K1	To MZ20545 Iss 2
BA374/T	Special Order	9K1	To MZ20916 Iss 1
BA374/X	Special Order	9K1	Special Order

BA374 PARTS LIST

Ref.	Description	Part No.
R1,3	Resistor TR4 2% 22K ohms	RA022K0
R2*,30,32	Resistor TR4 2% 9K1 ohms	RA009K1
R4	Resistor TR4 2% 2K4 ohms (NOT BA374/T)	RA002K4
R4	Resistor TR4 2% 7K5 ohms (BA374/T ONLY)	RA007K5
R5-9	Resistor TR4 2% 51K ohms	RA051K0
R10+	Resistor TR4 2% 220 ohms	RA220R0
R11+	Resistor TR4 2% 100K ohms	RA100K0
R11	Resistor TR4 2% 180K ohms (BA374/S & /T ONLY)	RA180K0
R12	Resistor TR4 2% 560K ohms	RA560K0
R13	Resistor TR4 2% 10K ohms (NOT BA374/T)	RA010K0
R13	Resistor TR4 2% 5K1 ohms (BA374/T ONLY)	RA005K1
R14	Resistor TR4 2% SELECT ON TEST	
R15	Resistor TR4 2% 91K ohms	RA091K0
R16,17	Resistor TR4 2% 15K ohms	RA015K0
R18	Resistor TR4 2% 12K ohms	RA012K0
R19,20	Resistor TR4 2% 5K1 ohms	RA005K1
R21,22	Resistor TR4 2% 36K ohms	RA036K0
R23	Resistor TR4 2% 1K6 ohms	RA001K6
R24	Resistor TR4 2% 1K5 ohms	RA001K5
R25	Resistor TR4 2% 750 ohms	RA750R0
R26	Resistor TR4 2% 680 ohms	RA680R0
R27	Resistor TR4 2% 3K0 ohms	RA003K0
R28	Resistor TR4 2% 20K ohms	RA020K0
R29	Resistor TR4 2% 11K ohms	RA011K0
R31	Resistor TR4 2% SELECT ON TEST	
R33	Resistor TR4 2% SELECT ON TEST	
C1,C2	Capacitor 10uF 25V (NOTBA374/S & /T)	CA60100
C2	Capacitor 4.7uF 25V (BA374/S & /T ONLY)	XX10415
C3+	Capacitor 1nF	CA20010
VR1,VR2	Potentiometer,Trimpot 10K lin.	PT15015
IC1-4	Integrated Circuit 741-OPA	IC20002
D1-4	Diode BAX13	DD10002
D21,22	Zener Diode IN5234B	DD16900
IC5-6	Transistor Array NPN CA3086	IC21000
T1	Transformer VT 22687	TF10009

+ Adjust on Test * R2 value varies according to meter type.-see page 5

M1	Meter, Sifam R22/F for BA374/D/J	IM13000
"	" " R32/F for BA374/C	IM13001
"	" " D14 for BA374/L	IM13002
"	" " R22/F for BA374/B/G	IM13100
"	" " R32/F for BA374/A	IM13101
"	" " D14 for BA374/H	IM13107
"	" " R22/F for BA374/F/K	IM13400
"	" " R32/F for BA374/E	IM13401
"	" " D14 for BA374/M	IM13403
M1	Meter, Special Order, for BA374/S Scale to MZ20545 Iss.2	XX11622
M1	Meter, Special Order, for BA374/T Scale to MZ20916 Iss.1	XX11640
M1	Meter, Special Order, for BA374/X Scale Special Order	

11. Apply bursts of 5kHz tone at +8dBm and check that the readings fall within the following limits:

100mS	6 ±1/8
10mS	5.1/4 to 5.1/4
5mS	4.3/4 to 5.1/4
1.5mS	3.1/2 to 4

The attack time is defined by R10, which should be decreased for higher readings and vice versa.

12. Apply an input at +12dBm and suddenly interrupt it. The meter reading should fall to '1' in 2.5 to 3.2 seconds. The fall-back time is proportional to the value of R11 which should be changed if necessary.

542 RANGE

Section 5 POWER SUPPLIES

CONTENTS

542 RANGE

INTERNAL POWER SUPPLY MODULE

34613

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ILLUSTRATIONS

FOLD OUT PAGE 4 FOR REFERENCE TO FRONT PANEL LAYOUT

INTERNAL POWER SUPPLY MODULE 34613

INTRODUCTION

1. The 34613 Internal Power Supply Module contains a system of re-chargeable nickel-cadmium cells which, in the fully charged state, are capable of maintaining optimum performance for a period of 4 hours or more.

   The circuit diagram is shown on ET20250 and the module front panel, containing all associated controls and 'dc check' meter on Dwg. No. ML34513.

   The module provides +15 volts dc only and does not provide phantom powering.

   The purpose and function of the controls are as follows and should be read in conjunction with the circuit diagram.

ON-OFF

2. This is a two position master control switch located in the lower position on the panel.

   (a) **OFF**
   With the switch lever set to the **OFF** position the +15 volt dc supplies from the external or internal systems are isolated from the console.

   (b) **ON**
   With the switch lever set to **ON**, indicated by a white dot, the ±15 volts dc supply to the console circuits is provided by internal or external systems depending on the selected position of the **INT-EXT** switch.

INT-EXT

3. This is a two position switch occupying the centre position and operating in conjunction with the master **ON-OFF** switch set to **ON**.

   (a) EXT(External)
   With the switch lever set to 'ext' the internal batteries are disconnected from the console circuits and the ±15 volts dc supply is provided by the External Power Supply Unit.

   The 'dc check' meter indicates the dc supply level provided by the external supply and the indication will settle and remain constant above the changeover point on the scale.

(b) INT (Internal)
With the switch lever set to 'int' indicated by a white dot, and the 'charge' switch set to **OFF** (up) again showing a white dot, the ±15 volts dc supply from the external psu is disconnected and is provided by the internal battery system.

Unless the cells are fully discharged the 'dc check' meter will indicate near full scale deflection.

(i) When the cells are fully charged they are capable of maintaining full operational performance for a period of 4 hours or more. During this time the cells will gradually discharge and the meter indication will gradually decrease to the changeover point on the scale.

(ii) When the cells are not fully charged the meter indication will rapidly decrease from near f.s.d. towards the changeover point on the scale at a rate dependent on the charge state of the cells.

In either of the above cases when the meter indication reaches the changeover point on the scale the cells should be re-charged.

CHARGE

4. The two position 'charge' switch occupies the uppermost position on the panel.

When the switch lever is set to the 'charge' position (down), the internal batteries are disconnected from the console circuits and are charged from the constant current supply from the External Power Supply Unit when connected.

(i) Normal Charge Rate

Under the above conditions the internal batteries will fully charge over a period of 14 hours. The charging procedure can be carried out simultaneously with the console operating from the external power supply unit and in this mode of operation the 'dc check' meter indicates the ±15 volts dc level provided by the external p.s.u.

(ii) Rapid and Ultra Rapid Charge Rates

Under normal operating conditions with due regard to the indications available on the 'dc check' meter the console will operate satisfactorily providing the internal cells are systematically re-charged in accordance with the procedures described in (i) above.
As an alternative to the normal charging procedure the internal VR cells can be re-charged at Rapid and Ultra Rapid charge rates specified by the manufacturers. When these methods are adopted the external power supply must be disconnected and replaced by a constant current charging source capable of meeting the manufacturer's requirements. The VR 1 2 RR electrical performance characteristics are described in the attached manufacturers leaflets.

Quick Visual Check **When all the white dots are visible, the console is ON and operating from its internal power supply.**

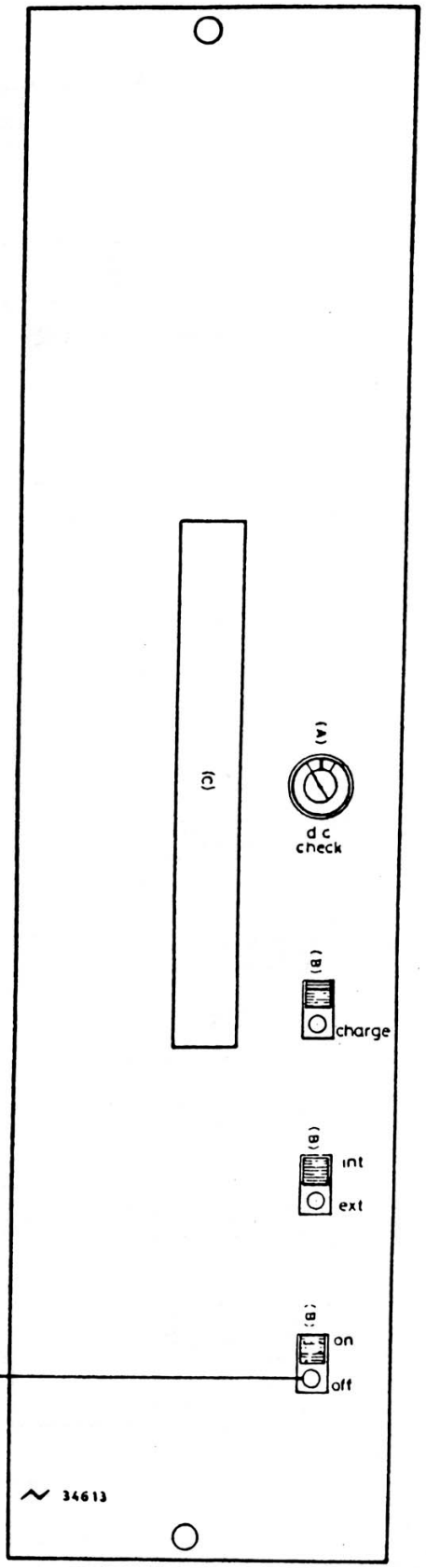
DC Check Meter

5. The 'dc check' meter indicates the ±15 volt dc level available at the console circuits from either the internal or external power supply systems.
On manufacture potentiometer RV1 is adjusted to set the 'dc check' meter level.

Fuse

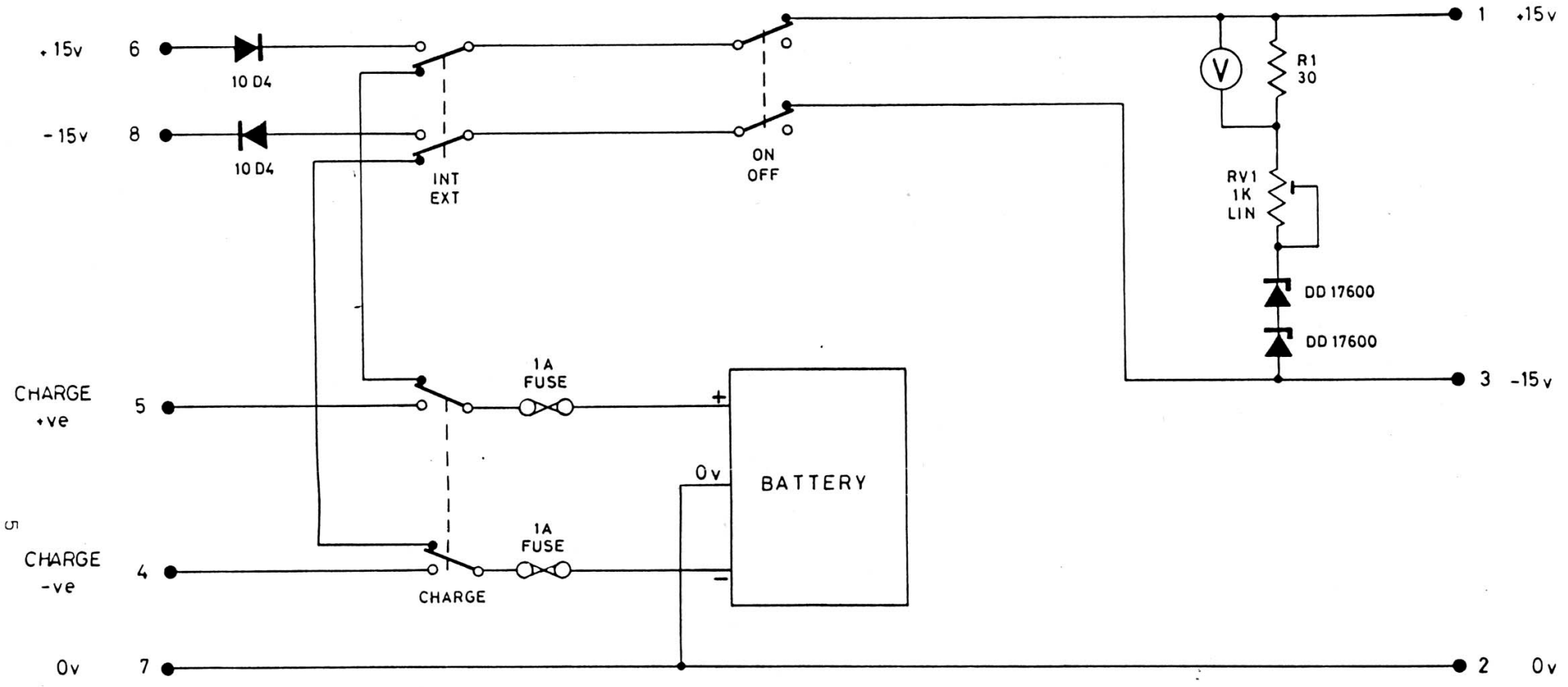
6. A 1 amp antisurge fuse is incorporated in each of the +15 volt and -15 volt lines of the internal batteries; these are located under the panel.

ITEM	DETAIL
A	MINI-METER COMPONEX C-125
B	R.S. 2 POSITION SLIDE SWITCH
C	ALUMINIUM HANDLE



TYPICAL WHITE DOTS INDICATING BATTERY IN USE

POWER SUPPLY MODULE
PANEL LAYOUT
(ML 34613 Iss 2)



INTERNAL POWER SUPPLY 34613
PARTS LIST

Ref	Description	Part No.
	Zener Diode 12V	DD17600
	Pot SFER 1K Lin-preset	PT11006
	Fuse 1 amp anti-surge	FU10001
	Slide Switch	XX13214
	SAFT Battery	XX13214
Plug	Cannon 8 way	CN10163
	Meter	IM17100

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2 electrical performance

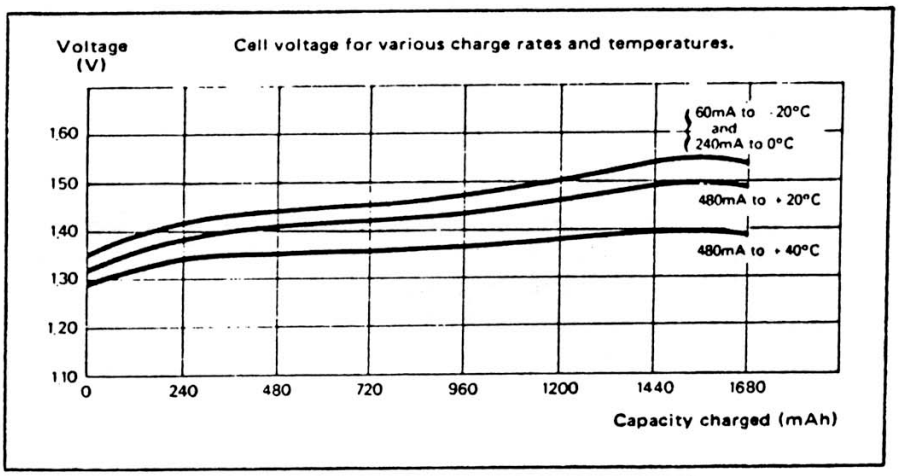
1. CHARGE

A — Normal charge (irrespective of the state of charge)

— from + 5 °C to + 50 °C :
normal charge : 120 mA for 14 hours
accelerated charge : up to 480 mA for 3.5 hours.

— from — 30 °C to + 5 °C.

Temperature	Maximum charging rates	Charging time
°C	mA	hr
—30	36	34
—20	60	21
—10	120	11
0	240	6
+ 5	480	3.5



B — Rapid charge (irrespective of the state of charge)

Monitoring of voltage, time or temperature makes it possible to reduce the charging time of VR **1.2** RR cells to between 15 and 60 minutes.

SAFT can manufacture chargers which recharge standard VR **1.2** RR batteries in about 1 hour over the temperature range + 10 °C to + 40 °C.

For lower temperatures and/or shorter times, please consult SAFT for specific charge systems.

C — Ultra rapid charge

SAFT can design charge systems to permit charging times of VR cells between 1 minute and 15 minutes, depending on the proportion of capacity to be recharged.

2. OVERCHARGE

A — Cycling applications

An occasional overcharge, even repeated, at the rates given in 1-A, beyond the prescribed times is not detrimental to VR **1.2** RR cells.

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POWER SUPPLY 33643

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ILLUSTRATIONS

INTRODUCTION

Power supply 33643 is a compact, rugged unit suitable either for use as a portable unit or for 19" rack mounting.

33643 provides the following outputs:

±15V at 1A for console circuitry

+48V at 100mA for phantom powering of microphones

120mA constant current source for battery charging

IMPORTANT

A mains voltage selector enables the unit to be used with supply voltages of between 90 and 265V at 45 to 65 Hz frequency – covering all territories.

THE VOLTAGE SELECTOR MUST BE SET TO SUIT THE LOCAL SUPPLY VOLTAGE

Safety Note: Changes to the voltage selector cannot be made without first removing the 2A fuse housed within the selector. See Fig. 1, Page 5.

Two 7-way output sockets are provided:

For type 5422, 5422-R, 5432 and 5442 consoles, connection is made to either socket using the output lead (PL77022) supplied with each 33643 unit.

The high output capability of the power supply enables a further lead to be connected to provide the second input required on 12 and 16 channel consoles type 5452 and 5462. The additional lead is supplied with the console.

CIRCUIT DESCRIPTION

Refer to: ET10239 33643 PSU Circuit Diagram - Page 6
EX10932 BA932 Regulator Board Circuit Diagram - Page 7

The three transformer outputs are rectified and smoothed before entering the BA932 regulator board. This consists of three separate circuits providing the different outputs:

Constant Current Source

The zener voltage minus V_{BE} of TR1 appears across R2. This results in a constant current through the resistor, and hence through the battery, of 120mA.

48V Supply

The 48V regulator is formed by TR4, TR5, IC2 and associated components. TR4 is the series pass transistor. TR5 compares the divided down output voltage with the reference voltage of IC2.

IC1, TR2, R3 and R4 provide a constant current that is shared between the base of TR4 and the collector of TR5.

TR3, TR6 and R5 - 7 limit the output current to 130mA.

SCR1, D3 and R11 - 13 provide overvoltage protection. The crowbar is activated at 56V, causing the current limit to operate.

C1 is included for stability and C6 prevents spikes on the output from firing the overvoltage thyristor.

+15V Supply

Linear regulators IC3 and IC4 and associated components provide $\pm$15V with foldback limiting.

SCR2, D5 and R16 - 18 comprise the overvoltage crowbar circuit. The crowbar is activated at 36V causing the current limit to operate.

D6 and D7 are to hold the output rails within $\pm$0.6V if the positive and negative rails are shorted together, either accidentally or by the crowbar. This prevents the negative rail from becoming positive enough, or the positive rail from becoming negative enough to damage the components in the console.

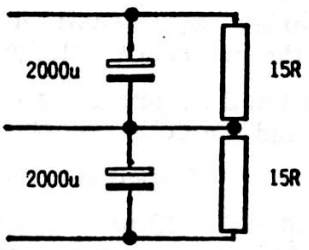
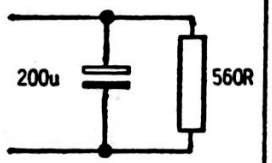
SPECIFICATION

Input

The power supply voltage selector is adjustable for 100, 120, 140, 200, 220 or 240 volts. Mains variations of ±10% about the selected input can be tolerated within the temperature range 0°C to 55°C. The unit may therefore be used with any voltage within the ranges 90 to 130V and 200 to 265V at mains frequency 45 to 65Hz.

Outputs

The three fully independent outputs have the following specification within the ambient temperature range 0°C to 55°C:

	±15V	48V
voltage tolerance (all outputs fully loaded)	±0.75V	+1.7V -2.3V
output current	1A	100mA
a.c. component 5Hz to 300kHz all outputs loaded (constant current source load = 220R)	1.8mV rms load: 	300uV rms load: 
over voltage protection	36V between o/p's	56V
short circuit protection	foldback current limiting within I.C. regulators	constant current limiting at 130mA
connections to chassis	0V connected to chassis of PSU by removable link	fully floating
fuse	2A QB FU12002 (2 0ff)	160mA QB FU12006

Outputs continued

	120mA Constant Current Source
Current tolerance	±10mA
Connections to chassis	fully floating
Fuse	160mA QB FU12006

Loads presented by consoles and microphones

	±15V typical quiescent current with maximum no. of modules in circuit	48V maximum current* with full complement of capacitor microphones
5422, 5432 and 5442 8 channel consoles	280mA	32mA
5452/12 and 5462/12 12 channel consoles	380mA	48mA
5452 and 5462 16 channel consoles	500mA	64mA

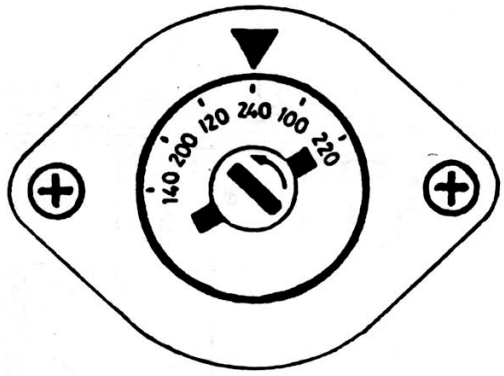
* Figures based on worst case capacitor microphones which draw 4mA each.

Fig.1

MAINS INPUT VOLTAGE SELECTOR

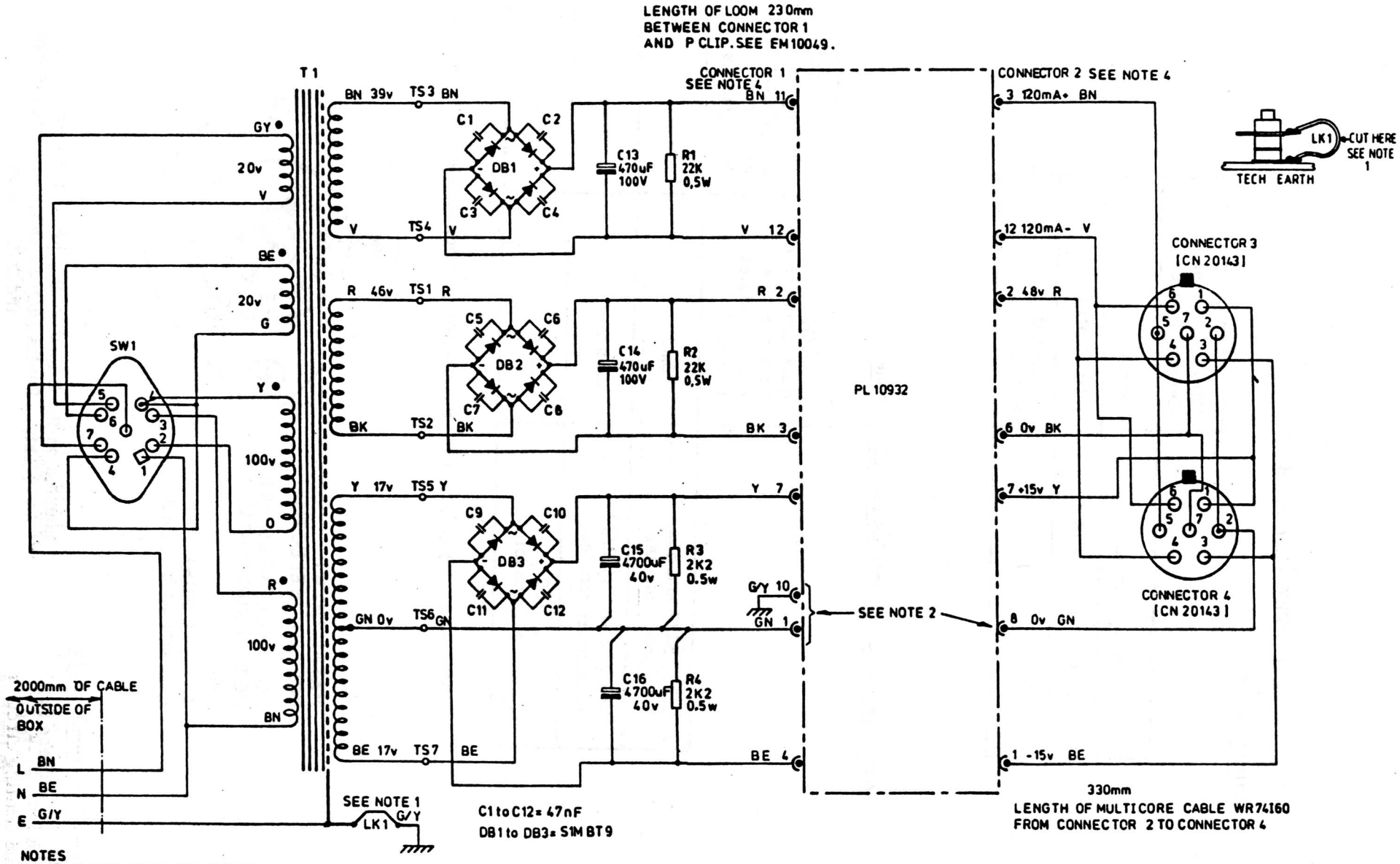
NOTE VOLTAGES ARE NOT IN NUMERICAL ORDER.

REMOVE FUSE BEFORE CHANGING VOLTAGE



Internal Fuses

These fuses, which are mounted on the BA932 PCB , protect the mains transformer if a fault occurs in the power supply. Faults such as short-circuited outputs cause the limiting circuits to operate without blowing the D.C. fuses.



NOTES

1 THIS LINK IS ALWAYS FITTED IT MAY BE REMOVED IN SYSTEMS WHERE THE EARTH POINT IS IN REMOTE EQUIPMENT

2 0v CONNECTED TO CHASSIS VIA LINK ON PL10932

3 FOR MECHANICAL ASSY SEE EM10049

4 CONNECTOR INSERTS CRIMPED ONTO WIRES BEFORE INSERTING INTO SHELL

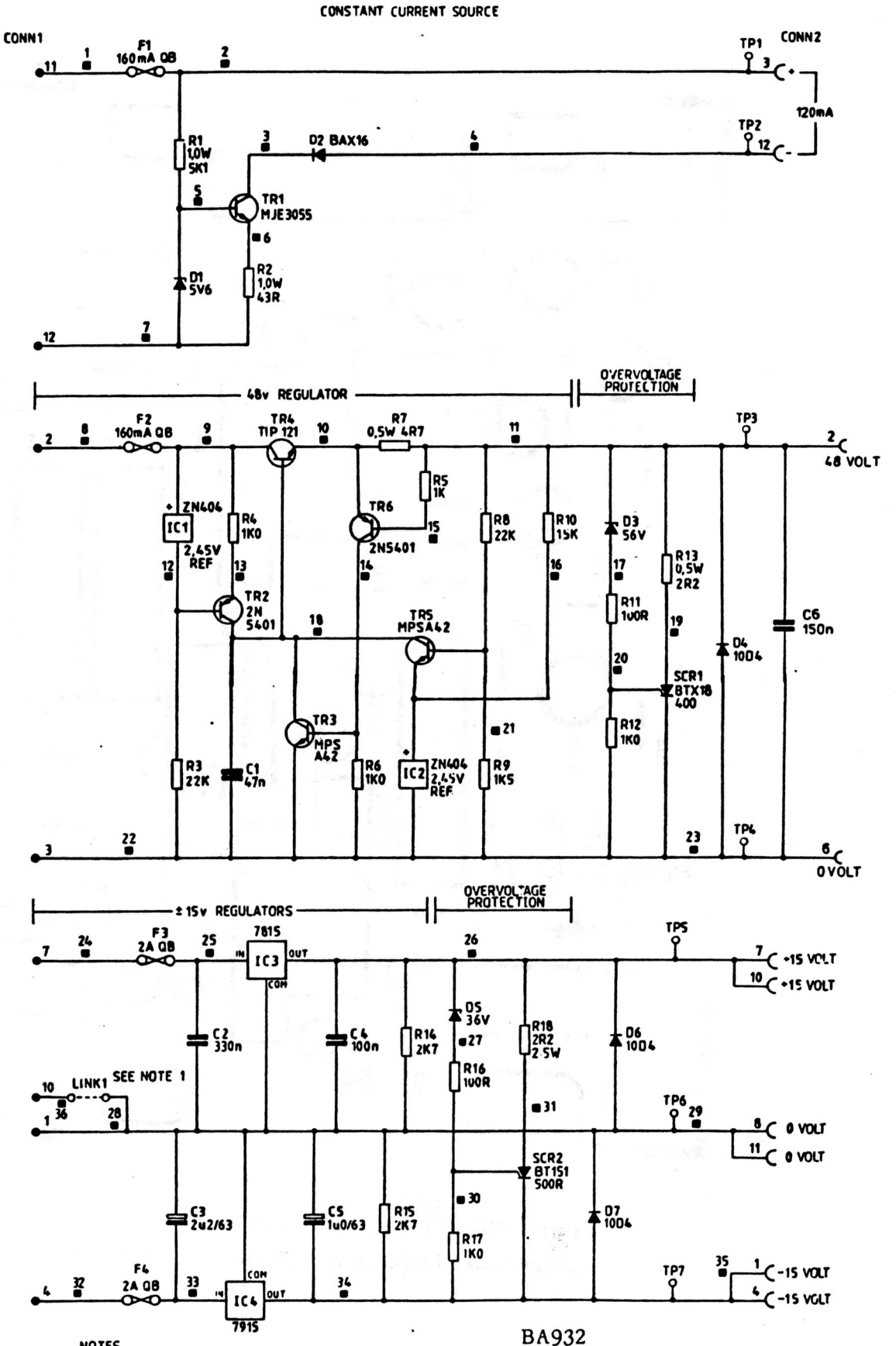
5 SLEEVE ALL MAINS WIRING.

6 ALL WIRING, EXCEPT WHERE OTHERWISE STATED, IS 16/0,2mm.

33643 POWER SUPPLY CIRCUIT DIAGRAM

ET 10239

33643 Iss 1 1981



NOTES

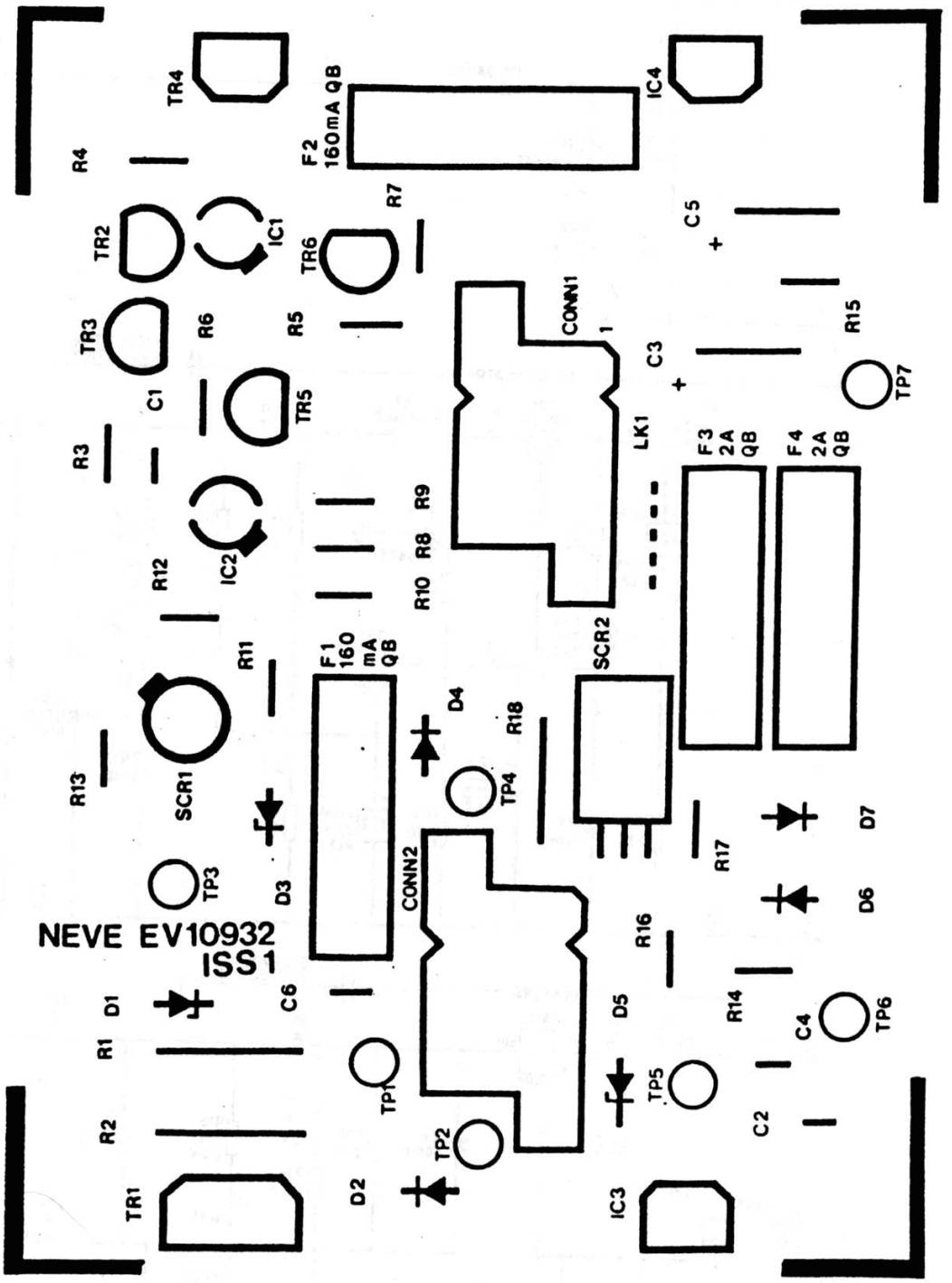
1) UNIT SUPPLIED WITH LINK 1 FITTED. REMOVE TO FLOAT 0v FROM CHASSIS

2) ■ REPRESENTS PRODUCTION ATE TEST POINT

BA932

POWER SUPPLY REGULATOR BOARD

CIRCUIT DIAGRAM EX10932



BA932
POWER SUPPLY REGULATOR BOARD
COMPONENT LAYOUT DIAGRAM EW10932

PARTS LIST - 33643
POWER SUPPLY

Part No.	Description	Qty	Ref.
CA20471	Capacitor Mullard 47n 160V	12	C1-C12
CA64709	Capacitor RS 470u 100V	2	C13,14
CA74701	Capacitor ITT 4700u 40V	2	C15,16
CN20243	12-Way QM Cable Mounting Shell	2	Conn 1,2
CN10006	QM Insert Pins Size 20	7	for above
CN20011	QM Insert Sockets Size 20	8	"
CN20143	7-way fixed Tuchel (DIN) socket	2	Conn 3,4
DD10603	Diode Bridge S1M BT9	3	DB1 - 3
FE10211	Handle	1	
FE10008	Feet	4	
FU14402	Fuse 20 x 5mm 2A HRC SB 250V AC	1	for volt. selector
PL10932	Regulator Board Assembly	1	SEE SEP. PARTS LIST
PL77022 *	7-Way DC Output Cable Assembly	1	
RB002K2	Resistor 2K2 0.5W	2	R3,4
RB022K0	Resistor 22K 0.5W	2	R1,2
TF14013	Transformer VT24832	1	T1
TF19201	Voltage Selector/Fuse Holder	1	SW1

*Additional cable assembly supplied with consoles 5452 and 5462

PARTS LIST - BA932
REGULATOR BOARD

Part No.	Description	Qty	Ref.
CA20472	Capacitor Siemans 47nF	1	C1
CA21003	Capacitor Siemans 100nF	1	C4
CA23302	Capacitor Siemans 330nF	1	C2
CA60011	Capacitor Mullard 1uF 63V	1	C5
CA60021	Capacitor Mullard 2u2 63V	1	C3
CA21502	Capacitor Siemans 150nF	1	C6
CN10242	12-Way QM Connector - Pin Contacts	1	Conn 1
CN20242	12-Way QM Connector - Skt Contacts	1	Conn 2
DD10001	Diode BAX16	1	D2
DD10000	Diode 10D4	3	D4,6,7
DD16801	Zener Diode 5V6 500mW	1	D1
DD18700	Zener Diode 36V 1.3W	1	D5
DD19200	Zener Diode 56V 1.3W	1	D3

PARTS LIST - REGULATOR BOARD continued

Part No.	Description	Qty.	Ref.
DD14001	Thyristor BTX18 - 400	1	SCR1
DD14500	Thyristor BT151 - 500R	1	SCR2
FU12006	Fuse 20 x 5mm 160mA QB	2	F1,2
FU12002	Fuse 20 x 5mm 2A QB	2	F3,4
FU18005	Fuse Clip	8	
IC20609	ZN404 2.45V Bandgap Ref.	2	IC1,2
IC20770	7815 +15V Regulator	1	IC3
IC20800	7915 -15V Regulator	1	IC4
RA100R0	Resistor 100R	2	R11,16
RA001K0	Resistor 1K	5	R4,5,6,12,17
RA001K5	Resistor 1K5	1	R9
RA015K0	Resistor 15K	1	R10
RA022K0	Resistor 22K	2	R3,8
RC043R0	Resistor 43R 1W	1	R2
RC005K1	Resistor 5K1 1W	1	R1
RG004R7	Resistor 4R7 0.5W	1	R7
RG002R2	Resistor 2R2 0.5W	1	R13
RJ002R2	Resistor 2R2 2.5W	1	R18
SA10200	Mounting Pad for SCR1	1	
SA10400	Mounting Pad for IC1,2, TR2,3,5&6	6	
SA10900	TO220 Mounting Kits for IC3,4, TR1&4	4	
TR17200	Transistor MPS-A42 NPN	2	TR3,5
TR13200	Transistor 2N5401 PNP	2	TR2,6
TR16800	Transistor MJE3055 NPN	1	TR1
TR17001	Darlington Pair TIP121	1	TR4

Section 6 SPARES KIT

The spares kit carried by the 542 range of consoles comprises the items listed below.

On the 5422 console the spares compartment is located beneath internal power supply module 34613.

On the 5432 and 5442 consoles the spares compartment is located below the blanking panel on the internal power supply module when this module is fitted as an option.

The spares kit for the 5422-R console is packaged as a separate item from the console.

(a)	Fuse antisurge 1 amp (34613 - 5422 only)	2 off	Part No. FU10001
(b)	Operational Amplifier TDA 1034-5	5 off	Part No. IC20007
(c)	Extension Lead 15 way (for channel amps.)	1 off	Part No. PN70107
(d)	Fuse 2 amp mains (33643 P.S.U.)	3 off	Part No. FU14402
(e)	Fuse 2 amp Quick Blow (33643 P.S.U.)	3 off	Part No. FU12002
(f)	Fuse 160mA Quick Blow	3 off	Part No. FU12006

542 RANGE

Section 7 TEST REPORT

Neve

Date: 15th February 1982

Works Order No: A8441
Serial No: 20298/K

SUITCASE MIXER 8 CHANNEL, 2 GROUP (SPEC 5432)

1. GENERAL TEST CONDITIONS

1.1 Test Equipment:

Sound Technology Distortion Measuring System (Ser. No. K201)
Sennheiser Valve Voltmeter Type RV 55 (Ser. No. K181)
Sennheiser Filter Unit Type FO 55 (Ser. No. K180)
Neve 4043 amplifier (used for Noise and Crosstalk measurements).
Isolating Transformer 1:1 (used in conjunction with Valve Voltmeter and amplifier for Noise and Crosstalk measurements).

1.2 Conditions:

Equalisation set flat with 300Hz square wave signal.
All outputs loaded 600 ohms, unless otherwise stated.
0dBu = 0dBm = 0.775V r.m.s.

2. PERFORMANCE

2.1 Maximum Output:

Signal to Line input. Channel amplifier sensitivity set to -15dB, no equalisation. Faders set to zero, front panel level controls at maximum. Input adjusted for maximum output.

(a) Line input 1 to all outputs.

Line	L	+22.5	dBu	Aux.	1	+22.6	dBu
	R	+22.5	"		2	+22.6	"
Mon	L	+21.1	"				
(unloaded)	R	+21.0	"				

(b) All Line inputs to Line left.

Channel	1	+22.5	dBu	Channel	5	+22.5	dBu
	2	+22.5	"		6	+22.4	"
	3	+22.4	"		7	+22.5	"
	4	+22.4	"		8	+22.6	"

2.1 (c) Playback to Line left output

Playback	1	+22.5 dBu
	2	+22.4 "

2.2 Input Headroom:

Signal to line inputs in turn. Input level -30dBu, sensitivity -30dB. Channel fader adjusted to give -30dBu output. Input level increased till output is just below clipping.

Channel	1	+41.0 dBu	Channel	5	+41.1 dBu
	2	+41.5 "		6	+41.1 "
	3	+40.8 "		7	+41.0 "
	4	+41.0 "		8	+41.2 "

2.3 Frequency Response:

(a) Signal to line input 1. Input level 0dBu. Channel amplifier sensitivity set to 0dB. Faders set to zero, front panel level controls set to give 0dBu out.
Output level 0dBu at 1kHz.

		25Hz dB	30Hz dB	1.1kHz dB	20kHz dB
Line	L	-0.3	-0.1	-0.3	-0.4
	R	-0.2	-0.1	-0.3	-0.4
Aux	1	-0.4	-0.2	-0.3	-0.4
	2	-0.4	-0.2	-0.2	-0.4
Monitor -2.5dBu output, unloaded	L	-0.4	-0.3	-0.1	-0.3
	R	-0.4	-0.3	-0.1	-0.4

(b) Signal to microphone inputs. Channel amplifier sensitivity set to -30dB. Faders set to zero. Output level 0dBu at 1kHz. Signal selected to line left output. 200 ohm source used.

		25Hz dB	30Hz dB	10kHz dB	20kHz dB
Channel	1	-0.1	0.0	0.0	-0.2
	2	-0.2	0.0	-0.1	-0.3
	3	-0.1	0.0	-0.2	-0.2
	4	-0.1	0.0	-0.1	-0.1
	5	-0.1	0.0	-0.2	-0.2
	6	-0.1	0.0	-0.1	-0.1
	7	-0.2	-0.1	-0.2	-0.3
	8	-0.1	0.0	-0.3	-0.4

(c) Signal to playback input. Input level 0dBu. Level controls set to maximum. Output level 0dBu at 1kHz.

		25Hz dB	30Hz dB	1.1kHz dB	20kHz dB
Playback	1	-0.5	-0.4	-0.1	-0.2
	2	-0.4	-0.3	-0.1	-0.2

2.4. Distortion:

(a) Signal to line 1. Input level 0dBu. Channel amplifier sensitivity set to -15dB. Faders set to zero, front panel level controls set to give +20dBu out.

		100Hz %	1KHz %	10KHz %
Line	L	0.011	0.004	0.005
	R	0.010	0.004	0.004
Aux.	1	0.009	0.003	0.004
	2	0.009	0.003	0.004
Mon (measured at +17.5 dBu out unloaded)	L	0.014	0.009	0.012
	R	0.012	0.009	0.009

(b) Signal to line inputs. Input level 0 dBu. Channel amplifier sensitivity set to -15dB. Faders set to zero. Distortion measured at Line Left Output.

		100Hz %	1KHz %	10KHz %
Channel	1	0.011	0.004	0.005
	2	0.010	0.005	0.005
	3	0.014	0.005	0.005
	4	0.009	0.005	0.005
	5	0.010	0.005	0.005
	6	0.010	0.004	0.005
	7	0.008	0.004	0.005
	8	0.010	0.004	0.004

(c) Signal to mic. inputs. Channel amplifier sensitivity set to -60dB. Faders set to zero. Distortion measured at Line Left, Input set to give +20dBu out.

		100Hz %	1KHz %	10KHz %
Channel	1	0.012	0.009	0.009
	2	0.012	0.010	0.010
	3	0.013	0.010	0.010
	4	0.012	0.009	0.009
	5	0.012	0.009	0.009
	6	0.010	0.008	0.008
	7	0.011	0.009	0.009
	8	0.011	0.009	0.009

(d) Input to playback, level controls set to maximum. Distortion measured at Line Left. Input set to give +20dBu out.

		100Hz %	1KHz %	10KHz %
Playback	1	0.006	0.005	0.007
	2	0.006	0.006	0.007

2.5. Crosstalk

(a) Signal to channel inputs. Input level +5dBu. Sensitivity -15dB. Output level +20dBu. Signal selected to Line Right crosstalk measured at Line Left.

		100Hz dB	1KHz dB	15KHz dB
Channel	1	-66.4	-65.9	-66.4
	2	-66.3	-65.6	-66.1
	3	-64.1	-63.6	-64.2
	4	-66.8	-66.2	-66.7
	5	-66.0	-65.4	-65.9
	6	-65.5	-65.0	-65.5
	7	-67.8	-67.4	-67.9
	8	-66.3	-65.6	-66.4

(b) Signal to channel 1 input, pan centre input level +5dBu, sensitivity -15dB. Output level +17 dBu at Line, +20 dBu at Aux. and +16.5 dBu at monitor. Crosstalk measured at outputs.

		100Hz dB	1KHz dB	15KHz dB
Line	L	-81.5	-81.7	-80.6
	R	-85.9	-86.5	-86.0
(Channel & Monitor selected to audition).				
Aux.	1	-93.0	-94.6	-88.1
	2	-91.4	-91.1	-76.5
(Channel & Monitor selected to programme)				
Mon.	1	-87.5	-89.6	-86.6
	2	-87.6	-88.3	-88.5

(c) Signal to channel under test, channel deselected. All other channels selected to Line Left. Crosstalk measured at Line Left output.

		100Hz dB	1KHz dB	15KHz dB
Channel	1	-83.5	-84.0	-82.1
	2	-84.0	-84.5	-82.2
	3	-83.6	-84.9	-82.6
	4	-84.8	-84.2	-82.9
	5	-83.4	-84.4	-83.8
	6	-83.5	-84.0	-83.6
	7	-83.8	-84.6	-84.0
	8	-83.6	-84.5	-83.9

2.6 Noise

Measured with 20Hz to 20kHz bandpass filter in circuit. Inputs open circuit. (Unless otherwise stated).

(a) Output stage noise, faders and pots at infinity.

(b) No group outputs selected, faders set to zero.

		(a) dBu	(b) dBu
Line	1	-104.7	-92.4
	2	-105.0	-93.7
Aux.	1	- 98.4	-91.2
	2	- 97.4	-92.3

(c) Channels selected individually to Line Left. Line input sensitivity set to 0dB. (Input of each channel terminated with 600 ohms).

(d) Channels selected individually to Line Left. Microphone input sensitivity set to -90dB. (Input of each channel terminated with 200 ohms).

(e) Equivalent input noise.

		(c) dBu	GAIN dB	(d) dBu	(e) dBu
Channel	1	-80.6	90	-37.1	-127.1
	2	-80.8	90	-36.2	-126.2
	3	-80.4	90	-35.8	-125.8
	4	-80.6	90	-35.9	-125.9
	5	-81.1	90	-36.9	-126.9
	6	-81.7	90	-37.2	-127.2
	7	-80.2	90	-37.0	-127.0
	8	-80.0	90	-36.9	-126.9

2.7 Miscellaneous Tests

D.C. current consumption. Maximum quiescent current. With maximum number of modules in circuit = +248 mA
-242 mA

Supply voltage. +15.1 Volts
-15.0 Volts

.....

For and on behalf of Neve Electronics International Limited

542 RANGE

Section 8 PARTS LIST

PN 50078	5422 PORTABLE CONSOLE
PN70220	5422-R RACK MOUNTED CONSOLE
PN50202	5432 'DROP THRO' CONSOLE
PN50203	5442 'TABLE TOP' CONSOLE

5422: 8 CHANNEL 2 GROUP BROADCAST CONSOLE

PARTS LIST PN50078

PART NO.	DESCRIPTION
MATING CONNECTORS	
CN10076	NEUTRIC FREE PLUG 3 WAY
CN20074	" " Skt. 3 "
PL33643	EXT. POWER SUPPLY UNIT
PL21104	BLANKING PLUG ASSY.
PN60046	542 FRAME
PN60002	CHASSIS ASSY
PN60004	TRANSFORMER PANEL ASSY
PN60005	CONNECTOR PANEL ASSY
PN60006	OUTPUT AND MONITOR PANEL ASSY
METAL WORK	
ME21353\1	BATTERY BOX WELL END L.H.
ME21353\2	BATTERY BOX WELL END R.H.
ME21354	INNER COVER
ME21442	SPARES RETAINER
MG21729	CHASSIS MOUNTING
MG20030\137	SPACER
COMPONENTS	
CN10324	D.I.L. PLUG 16 WAY
FG10505	POP RIVETS 1/8" Ø x 1/8"
FM10524	SCREW M2 x 5 C.S.K. HD
FM11560	SCREW M3 x 10 INST HD
FM11621	SCREW M3 x 6 POZI HD
FM21030	WASHER M3

N60003	FINISHING KIT
D20215	CASE ASSEMBLY
N34613	BATTERY BOX ASSY
D20215	METAL-WORK FOR CASE ASSEMBLY
D20211	CASE AND LID
D20214	HOOK SPACER
D20242	CATCH BACKING PLATE
D20247	CATCH SPACER
D22054	BEZEL (CONNECTOR PANEL)
G21695	HANDLE
G21701/1	HANDLE MOUNTING L.H.
G21701/2	HANDLE MOUNTING R.H.
G22058	CASE FEET SIDE
G21708	HANDLE SCREWS
G21724	CASE FEET FLAT
G21190	DESIGNATION LABEL
G22050	TRIM
D20236	STRENGTHENING STRIP
Z21174	CAMLOC FASTENER 5 IL & HOOK
G10506	POP RIVET 5/32"
M11560	SCREW M3 x 10 INST HD

5422-R 6 CHANNEL 2 GROUP RACK MOUNTED CONSOLE
PARTS LIST PN70220

PART NO	DESCRIPTION
MZ21271	RACK ASSEMBLY PN70220
	MATING CONNECTORS
CN10076	NEUTRIC FREE PLUG 3 WAY
CN20074	" " Skt. 3 "
CN10077	FIXED PLUG, NEUTRIC 3 WAY
PL10692	CAPACITOR BOARD
PL21104	BLANKING PLUG ASSEMBLY
CA61006	CAPACITOR 100 uF 63v
CN10141	DIN PLUG AMPHENOL 7 WAY
CN10324	DIL PLUG 16 WAY
CN20075	FIXED SKT. NEUTRIC 3 WAY
CN20300	SOCKET AMPHENOL 15 WAY
CN20301	SOCKET PAINTON 15 WAY
MZ21194	SLIDE SWITCH (SW12001 MODIFIED)
RE018KO	RESISTOR C5 1% 18K OHMS
TF12015	TRANSFORMER LH6297
WA17203	SOLDER TAG 6BA
WA17205	SOLDER TAG 6BA 6 WAY
	METAL WORK
MB20506	BUS BAR
MG20030/137	PILLAR
MG21934	INPUT P.C.B. MTG. BAR
MG21935	OUTPUT P.C.B. MTG. BAR
MG22218/411	PILLAR
MG22218/431	PILLAR
MD20268	HANK BUSH SPECIAL
MR21660/2	TRIM
MR21656	TIE BAR MOUNTING BRACKET
MR21657	PANEL SUPPORT ANGLE
MR21658	CHANNEL FRAME
MR21659	CHANNEL BULKHEAD
MR21660/1	TRIM
MR21661	LOWER PANEL SUPPORT
MR21662	PANEL SUPPORT
MR21686	PANEL SUPPORT
MR21664/1	MTG. EAR 19" RACK

MR21664/2	MTG. EAR 19" RACK
MR21666/1	19" MTG. SIDEPLATE
MR21666/2	19" RACK MTG. SIDEPLATE
MR21668	CHANNEL BULKHEAD
MR21670	TRANSFORMER MTG. BRKT.
MR21671	REARCOVER
MR21971	RACK PANEL FOR PSU
MS20748	SCRIBBLE PANEL (F)
MS20749	SCRIBBLE PANEL (R)
MX20868	CONNECTOR PANEL XLR
	SCREWS & FITTINGS
FG10704	HANK BUSH
FM11600	SCREW M3 x 6 mm CSK. POZI HD.
FM11606	SCREW M3 x 6 mm CKS. POZI HD.
FM11609	SCREW M3 x 10mm CKS. POZI HD.
FM11615	SCREW M3 x 6 mm PAN. POZI HD.
FM11617	SCREW M3 x 10mm PAN. POZI HD.
FM11621	SCREW M3 x 6 mm PAN. POZI HD.
FM11623	SCREW M3 x 10mm PAN. POZI HD.
FM20030	NUT M3
FM21030	WASHER M3
MD20268	HANK BUSH

5432:8 CHANNEL 2 GROUP 'DROP THRO' BROADCAST CONSOLE
PARTS LIST PN50202

PART NO	DESCRIPTION
MATING CONNECTORS	
CN10076	NEUTRIC FREE PLUG 3 WAY
CN20074	" " SKT. 3 "
PL33643	EXT. POWER SUPPLY UNIT
PL21104	BLANKING PLUG ASSY.
PN60046	'542' FRAME
PN60002	CHASSIS ASSY
PN60004	TRANSFORMER PANEL ASSY
PN60005	CONNECTOR PANEL ASSY
PN60006	MONITOR AND FACILITIES PANEL ASSY
PL10683	OUTPUT AND MONITOR BOARD
METAL WORK	
ME21353\1	BATTERY BOX WELL END L.H.
ME21353\2	BATTERY BOX WELL END R.H.
ME21354	INNER COVER
ME21442	SPARES RETAINER
MG21729	CHASSIS MOUNTING
MG20030\137	SPACER
COMPONENTS	
CN10324	D.I.L. PLUG 16 WAY
FG10504	POP RIVETS 1/8" Ø x 1/8"
FM10524	SCREW M2 x 5 CSK. HD
FM11560	SCREW M3 x 10 INST HD
FM11621	SCREW M3 x 6 POZI HD
FM21030	WASHER M3

PN60047	FINISHING KIT
PN60049	BATTERY BOX

METAL WORK

PL21105	WELDED ASSY
MG22166/1	TRIM LONG
MG22166/2	TRIM-LONG
MG22164	TRIM-SHORT
MC20874	BOTTOM PANEL
MG22162	DESIGN. PANEL
MS20864	SCRIBBLE REAR
MS20863	SCRIBBLE PANEL (F) 1-8
MG22160	SUPPORT ANGLE
MR21971	RACK PANEL FOR P.S.U.

WOODWORK

MW20492/1	SIDE FLASH
MW20492/2	SIDE FLASH
MW20493	BUFFER

COMPONENTS

FE10000	FOOT

FIXINGS

FA13030	WOOD SCREW NO 6 x ½" RD. HD. STEEL
FM11601	M3 x 8 CSK POZI HD. SCREW STEEL
FM21030	M3 WASHER STEEL
FM20030	M3 HEX NUT STEEL ZINC PL.
FM11606	M3 x 6 SCK POZI HD. SCREW BLACK
FM11622	M3 x 8 PAN POZI HD. SCREW STEEL
FA10271	2BA x ½" SKT CAP HD. SCREW STEEL
FA16000	2BA WASHER SH. PR. STEEL
FA15000	2BA FULL NUT BRASS
FM12602	M4 x 10 CSK POZI HD. SCREW STEEL
FM21050	M4 WASHER STEEL
FM20050	M4 FULL NUT STEEL
FG10504	RIVET Ø1/8" x 1/8"
FG10102	SPIROL PIN Ø 2 x 8

5442:8 CHANNEL 2 GROUP TABLE TOP BROADCAST CONSOLE
PARTS LIST PN50203

PART NO	DESCRIPTION
MATING CONNECTORS	
CN10076	NEUTRIC FREE PLUG 3 WAY
CN20074	" " Skt. 3 "
PL33643	EXT. POWER SUPPLY UNIT
PL21104	BLANKING PLUG ASSY.
PN60046	'542' FRAME
PN60002	CHASSIS ASSY
PN60004	TRANSFORMER PANEL ASSY
PN60005	CONNECTOR PANEL ASSY
PN60006	MONITOR AND FACILITIES PANEL ASSY
PL10683	OUTPUT AND MONITOR BOARD
METAL WORK	
ME21353\1	BATTERY BOX WELL END L.H.
ME21353\2	BATTERY BOX WELL END R.H.
ME21354	INNER COVER
ME21442	SPARES RETAINER
MG21729	CHASSIS MOUNTING
MG20030\137	SPACER
COMPONENTS	
CN10324	D.I.L. PLUG 16 WAY
FG10504	POP RIVETS 1/8" Ø x 1/8"
FM10524	SCREW M2 x 5 CSK HD
FM11560	SCREW M3 x 10 INST HD
FM11621	SCREW M3 x 6 POZI HD
FM21030	WASHER M3

PN60048	FINISHING KIT
PN60049	BATTERY BOX

METAL WORK

PL21105	WELDED ASSY
MG22166/1	TRIM LONG
MG22166/2	TRIM-LONG
MG22164	TRIM-SHORT
MC20874	BOTTOM PANEL
MG22162	DESIGN. PANEL
MS20864	SCRIBBLE REAR
MS20863	SCRIBBLE PANEL (F) 1-8
MR21971	RACK PANEL FOR P.S.U.

WOODWORK

MW20491	SIDE FLASH
MW20494	BUFFER

COMPONENTS

FE10000	FOOT

FIXINGS

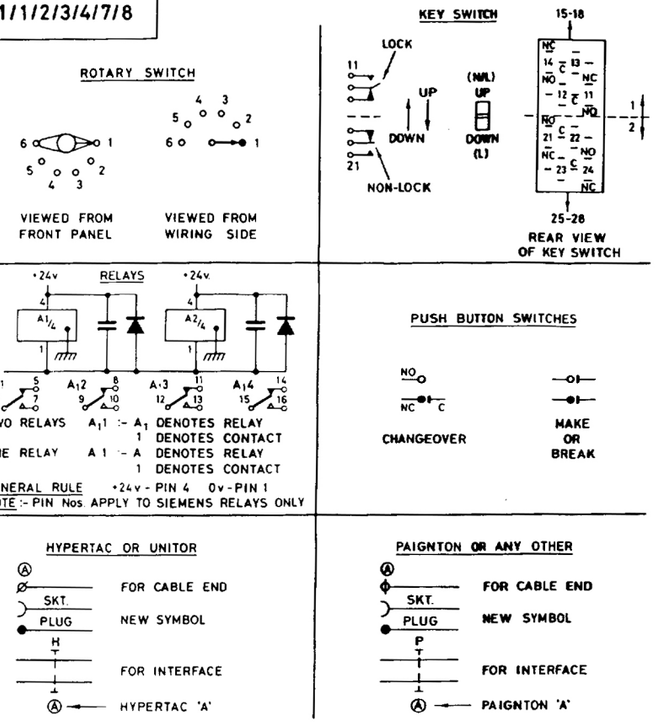
FA13030	WOOD SCREW NO 6 x ½" RD. HD. STEEL
FM11601	M3 x 8 CSK POZI HD. SCREW STEEL
FM21030	M3 WASHER STEEL
FM20030	M3 HEX NUT STEEL ZINC PL.
FM11606	M3 x 6 CSK POZI HD. SCREW BLACK
FM11622	M3 x 8 PAN POZI HD. SCREW STEEL
FA10271	2BA x ½" SKT CAP HD. SCREW STEEL
FA16000	2BA WASHER SH. PR. STEEL
FA15000	2BA FULL NUT BRASS
FM12602	M4 x 10 CSK POZI HD. SCREW STEEL
FM21050	M4 WASHER STEEL
FM20050	M4 FULL NUT STEEL
FG10504	RIVET Ø1/8" x 1/8"
FG10102	SPIROL PIN Ø 2 x 8

ELECTRICAL STANDARDS EDO 71

Contents

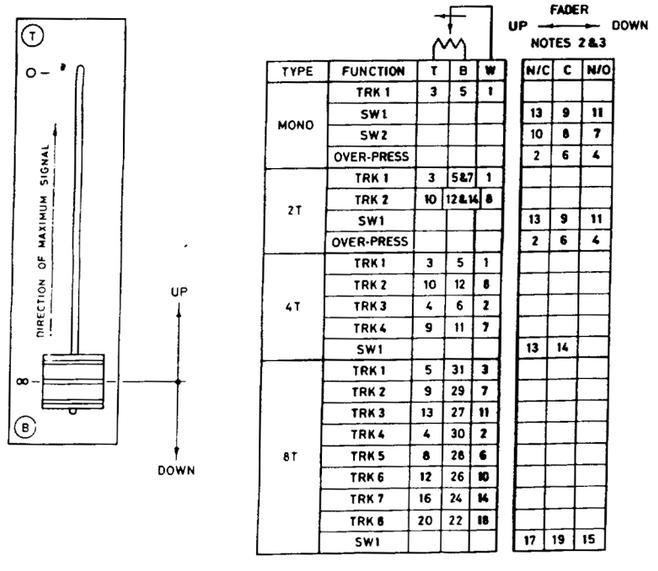
TECHNICAL EARTH

EDO 71/1/2/3/4/7/8



SWITCHES

EDO 71/1 ISSUE 3 6-9-72



TYPE	FUNCTION	T	B	W	N/C	C	N/O
MONO	TRK 1	3	5	1			
	SW1				13	9	11
	SW2				10	8	7
	OVER-PRESS				2	6	4
2T	TRK 1	3	5&7	1			
	TRK 2	10	12&14	8			
	SW1				13	9	11
	OVER-PRESS				2	6	4
4T	TRK 1	3	5	1			
	TRK 2	10	12	8			
	TRK 3	4	6	2			
	TRK 4	9	11	7			
	SW1				13	14	
8T	TRK 1	5	31	3			
	TRK 2	9	29	7			
	TRK 3	13	27	11			
	TRK 4	4	30	2			
	TRK 5	8	28	6			
	TRK 6	12	26	10			
	TRK 7	16	24	14			
	TRK 8	20	22	18			
	SW1				17	19	15

NOTE - 1 MONO, 2T & 4T FADERS PIN 15 AND 8T FADERS PIN 1 WIRE TO EARTH

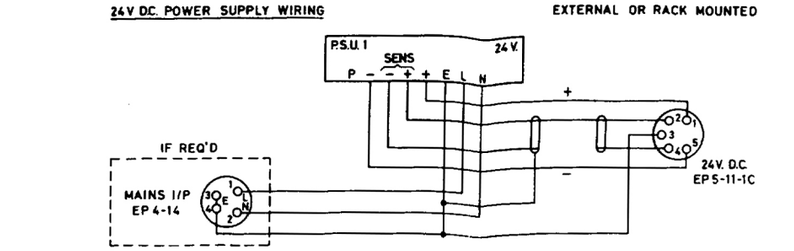
2 SWITCH CHANGEOVER OCCURS ABOUT THE INFINITY POINT ∞

3. N/C, C & N/O REFER TO CONTACT IDENTIFICATION ON FADER MICROSWITCHES & NOT TO SWITCH OPERATION

* NOTE : SEE WIRING OF FADERS

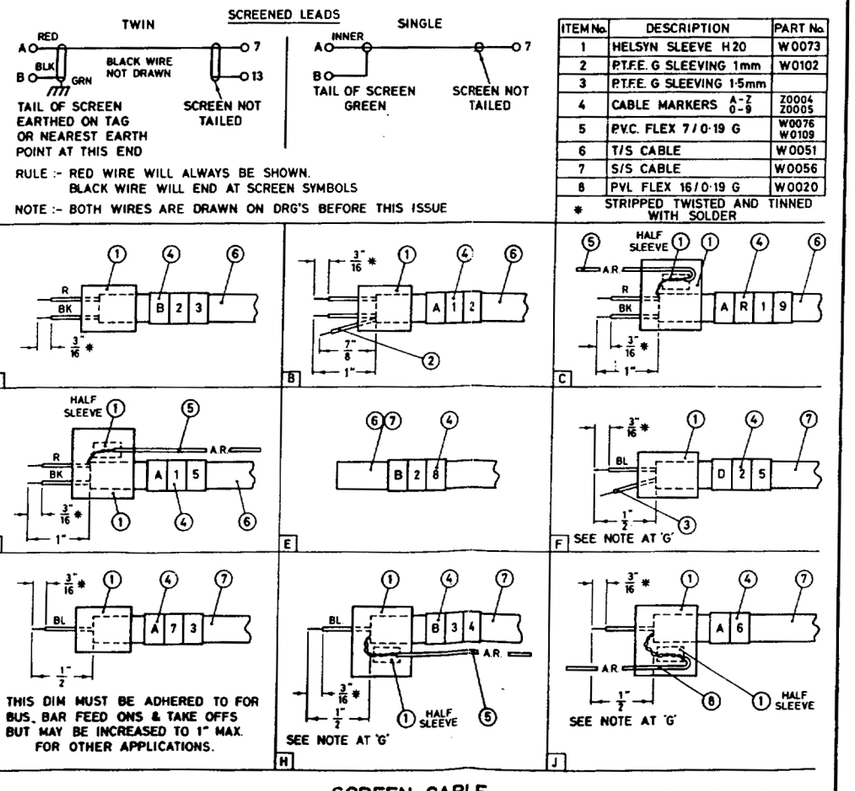
PENNY & GILES FADER CONNECTIONS

EDO 71/4 ISSUE 7 1-9-78



POWER SUPPLY UNIT WIRING

EDO 71/2 ISSUE 4 8-11-74

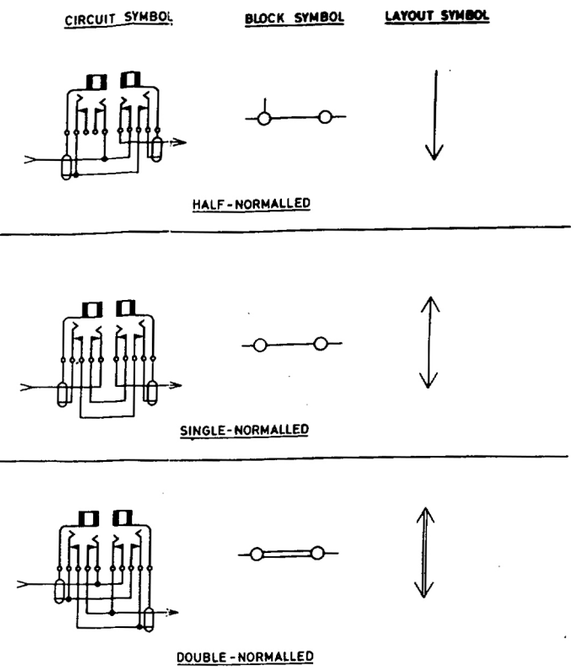


ITEM No.	DESCRIPTION	PART No.
1	HELSYN SLEEVE H20	W0073
2	P.T.F.E. G SLEEVING 1mm	W0102
3	P.T.F.E. G SLEEVING 1·5mm	
4	CABLE MARKERS A-Z 0-9	Z0004 Z0005
5	P.V.C. FLEX 7/0·19 G	W0076 W0109
6	T/S CABLE	W0051
7	S/S CABLE	W0056
8	PVL FLEX 16/0·19 G	W0020

* STRIPPED TWISTED AND TINNED WITH SOLDER

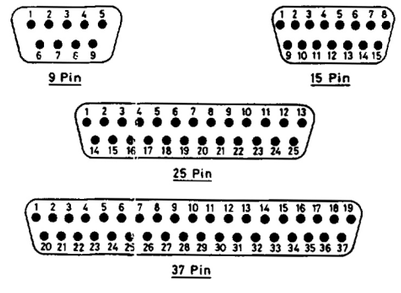
SCREEN CABLE

EDO 71/7 Sheets 1 & 2 Sht. 1 ISSUE 8 4-12-75 Sht. 2 ISSUE 3 5-1-77



STANDARD JACK SOCKET CONNECTIONS

EDO 71/3 ISSUE 3 27-3-79



NOTE : CONTACT ARRANGEMENT. MATING FACE OF PIN INSERT

CONNECTOR PIN ALLOCATION (CANNON 'D')

EDO 71/8 ISSUE 4 14-9-79

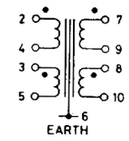
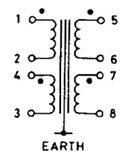
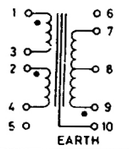
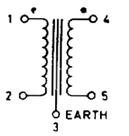
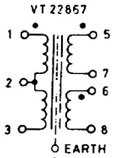
	ISSUE	FIRST USED ON	MATL.	TOL UNLESS OTHERWISE STATED: LINEAR ± / ANGULAR ±
	DATE	DRN.	FINISH	3rd ANGLE PROJ. / DIMS IN / SCALE N.T.S
	CHANGE NOTE No	TRACED S.C.S.	TITLE ELECTRICAL STANDARDS	DRG. No. EDO 71/1/2/3/4/7/8
	CHECKED	CHECKED	Rupert Neve & Company Ltd.	1979 © A1
	CHECKED			

DRAWING No

EDO 71 / 13, 14, 15, 19, 23

NOTE :
- DOTS INDICATE IN PHASE POINTS

TRANSFORMERS

TYPE	PRIMARY SERIES	PRIMARY PARALLEL	SECONDARY SERIES	SECONDARY PARALLEL	dB
31267, 10368 & 10468 					
31267 VT 22671 T1452	10K		2K4		-6
	10K			600	-13
		2K4	2K4		0
		2K4		600	-6
10368 T1453	5K		2K4		-3
	5K			600	-9
		1K2	2K4		+3
		1K2		600	-3
10468 VT 22670 T1454	1K2		4K8		+6
	1K2			1K2	0
		300	4K8		+12
		300		1K2	+6
LO 2567, LI 1166, LI 1366 					
LO 2567 UNGAPPED NO D.C.	200		600		+4
	200			150	-2
		50	600		+10
		50		150	+4
LI 1166 GAPPED	200		600		+4
	200			150	-2
		50	600		+10
		50		150	+4
LI 1366	600		600		0
V22543 	600	150	SECONDARY CENTRE TAPPED LOADED 600	600	-1 +5
LO 1173, VT 22737, & VT 22761  LO 1173 = T1684 = PCB MOUNTING T1686 = CHASSIS MOUNTING VT 22737 = PCB MOUNTING VT 22761 = CHASSIS MOUNTING	LO 1173 VT 22737 VT 22761 T1684 T1686	70 ohms	600 ohms		+8
VT 22867  PCB MOUNTING NO METAL CAN	VT 22867				
	10K		2K4		-6
	10K			600	-12

TRANSFORMER WINDINGS

EDO 71/13 Sheets 1 & 2

Sheet 1 ISSUE 6 27-8-76
Sheet 2 ISSUE 1 8-11-73

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1. AUDIO

	PIN		INPUT XLR 3-31	OUTPUT XLR 3-32
	1	SCREEN		
	2	RED		
	3	BLACK		
MATING CONNECTORS: INPUT		XLR 3-12 C		
MATING CONNECTORS: OUTPUT		XLR 3-11 C		

2. 24 V D.C.

	PIN		INPUT EP 5-14	OUTPUT EP 5-13
	1	24 V + (B+)		
	2	+24 V SENSING N.B. SENSING LEADS SHOULD BE SCREENED		
	3	EARTH		
	4	0V SENSING		
	5	0V (B-)		
MATING CONNECTORS: INPUT		EP 5-11		
MATING CONNECTORS: OUTPUT		EP 5-12		

3. 24 V A.C.

	PIN		INPUT EP 2-14	OUTPUT EP 2-13
	1, 2	24 V A.C.		
MATING CONNECTORS: INPUT		EP 2-11		
MATING CONNECTORS: OUTPUT		EP 2-12		

4. 48 V D.C.

	PIN		INPUT EP 3-14	OUTPUT EP 3-13
	1	48 V +		
	2	EARTH		
	3	0 V		
MATING CONNECTORS: INPUT		EP 3-11		
MATING CONNECTORS: OUTPUT		EP 3-12		

5. 110 V A.C. / 250 V A.C. A.C. POWER

	PIN		INPUT EP 4-14	OUTPUT EP 4-13
	1	LIVE		
	2	NEUTRAL		
	3, 4	EARTH		
MATING CONNECTORS: INPUT		EP 4-11		
MATING CONNECTORS: OUTPUT		EP 4-12		

6. 15 V & 10 V SUPPLIES

POWER PIN		SENSE PIN	
1	+15 V	14	+VE
2	0 V	9	-VE
4	+15 V	10	+VE
5	0 V	11	-VE
8	+10 V	12	CHASSIS
7	0 V		
6	-10 V		

INPUT EP 15-14 / OUTPUT EP 15-13

ALL PIN ARRANGEMENTS SHOWN LOOKING ON MATING FACE

CONNECTOR PIN ALLOCATION (CANNON XLR & EP)

EDO 71/14 Sheets 1 & 2

Sheet 1 ISSUE 1 19-1-72
Sheet 2 ISSUE 1 21-7-77

LA 10000
20mm, 6mm
28V 1·1W 6mm EDISON SCREW
(USED IN LICON SWITCHES)

LA 11100
15mm, 6mm
28V 40mA 6mm CLIP-IN END FLANGE
(USED IN LS9 LAMPS)

LA 11000
10mm, 4mm
28V 24mA 4mm CLIP-IN END FLANGE
(USED IN LS7 LAMPS)

LA 11300
12mm, PINS 5·5mm
28V 35mA 5·5mm PUSH-IN TYPE
(USED IN TJ SWITCHES)

LA 11500
36mm, 8mm
12V 3W 36mm x 8mm FESTOON BULB
(USED FOR METER ILLUMINATION)

LA 13000 GREEN
LA 13001 AMBER
LA 13002 RED
} LIGHT EMITTING DIODE

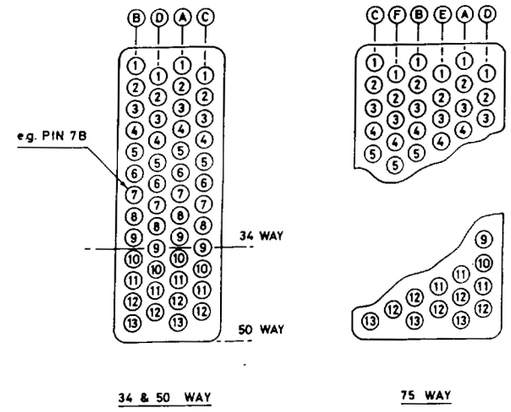
CATHODE
ANODE

RED = 20mA CONTINUOUS CURRENT
AMBER, GREEN } 40mA CONTINUOUS CURRENT
PEAK INVERSE VOLTAGE = 3V

INDICATOR LAMPS

EDO 71/23

ISSUE 2 12-5-78



34 & 50 WAY — 75 WAY

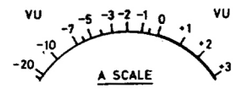
SOCKETS SHOWN VIEWED FROM WIRING SIDE

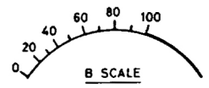
NOTE :- 1. MOULDED DESIGNATIONS IGNORED (DUE TO POOR LEGIBILITY)
2. ONLY USED WHERE CALLED FOR IN GENERAL NOTES.

34, 50, & 75 WAY UNITOR CONNECTORS

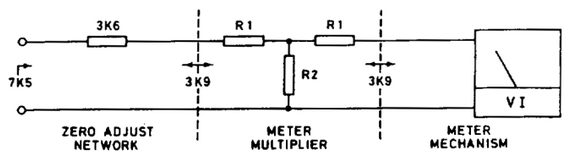
EDO 71 / 15

ISSUE 2 5-11-75





SCALE COLOUR IS BUFF — 2.93Y ON MUNSELL SCALE



METER MULTIPLIER VALUES

0 VU CALIBRATION	MULTIPLIER ATTENUATION	SERIES R1	SHUNT R2
+4 dBm	0 dB	SHORT	OPEN
+6 dBm	2 dB	447 Ω	16 789 Ω
+8 dBm	4 dB	883 Ω	8 177 Ω
+10 dBm	6 dB	1 296 Ω	5 221 Ω
+12 dBm	8 dB	1 679 Ω	3 690 Ω
+14 dBm	10 dB	2026 Ω	2 741 Ω
+16 dBm	12 dB	2 334 Ω	2 091 Ω
+18 dBm	14 dB	2 603 Ω	1 621 Ω
+20 dBm	16 dB	2 833 Ω	1 268 Ω

THE STANDARD VOLUME INDICATOR

EDO 71 / 19

ISSUE 1 30-11-73

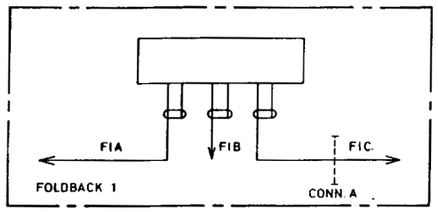
		ISSUE	FIRST USED ON	MATL.	TOL. UNLESS OTHERWISE STATED: LINEAR . ANGULAR HOLES .C
		DATE	DRN.	FINISH	3rd ANGLE PROJ. DIMS. IN SCALE N.T.S
		CHANGE NOTE No.	TRACED S.C.S. CHECKED	TITLE ELECTRICAL STANDARDS	DRG. No. EDO 71/ 13, 14, 15, 19 & 23
		CHECKED	Neve Electronics International Ltd.		1979 © A1

EDO 71 / 31,32 & 33

1. TO FACILITATE LOCATION OF SIGNAL SOURCE (BACK REFERENCE) CONSOLE CABLE CODING IS ARRANGED TO PROVIDE DIRECT READING (SYSTEM, SUB SYSTEM AND WIRE) IDENTIFICATION. THE SYSTEM OF ORIGIN CODE IS RETAINED TO ITS DESTINATION. IF THIS IS A MIXING BUS OR SWITCHING MATRIX THE CABLE CODE THEN CHANGES TO SUIT ITS OUTPUT CONFIGURATION OR FUNCTION. FOR EXAMPLE :-
   - G = GROUP
   - M = MONITORING
   - X = METERING
   - Q = 4 TRACK
   - S = STEREO

2. THE CODE IS BUILT UP AS FOLLOWS :-
   a. ELEMENT 1 IS A LETTER IDENTIFYING THE PARENT SYSTEM (SEE TABLE 1)
   b. ELEMENT 2 IS A NUMBER OR NUMBERS IDENTIFYING THE SUB-SYSTEM
   c. ELEMENT 3 IS A LETTER IDENTIFYING THE INDIVIDUAL WIRE

   FOR EXAMPLE, ASSUMING THE PARENT SYSTEM TO BE FOLDBACK
   ELEMENT 1 = F
   ELEMENT 2 = 1
   ELEMENT 3 - STARTS AT 'A' AND PROGRESSES THROUGH THE ALPHABET, OMITTING 'I' AND 'O'



FOLDBACK 2 TO 4 IDENTICAL

CABLE CODES FOR SUB-SYSTEMS 2 TO 4 =
F2A TO F4A ; F2B TO F4B ; F2C TO F4C

NOTE : WIRE CODE DOES NOT CHANGE THROUGH PLUG BREAK

3. ADDITIONAL INFORMATION MAY BE GIVEN BY A NUMBER PREFIX OR SUFFIX. FOR EXAMPLE :-

MULTIPLE TAPE INPUTS (CONSOLE OUTPUTS) AND TAPE OUTPUTS (REPLAY) THUS :-

4 TRACK	= Q	TAPE OUTPUT FROM M/C 2	= 2
TRACK No	= 2	4 TRACK	= Q
WIRE	= C	TRACK No	= 2
TAPE INPUT TO M/C No.	= 2	WIRE	= C

SYSTEM LETTER 'Z' (MISCELLANEOUS) MAY BE USED FOR VARIOUS UNCLASSIFIED SYSTEMS EACH OF WHICH WILL BEAR A NUMBER PREFIX WHICH MAY VARY FROM CONSOLE TO CONSOLE

4. A TABLE SHOWING ALL SYSTEM LETTERS USED, WITH RELATED SYSTEM AND DRAWING SHEET NUMBER OF ORIGIN, WILL BE INCLUDED ON SHEET 1 OF ALL CONSOLE WIRING DIAGRAMS

TABLE 1 SYSTEM LETTER IDENTIFICATION KEY

A	= AUX	N	= MIXDOWN
B		P	
C	= CHANNEL	Q	= QUAD (4 TRACK)
D	= DIRECT INPUT	R	= REV (ECHO)
E	= EXTERNAL	S	= STEREO (2 TRACK)
F	= FOLDBACK	T	= TALKBACK
G	= GROUP	U	= MONO
H		V	
J	= JACK INPUTS	W	= OSCILLATOR
K		X	= METER
L	= LISTEN (SOLO ETC.)	Y	= CONSOLE LOUDSPEAKER
M	= MONITOR	Z	= MISCELLANEOUS

THIS EDO CANCELS & REPLACES EDO 71/6

CABLE CODING STANDARD

EDO 71 / 31 Sheets 1 & 2 — ISSUE 1

DRAWING PRESENTATION OF MULTIPLE PUSH BUTTON SWITCHES

THESE SWITCHES ARE USUALLY WIRED SO AS TO PROVIDE AN ELECTRICAL INTERLOCK TO AUGMENT THE EASILY DEFEATED MECHANICAL INTERLOCK.
A TYPICAL SWITCH IS DRAWN, SHOWING ALL WIRED CONTACTS, WITH SPECIFIC WIRING INFORMATION FOR INDIVIDUAL SWITCHES GIVEN IN WIRING TABLES, WHICH ARE ARRANGED TO REPRESENT A WIREMANS VIEW OF THE PANEL i.e. REVERSED LEFT TO RIGHT.

1. EXAMPLE OF TYPICAL SWITCH PRESENTATION

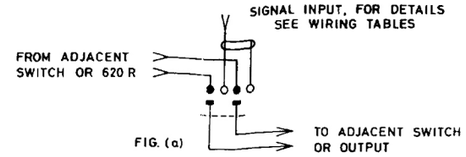


FIG. (a)

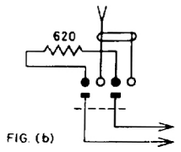


FIG. (b)

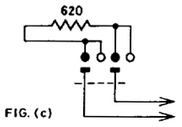


FIG. (c)

THE FIRST SWITCH HAS A TERMINATING RESISTOR FITTED AS FIG. (b) UNLESS IT IS AN OFF SWITCH WHICH IS AS FIG. (c). INTERMEDIATE SWITCHES ARE AS FIG. (a) WITH THE LAST SWITCH FEEDING THE METER OR AMPLIFIER ETC.

2. WIRING TABLE EXAMPLES

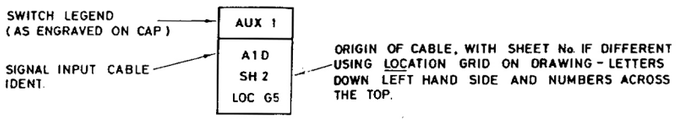


FIG. (d)

WHEN A SIGNAL IS PARALLELED TO A SECOND SWITCH, USUALLY THROUGH A TWISTED PAIR, THIS IS ADDED TO THE TYPICAL SWITCH WITH THE WIRING TABLES INDICATING AFFECTED SWITCHES AS FOLLOWS :-

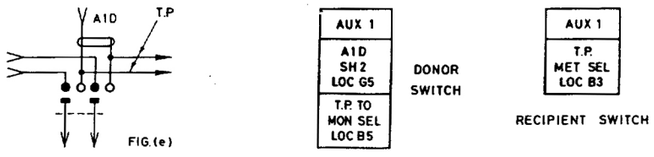


FIG.(e)

WHEN A MONO SIGNAL OCCURS IN A STEREO MATRIX IT MAY BE LINKED TO THE SECOND CHANNEL OR THE SECOND CHANNEL MAY BE TERMINATED WITH A 620 OHM RESISTOR SHOWN THUS :-

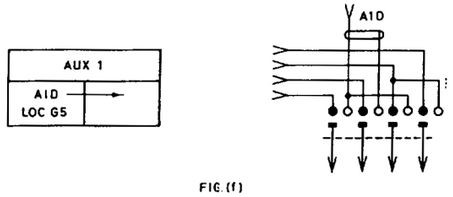


FIG. (f)

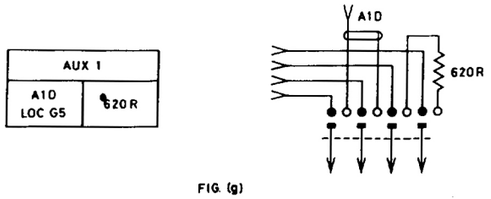
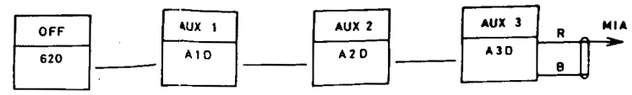


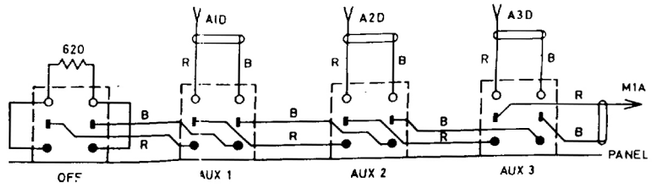
FIG. (g)

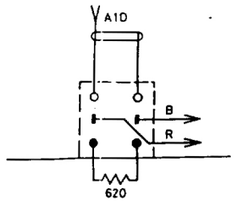
SWITCH PRESENTATION

EDO 71/32 Sheets 1 & 2 of 3 — ISSUE 1



SCHEMATIC PRESENTATION



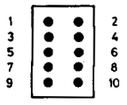


ALTERNATIVE ARRANGEMENT WITHOUT OFF SWITCH

PICTORIAL PRESENTATION

SWITCH PRESENTATION

EDO 71/32 Sheet 3 of 3 — 28-3-79 ISSUE 1



CONTACT ARRANGEMENT

MATING FACE OF PLUG (PIN INSERTS) PIN 1 IS INDICATED BY A TRIANGULAR DEVICE ON SIDE OF CONNECTOR.

ITT / CANNON GO8 SPEEDY CONNECTOR MARKINGS SHOULD BE IGNORED AND THIS STANDARD APPLIED.

FOR CANNON D COMPATIBLE CONNECTORS SEE EDO 71/8

RIBBON CABLE CONNECTOR PIN NUMBERING

EDO 71 / 33 — 13-9-79 ISSUE 1

		ISSUE	FIRST USED ON	MATL.	TOL UNLESS OTHERWISE STATED: LINEAR ±, ANGULAR °, HOLES +0.13 −0
		DATE	DRN.	FINISH	3rd ANGLE PROJ. DIMS IN, SCALE N.T.S.
		CHANGE NOTE No	TRACED S.C.S.	TITLE	DRG. No.
		CHECKED	CHECKED	ELECTRICAL STANDARDS	EDO 71/31,32&33
		CHECKED		Neve Electronics International Ltd.	1979 © A1

	MULTIPIN CONNECTOR		MICROPHONE		PUSHBUTTON ILLUMINATED,CHANGEOVER		POTENTIOMETER, ROTARY
	SOLDER TAG TERMINATION		LOUDSPEAKER		PUSHBUTTON NON-ILLUMINATED, MECH. ACTIVATED COLOUR CHANGE		POTENTIOMETER, ROTARY STEPPED
	TUCHEL CONNECTOR WITH OPEN CONTACTS		HEADPHONES		ROTARY SWITCH (SHOWN IN ANTI-CLOCKWISE POSITION CONTACT FUNCTION TO BE DESIGNATED)	OR	POTENTIOMETER, PAN POT
	TUCHEL CONNECTOR WITH JUMP CONTRACTS		P.C BOARD (TYPE TO BE STATED)	RA L	RELAY CONTACTS		POTENTIOMETER, QUAD PAN POT
	XLR CONNECTOR INPUT NORMALLY XLR 3-31		CHOKE	R A L	RELAY COIL	0dB	FADER, CALIBRATED, LINEAR, (LEVEL IN HAND TO BE STATED)
	XLR CONNECTOR OUTPUT NORMALLY XLR 3-32		SIGNAL LAMP (VOLTAGE & COLOUR TO BE STATED)		SWITCHER CROSSPOINT	0dB	FADER, CALIBRATED, WITH END STOP SWITCH (MAX OF 3)
	JACK SOCKET, SINGLE	(NL) DOWN	KEYSWITCH, SINGLE (FRONT PANEL FUNCTION DESIGNATED BY ARROW, MECHANICAL ACTION TO BE STATED)		LIMITER		MODULE GENERAL SYMBOL (FUNCTION & TYPE NUMBER TO BE STATED)
	JACK SOCKET, HALF NORMALLED PAIR (SEND ON UPPER ROW, RETURN ON LOWER ROW)	UP (L) (NL) DOWN	KEYSWITCH, TWO WAY (NOTES AS ABOVE)		METER (TYPE TO BE STATED)		MODULE WITH FRONT PANEL MOUNTING COMPONENT
	JACK SOCKET, SINGLE NORMALLED PAIR		TOGGLE SWITCH		METER, LIGHT BEAM, MONO		MODULE WITH EXTERNAL MOUNTING COMPONENT
	JACK SOCKET, DOUBLE NORMALLED PAIR		PUSHBUTTON, NON-ILLUMINATED		METER, LIGHT BEAM, STEREO		POT/PUSHBUTTON COMBINED INTO ONE COMPONENT (i.e. CENTRALAB.)
	TRANSFORMER		PUSHBUTTON, NON ILLUMINATED WITH LAMP INDICATION, (COLOUR TO BE STATED)		TERMINATION RESISTOR (VALUE TO BE STATED) ATTENUATION RESISTOR (ATTEN. IN dB TO BE STATED)		
	HYBRID TRANSFORMER		PUSHBUTTON, ILLUMINATED		POTENTIOMETER, ROTARY PRE-SET		

4 RE DRAWN	ISSUE	FIRST USED ON	MATL.	TOL. UNLESS OTHERWISE STATED	
9 OCT. '78	DATE	DRN.	FINISH	LINEAR ±	ANGULAR ± 0.13 / − 0 HOLES
	CHANGE NOTE Nº	TRACED ADL	TITLE BLOCK DIAGRAM SYMBOLS	3rd ANGLE PROJ.	DIMS. IN / SCALE
	CHECKED	CHECKED		DRG. No. B 10001	
		Neve Electronics International Ltd.		1978 ©	A2

SWITCH CONTACTS

The design of modules employing switches is such that trouble through the ingress of dust and moisture should not normally arise. This means that any routine cleaning treatment is both unnecessary and a possible cause of trouble.

In the event of a switch causing excessive electrical noise a universal electrical contact cleaner Electrolube 2X should be used sparingly where required. This fluid is compatible with plastics used in the manufacture of switches and contains no silicones or hydrocarbons. It is also anti-static and will not attract dust.

NOTE Electrolube 2X is available in Aerosol cans as Electrolube 2A-X.

WARNING

The following Electrolube products contain solvents which have a softening effect on polystyrene and certain other thermo-plastics likely to be found in switches and should NOT be used.

Electrolube	No. 1	Green
Electrolube	No. 2	Red
Electrolube	2G	

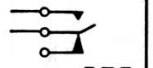
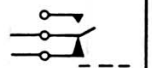
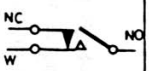
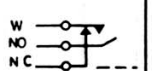
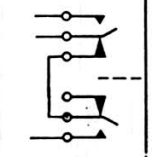
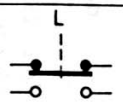
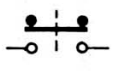
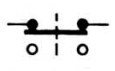
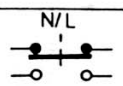
Note the majority of other switch solvents are in this category and cannot safely be used.

The recommended cleaner should be applied sparingly and directed according to the manufacturers instructions.

Electrolube No. 1 may be used for cleaning the edge contacts of Printed Circuit Boards only.

	1	ISSUE	FIRST USED ON	MATL.	TOL. UNLESS OTHERWISE STATED		
					LINEAR ±	ANGULAR	HOLES +.005 −.000
	25-7-72	DATE	DRN. P.F.T.	FINISH	3RD ANGLE PRJ.	DIMS IN	SCALE
		CHANGE NOTE Nº	TRACED				
		CHECKED	CHECKED	TITLE CONTACT CLEANER STANDARD	DRG. Nº EY 10,000		

NM7828

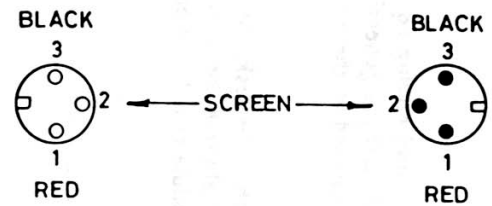
FORM	CONTACTS	ISOSTATS TJ. etc.	LICON BRITIC etc.	RELAY	KEY SWITCH
A	SPST-NO		—		
B	SPST-NC		—		
C	SPDT BREAK BEFORE MAKE		—		
D	SPDT MAKE BEFORE BREAK		—		
K	SPDT-NO	—	—	—	
W	SPDT-NC-NO (DB-DM)	—		—	—
X	SPST-NO (DM)	—		—	—
Y	SPST-NC (DB)	—		—	—
Z	SPDT-NC-NO (DB-DM)	—		—	—

DEFINITIONS OF CONTACT FORMS

EDO 71/29 ISSUE 1 1-4-76

DIN AND XLR MICROPHONE PIN CONNECTIONS ARE NOT COMPATIBLE AND CARE SHOULD BE TAKEN WHEN WIRING MATING CONNECTORS.

WIRE DIN CONNECTORS AS FOLLOWS :-



SOCKET WIREMANS VIEW. PLUG

WIRE XLR'S TO EDO 71/14.

MICROPHONE INPUT CONNECTIONS

EDO 71/30 ISSUE 1 2-9-76

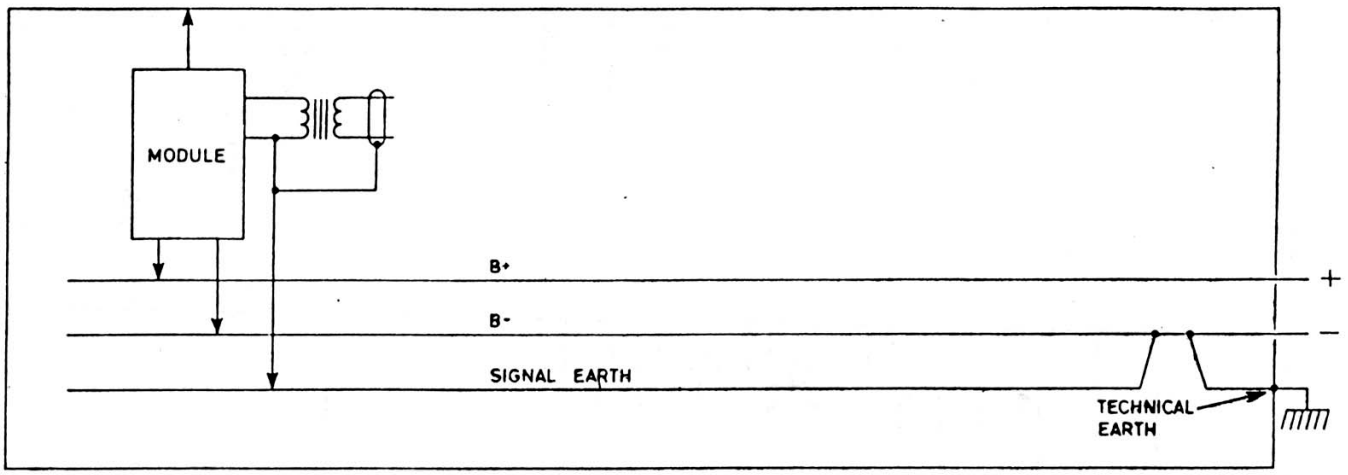
FIRST USED ON	MATL.	TOL. UNLESS OTHERWISE STA	
		LINEAR ±	ANGULAR
DRN.	FINISH	3rd ANGLE PRJ.	DIMS. IN
TRACED			
CHECKED	TITLE ELECTRICAL STANDARDS	DRG. No. EDO 71/29 & 3	

Neve Electronics International Ltd. 1979 ©

TECHNICAL EARTH

The very low hum and noise achieved in all Neve sound mixing equipment can be marred by the use of a poor earthing system. A good earthing system (technical earth) is generally available in professional recording studios and in broadcast installations. The earthing wire provided at the a.c. power input should not be relied upon for the best results.

To avoid the accidental creation of hum loops within the desk, the B— and signal negative rails are separate and are linked together at one point close to the technical earth connection (see diagram). Earthing wires are taken to the connectors of all modules ensuring that the module chassis are earthed on plugging into their positions in the desk.



The desk framework is provided with an earthing connection which should be made to a good technical earth before power is applied to the equipment. Note that the earthing is at one point and that the conductor used should be a heavy duty copper cable or copper braid ensuring the lowest possible resistance.

Earthing at more than one point on the desk, or on ancillary equipment connected to the desk circuits should be avoided, as circulating currents will produce a 'hum loop' giving unacceptably high hum content in the output signal from the desk. Particular care should be taken when remote ancillary equipment such as microphones, echo plates, gramophone turntables or tape machines are used. If a good technical earth is available at the ancillary equipment, this may be used, provided that the earth return via the screens of the audio cables is disconnected.

When a technical earth is not available at a location where ancillary equipment is used, the screens of the audio cables cannot be relied upon to ensure connection to the technical earth at the mixing desk. This is particularly true where tape machines are used. The currents induced by the motors of the tape machine must not be allowed to find earth at the desk via the audio cable screens. Instead, a heavy cable connected directly to the motor casing should be run to the desk and connected as close as possible to the technical earth connection. The earthing between the ancillary equipment and the desk should remain connected at all times.

When the installation of a mixing console has been completed, a final check is made to verify the absence of a hum loop, the effect of which might not immediately be apparent. The test can be carried out by disconnecting the technical earth and connecting an Avometer (switched to ohms), between the technical earth and the earthing point on the chassis. A small resistance will indicate the presence of a second earth connection—possibly due to a mains earth—which should be located and removed.

Independent earthing to the mains earth wire should not be used as a technical earth.