

# TRIDENT SERIES 65 OWNER'S MANUAL

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CONTENTS:

	<u>Page Number</u>
1    INSTALLATION	1
2    GENERAL DESCRIPTION	3
Technical Specifications, System Flow, Rear Panel	
3    INPUT MODULE	
3.1 General Description	4
3.2 Operational Description	6
Module E.C. Connections	11
Component List	12
Flow and Circuit	
4    OUTPUT/MONITOR MODULE	
4.1 General Description	19
4.2 Operational Description	21
Module E.C. Connections	24
Component List	25
Flow and Circuit	
5    AUX MASTER / ECHO RETURN MODULE	
5.1 General Description	31
5.2 Operational Description - Aux Master	31
5.3 Operational Description - Echo Return	32
Module E.C. Connections	33
Component List	34
Flow and Circuit	
6    REMIX MASTER MODULE	
6.1 General Description	42
6.2 Operation Description	43
Module E.C. Connections	46
Component List	47
Flow and Circuit	
7    POWER SUPPLY	
Power Connector Connections	55
Component List	56
Circuit	
8    MISCELLANEOUS	

## TECHNICAL SPECIFICATIONS

### MIC INPUT

Input impedance: 1.2K  $\Omega$  electronically balanced  
 Noise: -125dBu ref 200  $\Omega$  20Hz to 20KHz  
 Gain: 0 to 60dB variable (including pad)  
 (overall system gain 70dB)

### LINE INPUT

Input impedance 10K  $\Omega$  electronically balanced  
 Noise: -84dBu (Eq in, direct output) 20Hz to 20KHz  
 Gain: +10dB (overall system gain 20dB)

### GROUP OUTPUTS, AUXILIARY SENDS, REMIX OUT

Output impedance: 100  $\Omega$  balanced  
 Maximum level: +28dBu balanced, +22dBu unbalanced into loads of  
 5K  $\Omega$  and above. +22dBm balanced +17dBm  
 unbalanced, into 600  $\Omega$

### NOMINAL LEVEL

+4dBu

### OVERALL SYSTEM NOISE

-75dBu one channel routed to one output group,  
 faders set for unity, 20Hz to 20KHz.

### CROSSTALK

With one channel routed to one group and faders set  
 for unity, better than -65dB 20Hz to 15KHz

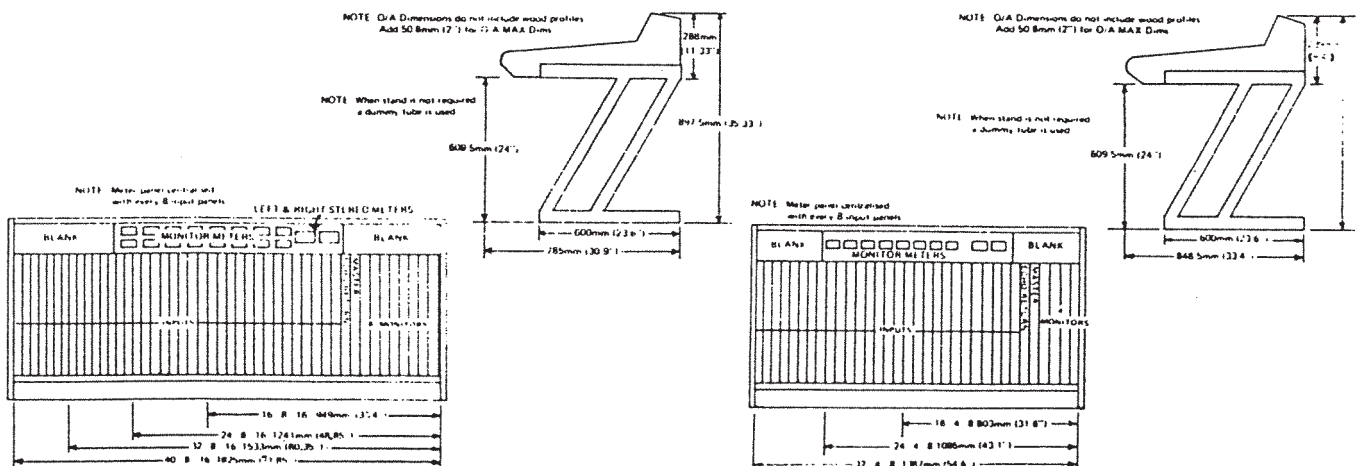
### DISTORTION

(LINE INPUT TO GROUP OUTPUT)

Better than 0.05% T.H.D. 1KHz +20dBu  
 Better than 0.1% T.H.D. 10KHz +20dBu

In accordance with our continuing policy of product improvement, we reserve the right to amend specifications without prior notice.

## CONSOLE LAYOUT/DIMENSIONS



## SECTION 1. INSTALLATION

### 1.1 VOLTAGE ADJUSTMENTS

Each Series 65 console is supplied with a separate, self contained power supply which is designed to operate on either 110 or 240 volt, 50 or 60 Hertz A.C. mains power. In order to select the required operating voltage WHICH SHOULD ALWAYS BE CHECKED PRIOR TO SWITCHING THE UNIT ON, a slide switch is provided on the front panel of the power supply and this should be set for the correct voltage applicable to the country of operation. It is important also to change the fuse rating when changing the operating voltage so that the current rating is correctly matched to the line voltage. As a guide, the fuse rating for 110 volts should be twice that of 240 volts.

### 1.2 SYSTEM INTERFACE

Since the Series 65 console follows today's normal practice of providing low impedance outputs and high impedance bridging inputs, cable runs to and from the console can be of considerable length (up to 1000 metres for example) without significant loss or high frequency response. As all the major inputs and outputs are balanced (electronically), connections to external devices having balanced inputs and outputs will provide considerable rejection of hum etc. It is important, however, as with all sophisticated audio equipment to make sure that all equipment earths are connected together correctly in order to avoid unwanted hum loops.

The best way to achieve this is to make the mixing console the central piece of equipment from an earthing point of view and return all other equipment to a 'technical earth' at the console. In order to do this, the procedure is as follows:

Connect the Series 65 power supply earth to the mains earth but disconnect the mains earth from all other equipment that will be connected to the console.

Re-connect a piece of heavy duty cable (preferably copper) to the chassis of each piece of equipment and connect these to the Series 65 'technical earth' point.

On signal leads to and from equipment connected to the console such as tape recorders, etc., disconnect the earth or screen of the cable at one end so that the input lead to external equipment has an earth at the console end only and the output lead from external equipment has an earth connection at the equipment end only.

By using the above methods all equipment remains safely earthed whilst the possibility of hum and clicks etc. will be greatly reduced.

Figure 1 is a diagram that details the type of connectors used on the rear panel of the Series 65 together with indications as to which are balanced and unbalanced, as well as the correct way to wire the various connectors.

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## SECTION 2. GENERAL DESCRIPTION

Because the Series 65 console offers a great many facilities in a very compact space, the uses to which the console can be put are many and in fact effectively encompass any use that can be imagined for a sound recording console. The most common of these uses include: multi-track recording, sound re-inforcement, broadcast, mobile recording, and theatre sound.

Very often the console can be used for a dual purpose such as providing live sound re-inforcement whilst at the same time being used to make a multi-track recording. In this example the Series 65 can also be used to perform a sophisticated master mix-down after the recording, quite comparable with that obtainable in a major recording studio.

Because of an ingenious mechanical construction, it is possible to expand the input section of the Series 65 by the addition of 8-way expander sections up to a maximum of 40 inputs. When the console is expanded in this manner, there is no visible sign that the console has been increased in size unless it is expanded after its original purchase in which case the front arm rest will need to be lengthened if it is required to remain in one continuous length.

If required, instead of fitting input modules to an 8-way expander section it may be fitted with a 240 point professional 'bantam' patch-bay. This greatly increases the versatility of the system and eliminates the need to reach the back of the console in order to re-patch equipment. This patch-bay is supplied unwired by Trident as it would be impossible to stock patch-bays to cater for the wide variety of input/output configurations available with Series 65.

For portable applications, owing to its compact size the Series 65 will readily adapt to use in a flight case. Because the main inputs and outputs of the console are electronically balanced, ground loops and hum etc. can safely be eliminated when used in a portable application where the console is constantly being connected to different types of equipment. A separate power supply also ensures that stray radiated fields can be avoided in various types of buildings.

Because the Series 65 is a fully modular system, maintenance and fault finding is a very simple affair. Each module employs a high quality glass fibre printed circuit board that has clearly printed component identification. All integrated circuits are mounted in sockets so that replacement is extremely quick and does not require a soldering iron.

### SECTION 3. INPUT MODULE

#### 3.1 GENERAL DESCRIPTION

The Series 65 Input Module is designed to accept the signal from either a low impedance 200 ohm condenser or dynamic microphone and a line level balanced source of up to 10K ohms impedance. To facilitate the use of condenser microphones which require 'phantom powering' a 45 volt supply is made available at the microphone input via two resistors, as is the practice when providing 'phantom' microphone power. Since some types of dynamic microphones distort when phantom power is present, a slide switch is provided on the rear panel for each microphone input. By using condenser microphones that accept 'phantom' power, they can be connected to the console in exactly the same manner as conventional microphones thereby eliminating the need for separate bulky power supplies.

The amplification of the electronically balanced microphone input can be continuously adjusted from 0-60dB making it possible to accommodate the wide variety of signal levels available from all types of dynamic and condenser microphones.

The balanced line input can also be continuously adjusted independently of the microphone input over a 20dB range, providing a maximum of 10dB attenuation or 10dB amplification so as to match the wide range of high level sources available from today's equipment. The centre position of the line level control has a detent so that a 0dB reference point can be easily found.

A pushbutton switch allows instant selection of either the microphone or line inputs and a phase reversal switch operates on both of the input sources.

After the microphone and line signal processing, the signal passes through an 'equaliser' section which can be used to modify the tonal characteristic of the signal by either amplifying or attenuating chosen portions of the frequency spectrum. The Series 65 has a very comprehensive 'equaliser' section consisting of five separate ranges. The lowest range covers bass signals around 100Hz and has a 'shelving' characteristic providing continuously variable boost and cut of up to 15dB. The next range covers low mid (continuously variable from 100Hz to 1.5kHz) which has a 'peaking' characteristic. The third range affects upper mid range frequencies from 1kHz to 15kHz again continuously variable and with a 'peaking' characteristic. Both mid ranges provide 15dB of boost and cut. The fourth band of 'equalisation' is again of the 'shelving' type like the bass section but provides continuously variable boost and cut of 15dB to frequencies in the 12kHz range. Completing the range of control offered is a very useful continuously variable low frequency (high-pass) filter. This makes it possible to eliminate low frequencies such as 'rumble' etc. without having to use the bass control. The frequency range of the filter is from 10Hz to 400Hz



and has a slope rate of 12dB per octave. An illuminated 'equaliser' bypass switch makes it possible to compare the 'equalised' to original signal very easily and without producing an audible click.

After the 'equaliser' section, the signal appears at a pair of sockets marked 'insert send' and 'insert return'. These two unbalanced jack sockets make it possible to connect an external piece of signal processing equipment such as limiter compressor etc. into the signal path before the channel fader.

From the 'insert return' jack, the signal routes through the channel fader and then to a line amplifier which provides a further 5dB of signal amplification. From this point the signal passes through an illuminated channel 'Mute' button and the 'Auto-Mute' circuit. 'Auto-Mute' is an extremely useful function and works in a similar fashion to the normal 'Mute' circuit except that the 'Mute' is only enabled when a master button (situated in the Auxiliary module) is initiated. This makes it possible to pre-program and simultaneously 'Mute' any number of input modules. This can be used most effectively on a mix-down session when, for example, it may be necessary to bring into the mix a group of signals all at one time for a particular effect.

After the 'Auto-Mute' circuitry the signal passes through a stereo pan-pot making it possible to continuously pan the signal anywhere in the stereo spectrum. A centre detent is provided on this control making it very easy to pan a signal to the centre (mono) position.

The signal then routes to the group assignment switches (either four or eight groups depending on the model chosen) and the master stereo output groups (designated 'Remix'). Each assignment pushbutton routes the signal to one odd and one even numbered output group at the same time via the pan-pot. This means that in order to route to an odd numbered group it is necessary for the pan control to be in the extreme left (anti-clockwise) position whilst for an even numbered group the pan pot should be turned fully right (clockwise position).

Because the Series 65 is provided with a separate stereo master output (Remix), independently of the multi-track output groups, setting up for a stereo mix-down is simply accomplished by depressing the Remix buttons on the appropriate input modules and panning the signal to the required points in the stereo image. In the Series 65, the Remix outputs are in fact derived from the same mixing amplifiers as are used to provide the control room monitor mix. This provides a useful additional function when first recording 'live' tracks prior to mixdown since routing to Remix will in fact cause the signal to appear only on the control room monitor speakers if no other assignment button is depressed. This can be very useful if it is desired, for example, to hear an instrument only on monitor without it being recorded. Before feeding the group assignment and remix/monitor busses, the

pan signal routes through an illuminated 'Solo' pushbutton. When this button is depressed, the signal is diverted from its normal path and feeds a stereo solo system which is essentially the same as a 'pre-fade listen' circuit except that it has the added advantage of being stereo. This means that whenever an input is solo'd the signal will be heard in its correct stereo perspective, dependent on the setting of the pan control. Because it does not affect the signal being sent to the main group outputs and only interrupts the monitor signal, the 'Solo' function can be used with equal benefit in either the recording or mixdown modes.

It is possible to route to a maximum of 8 auxiliary sends from each Series 65 input module although only 4 auxiliary send level controls are fitted. This is accomplished by means of two auxiliary send routing pushbuttons located below auxiliary sends 2 and 4. By depressing either of these buttons, auxiliary sends 1 and 2 can become sends 5 and 6, whilst auxiliary sends 3 and 4 can become sends 7 and 8. This provides the operator with a very versatile auxiliary send system, allowing many different types of effects devices to be used in conjunction with the console. Whilst it is true that with this system it is not possible to route to all 8 auxiliary sends simultaneously, the philosophy behind it is that whilst it may be quite likely that a number of different effects devices may be used with the console, it is unlikely that it will be required to route any single input to all of the devices at one time.

Situated between each pair of auxiliary send controls are two pushbuttons which determine whether the auxiliary send signal will be derived either 'pre' or 'post' the module fader. When selected to the 'pre' mode, the auxiliary signal is derived after the equaliser circuitry but before the fader, 'Mute' and Auto-Mute circuits. This, therefore, makes its use ideal as a musicians headphone feed or 'foldback'.

When selected to the 'post' mode, the signal is taken after the fader, 'Mute' and Auto-Mute circuits. The auxiliary sends selected to this mode of operation can ideally be used as an echo send signal since the relationship between the echo ('wet') and main ('dry') signal will always be maintained irrespective of the fader setting. Also, with the majority of echo effects it will be desirable to have the echo signal terminate when the 'Mute' or Auto-Mute functions are used.

Reference to the input module signal flow diagram will help to give a better understanding of the way in which the signal is routed from the microphone or line input to the module output.

### 3.2 OPERATIONAL DESCRIPTION

First of all, make sure that all controls on the console are set to their normal or default positions. That is to say that all rotary controls are set to their minimum positions, (maximum)

anti-clockwise unless they have a centre detent; i.e. pan, line input level, or EQ boost and cut). All pushbuttons should be un-depressed.

Connect the signal from either a balanced microphone or line level device to the appropriate X-L-R or quarter inch (6.5 mm) jack socket located on the rear of the mixer. The wiring of the microphone or line level input must be in accordance with the wiring information given in the Installation Section of this handbook. If an unbalanced line input is connected to the console it is advisable that the negative phase signal connection (ring of the jack) is connected to ground.

Because the input module provides separate microphone and line inputs, it is quite in order to connect both sources to the input module at the same time so that the 'Mic/Line' selector pushbutton (depressed for line) selects either input instantly.

Having, therefore, selected the input source by means of the 'Mic/Line' switch, the next step is to adjust the module amplification to provide a signal of optimum noise and distortion characteristic. In order to do this it will be necessary to have visual indication of the signal level. This is best accomplished by routing the module to a group output and using the appropriate meter for this purpose. Obviously the group output chosen should be the one that will ultimately be the module's final destination. In order to do this, the appropriate group assignment pushbutton (situated next to the module fader) should be depressed and the pan control used to determine which (or both) of the two groups associated with the assignment buttons the signal will route to. The relevant group fader(s) should be set to maximum (the top of their travel) and the 'Tape' pushbutton (situated above the monitor pan control) should be selected to monitor and meter the group, i.e. un-depressed. In order to listen to the signal, the monitor level control on the appropriate group output module should be advanced to approximately halfway and the pan control should be set initially also to its halfway (centre) position. The Control Room Master level potentiometer (situated in the Remix Master module) should also be adjusted for a comfortable monitor level through the control room speakers.

The input module fader should be adjusted to its maximum position (+5) and the appropriate mic or line level control should be adjusted to give a satisfactory level indication on the group output meter. This should be such that extreme peaks give an occasional reading of no more than +2 whilst average signals are around or just below the 0 marking. Many operators prefer to have extra gain available on the fader so that if necessary the signal can be raised during quiet programme passages, etc. In this case the mic or line level control should be advanced clockwise and the fader attenuated until the required operational position is achieved. Care should be taken not to bring the fader too far from the top as this will result in either the

microphone or line amplifier raising the input level to such a degree that it could overload the 'equaliser' circuitry for example, especially when amplification of frequencies predominant in the programme material is necessary. As a general rule, therefore, operation of the channel fader around the -5 position will ensure enough extra gain for most occurrences whilst still maintaining an adequate overload margin.

If 'equalisation' is used, therefore, the appropriate input level control should be attenuated proportionately with any boost introduced. Similarly, if the 'equaliser' is used to attenuate frequencies, the appropriate input level control may have to be advanced to obtain a suitable reading on the meter.

Another method that can be employed to set up initial levels without having to route to a group etc., is to use the 'Solo' facility. By depressing the 'Solo' button on the appropriate input module and advancing the 'Solo' master level control (situated in the Remix Master Module), the module output can be listened to directly on the control room speakers. The signal can be metered via the large Left/Right Remix meters but will be dependent on the level of the 'Solo' master level control. The 'Solo' facility, therefore, has the advantage of being quick to set up but does not give a totally accurate indication of the level being sent to a group. This problem can be overcome by routing to a group in the normal manner and making a note of the meter indication, then routing via the 'Solo' system and adjusting the 'Solo' master level control until a similar reading is indicated on the Left/Right Remix master meters. The solo function will then give an accurate indication of level.

The phase reverse button (situated below the line gain control) works in conjunction with the mic and line inputs and can be used to reverse the signal phase of either input. Phase differences on a mic input can occur when two microphones are in close proximity (for example when recording acoustic guitar) and causes a cancellation of certain frequencies (usually bass) which results in a 'thin' sound. By using the phase switch, this effect can often be minimised to a degree where it is no longer objectionable. In the line mode, phase errors can often occur due to incorrect phase wiring of a piece of equipment connected to the console. Operation of the phase switch under these circumstances will usually solve the problem completely.

The Series 65 equaliser section is extremely comprehensive and to a large degree should be self explanatory. The high frequency (HF) and low frequency (LF) controls are of the 'shelving' type which means that when they reach the required level of amplification (boost) or attenuation (cut) at the appropriate frequency (either 100Hz or 10kHz), they form a plateau or 'shelf' above or below the frequency depending whether boost or cut has been chosen. This provides a very musical response that can be used to great effect on certain instruments. The two swept mid ranges have a 'peaking' characteristic which means that the

signal rises to the desired frequency and then falls back quite sharply afterwards. This makes it possible to pin point the harmonics of various instruments to either accentuate or eliminate them. The final but by no means least important equaliser facility is the swept high pass filter. This makes it possible to roll off frequencies from 10Hz to 400Hz at a rate of 12dB per octave. This is extremely useful for eliminating low frequency rumble or boom from such things as passing vehicles or sub-sonics which can very easily damage speakers. An illuminated bypass switch makes it possible to compare the original to equalised sound instantly.

If it is required to introduce a further signal processing device such as a limiter/compressor or graphic equaliser into the programme chain, this can be accomplished by connecting the input of the device to the jack socket marked 'send' and the output of the device to the jack socket marked 'return' located on the rear of the console. At this point in the signal chain the signal is unbalanced and this means that a balanced signal must be made unbalanced by connecting the minus phase to ground before connection to the console.

If the external device contains level controls, these should be adjusted so that when the device is connected the level through the module is approximately the same as before.

The auxiliary send section can now be utilised to provide either a headphone mix for musicians (foldback) or the feed to an echo or reverberation effects device. To provide foldback, the appropriate auxiliary send(s) should be selected pre-fader by using the 'pre/post' switch located between each pair of auxiliary send level controls. This will then make the signal independent of the module fader and 'Mute' controls so that any changes made by the operator will not affect what the musicians are hearing. A power amplifier capable of driving the required number of headphones should be connected to the appropriate Auxiliary Send X-L-R on the rear panel of the console.

The master auxiliary send level controls located on the Aux/Echo Return module should be advanced fully clockwise and the module auxiliary send level control adjusted until the required level is being sent to the headphones.

To provide an echo send signal, a similar procedure has to be followed except that the appropriate auxiliary send(s) should be selected post fade and the auxiliary send output X-L-R must be connected to the input of the echo device. The echo device output should either be connected to the line input of another input module or any of the four echo return jacks located on the rear panel of the console.

The Series 65 console provides a maximum of eight auxiliary send systems and these can be accessed by using the auxiliary send routing buttons located below each pair of auxiliary send level

controls. The first button is marked '5-6' so that auxiliary sends 1 and 2 can become 5 and 6, whilst the lower button is marked '7-8' so that auxiliary sends 3 and 4 can become 7 and 8. This system provides a great degree of flexibility and is very practical since it is unlikely that any module will require to send to as many as eight different destinations at any one time but it is likely that the console may be used with as many as eight types of echo or effects devices.

The 'Solo' function is a very useful facility as it is a stereo system which means that any channel can be listened to in isolation on the monitor speakers but maintaining its stereo perspective. Since it does not 'Mute' the other modules and only affects the monitoring system, the 'Solo' function can be used whilst recording without affecting the signal being sent to the tape recorder. It can, therefore, be used just as easily during the recording process or final mixdown stage making it a very versatile facility. In order to operate the 'Solo' function it is only necessary to depress the input module 'Solo' button and advance the Master Solo level control (situated in the Remix Master Module) for a comfortable listening level.

The 'Mute' and Auto-Mute functions operate in a similar fashion whereby the 'Mute' pushbutton allows you to 'Mute' any module individually whilst the Auto-Mute function makes it possible to 'Mute' a number of channels simultaneously. This is accomplished by depressing the required input module Auto-Mute pushbuttons and then the master Auto-Mute button located in the Remix Master module. By this method, any number of input modules can be pre-programmed to 'Mute' simultaneously by the depression of one master button.

SERIES 65 INPUT MODULE PIN CONNECTIONS

UPPER HEADER

P1	-	1	MICROPHONE I/P +ve
P1	-	2	MICROPHONE I/P -ve
P1	-	3	OV
P1	-	4	LINE I/P -ve
P1	-	5	LINE I/P +ve
P1	-	6	INSERT SEND
P1	-	7	INSERT RETURN
P1	-	8	DIRECT O/P
P1	-	9	N/C
P1	-	10	N/C

LOWER CONNECTOR

P2	-	1	+18V
P2	-	2	-18V
P2	-	3	OV
P2	-	4	OV
P2	-	5	LED EARTH
P2	-	6	+5V
P2	-	7	AUTO MUTE D.C.
P2	-	8	AUX 1
P2	-	9	" 2
P2	-	10	" 3
P2	-	11	" 4
P2	-	12	" 5
P2	-	13	" 6
P2	-	14	" 7
P2	-	15	" 8
P2	-	16	SOLO D.C.
P2	-	17	SOLO O/P LEFT
P2	-	18	SOLO O/P RIGHT
P2	-	19	REMIX LEFT
P2	-	20	REMIX RIGHT
P2	-	21	GROUP O/P 1
P2	-	22	" " 2
P2	-	23	" " 3
P2	-	24	" " 4
P2	-	25	" " 5
P2	-	26	" " 6
P2	-	27	" " 7
P2	-	28	" " 8

# COMPONENT SCHEDULE

MODULE SERIES 65 INPUT - CB 9349

SHEET 1 OF 7

ISSUE 6

DATE 18/6/86



P.C.B No	DESCRIPTION	PART No
R1	RESISTOR 1/4W 1%	680 Ω
R2	" 1/4W 1%	2K2
R3	" 1/4W 1%	3K3
R4	" 1/4W 1%	2K2
R5	" 1/4W 1%	22 Ω
R6	" 1/4W 1%	4K7
R7	" 1/4W 1%	680 Ω
R8	" 1/4W 1%	3K3
R9	" 1/4W 1%	4K7
R10	" 1/4W 1%	22K
R11	" 1/4W 1%	1K2
R12	" 1/4W 1%	30K
R13	" 1/4W 1%	360 Ω
R14	" 1/4W 1%	5K6
R15	" 1/4W 1%	5K6
R16	" 1/4W 1%	56K
R17	" 1/4W 1%	1K2
R18	" 1/4W 1%	270 Ω
R19	" 1/4W 1%	5K6
R20	" 1/4W 1%	5K6
R21	" 1/4W 1%	56K
R22	" 1/4W 1%	47K
R23	" 1/4W 1%	22K
R24	" 1/4W 1%	150K
R25	" 1/4W 1%	150K
R26	" 1/4W 1%	1K
R27	" 1/4W 1%	150K
R28	" 1/4W 1%	1K
R29	" 1/4W 1%	12K
R30	" 1/4W 1%	150K
R31	" 1/4W 1%	12K
R32	" 1/4W 1%	47K
R33	" 1/4W 1%	12K
R34	" 1/4W 1%	4K7
R35	" 1/4W 1%	6K8
R36	" 1/4W 1%	6K8



# COMPONENT SCHEDULE

MODULE SERIES 65 INPUT - CB 9349

SHEET 2 OF 7

ISSUE 6

DATE 18/6/86



P.C.B No	DESCRIPTION	PART No
R37	RESISTOR 1/4W 1%	2K7
R38	" 1/4W 1%	47K
R39	" 1/4W 1%	47K
R40	" 1/4W 1%	2K4
R41	" 1/4W 1%	2K4
R42	" 1/4W 1%	12K
R43	" 1/4W 1%	12K
R44	" 1/4W 1%	4K7
R45	" 1/4W 1%	6K8
R46	" 1/4W 1%	6K8
R47	" 1/4w 1%	2K7
R48	" 1/4W 1%	12K
R49	" 1/4W 1%	2K4
R50	" 1/4W 1%	2K4
R51	" 1/4W 1%	12K
R52	" 1/4W 1%	12K
R53	" 1/4W 1%	1K
R54	" 1/4W 1%	4K7
R55	" 1/4W 1%	1K
R56	" 1/4W 1%	12K
R57	" 1/4W 1%	12K
R58	" 1/4W 1%	3K
R59	" 1/4W 1%	3K
R60	" 1/4W 1%	100 Ω
R61	" 1/4W 1%	270 Ω
R62	" 1/4W 1%	100K
R63	" 1/4W 1%	100K
R64	" 1/4W 1%	12K
R65	" 1/4W 1%	12K
R66	" 1/4W 1%	12K
R67	" 1/4W 1%	12K
R68	" 1/4W 1%	2K2
R69	" 1/4W 1%	47K
R70	" 1/4W 1%	36K
R71		
R72		

# COMPONENT SCHEDULE

02/20/2019

MODULE SERIES 65 INPUT - CB 3949

SHEET 3 OF 7

ISSUE 6

DATE 18/6/86



P.C.B No	DESCRIPTION	PART No
R73	RESISTOR 1/4W 1%	2K2
R74	" 1/4W 1%	12K
R75	" 1/4W 1%	1K
R76	" 1/4W 1%	1M
R77	" 1/4W 1%	12K
R78	" 1/4W 1%	12K
R79	" 1/4W 1%	12K
R80	" 1/4W 1%	12K
R81	" 1/4W 1%	12K
R82	" 1/4W 1%	12K
R83	" 1/4W 1%	12K
R84	" 1/4W 1%	12K
R85		
R86	" 1/4W 1%	270 Ω
R87	" 1/4W 1%	12K
R88	" 1/4W 1%	12k
R89	" 1/4W 1%	12K
R90	" 1/4W 1%	12K
R91	" 1/4W 1%	12K
R92	" 1/4W 1%	12K
R93	" 1/4W 1%	12K
R94	" 1/4W 1%	12K
R95	"	A.O.T.
R96	"	A.O.T.
R97	" 1/4W 1%	12K
R98	" 1/4W 1%	12K
R99	" 1/4W 1%	12K
R100	" 1/4W 1%	12K
R101		
R102		
R103		
R104		
R105		
R106		
R107		
R108		

# COMPONENT SCHEDULE

MODULE SERIES 65 INPUT - CB 9349

SHEET 4 OF 7

ISSUE 6

DATE 18/6/86



P.C.B No	DESCRIPTION	PART No		
R109				
R110				
R111				
R112				
R113				
R114				
R115				
R116				
R117	RESISTOR 1/4W 1%	47K		
R118	" 1/4W 1%	10K		
R119	" 1/4W 1%	10K		
R120	" 1/4W 1%	270 Ω		
R121	" 1/4W 1%	1K		
R122	" 1/4W 1%	12K		
R123	" 1/4W 1%	270 Ω		
R124	" 1/4W 1%	12K		
C1	CAPACITOR	470μF	10V	RADIAL
C2	"	47μF	50V	RADIAL
C3	"	47μF	50V	RADIAL
C4	"	22μF	25V	RADIAL
C5	"	22μF	25V	RADIAL
C6	"	47μF	25V	RADIAL
C7	"	22μF	25V	RADIAL
C8	"	47μF	50V	RADIAL
C9	"	100μF	25V	RADIAL
C10	"	22μF	25V	RADIAL
C11	"	22μF	25V	RADIAL
C12				
C13	"	10pF		C/D
C14	"	100μF	25V	RADIAL
C15	"	1500pF		
C16	"	1500pF		
C17	"	100μF	25V	RADIAL

# COMPONENT SCHEDULE

MODULE SERIES 65 INPUT - CB 9349

SHEET 5 OF 7

ISSUE 6

DATE 18/6/86



P.C.B No	DESCRIPTION	PART No		
C18	CAPACITOR	100µF	25V	RADIAL
C19	"	33pF		
C20	"	100µF	25V	RADIAL
C21	"	0.015µF		
C22	"	0.015µF		
C23	"	0.1µF		C/D
C24	"	0.1µF		C/D
C25	"	100µF	25V	RADIAL
C26	"	22µF	25V	RADIAL
C27	"	100µF	25V	RADIAL
C28	"	33pF		
C29	"	100µF	25V	RADIAL
C30	"	100µF	25V	RADIAL
C31	"	0.22µF		
C32				
C33	"	22µF	25V	RADIAL
C34	"	100µF	25V	RADIAL
C35	"	0.22µF		
C36	"	100µF	25V	RADIAL
C37	"	100µF	25V	RADIAL
C38				
C39	"	22µF	25V	RADIAL
C40	"	47pF		C/D
C41	"	100µF	25V	RADIAL
C42	NOT ON BOARD			
C43	"	220µF	25V	AXIAL
C44	"	220µF	25V	AXIAL
C45	"	0.1µF		C/D
C46	"	0.1µF		C/D
C47	NOT ON BOARD			
C48	"	0.1µF		C/D
C49	"	0.1µF		C/D
C50	"	0.1µF		C/D
C51	"	0.47µF		S.I.E.
C52	"	560pF		SUFLEX
C53	"	0.1µF		C/D

# COMPONENT SCHEDULE

SHEET:

MODULE	SERIES 65	INPUT - CB 9349
SHEET 6	OF 7	ISSUE 6
		DATE 18/6/86



P.C.B No	DESCRIPTION	PART No		
C54	CAPACITOR	0.1µF		C/D
C55	"	33pF		
C55	" (BENEATH FADER)	470µ	25V	RADIAL
VR1	POTENTIOMETER	10K	ALOG	OMEG
VR2	"	10K	LOG C/D	OMEG
VR3	"	22K	LIN C/D	OMEG
VR4	"	100K	INV LOG	2G OMEG
VR5	"	22K	LIN C/D	OMEG
VR6	"	100K	INV LOG	2G OMEG
VR7	"	22K	LIN C/D	OMEG
VR8	"	22K	LIN C/D	OMEG
VR9	"	100K	LIN/LIN	2G OMEG
VR10	"	22K	LIN	OMEG
VR11	"	22K	LIN	OMEG
VR12	"	22K	LIN	OMEG
VR13	"	22K	LIN	OMEG
VR14	"	10K	- LOG/ALOG	CD 2G OMEG
S1-10	SWITCH	ALPS	SUN	2
S11	"	ALPS	SUN	4
S12-16	"	ALPS	SUN	2



## SECTION 4. OUTPUT/MONITOR MODULE

### 4.1 GENERAL DESCRIPTION

The Series 65 Output/Monitor contains two sections that provide all the necessary mixing and monitoring facilities that are required for use with multi-track tape machines, etc. The lower section contains a group mixing amplifier for the appropriate sub-group and an associated master fader, plus the added facility of a 3-band equaliser with swept mid-range that can be inserted either into the monitor path or group output.

The upper section provides comprehensive facilities to monitor the output from a multi-track recorder and by use of the 'Group Assign' facility can also monitor the send to the tape recorder.

Let us look at the lower section first. After the signal has been restored to normal level by the mixing amplifier, i.e. the same level that was present prior to the group mixing resistors, the signal is connected to a jack socket marked 'Group Insert Send' located on the rear of the meter overbridge panel. This is so that an external signal processing device such as a limiter/compressor or graphic equaliser etc. can be used to affect the entire group of instruments. The output of the device is connected to the 'Group Insert Return' jack socket also located on the rear of the meter overbridge panel. From the 'return' jack the signal is routed through the group fader and then to a line amplifier which provides an extra 5dB of gain. This means that any input routed to a sub-master output will be amplified by this amount thereby increasing the overall amount of gain of the system. From here the signal routes to the appropriate rear panel Group Output X-L-R.

The monitor section of the sub-master module begins with the 'Tape' selector switch which selects to the monitoring circuitry either the line level output of a professional tape recorder or the output of the appropriate group output (in conjunction with the 'Group Assign' switch in the case of the upper section). This makes it instantly possible to monitor either the signal feeding the tape recorder or the signal being played back. This is known to many people as A/B or 'line-in line-out' switching. From this switch a feed is taken for the group output VU meter and then the signal passes through (in the case of the lower monitor section) a 3-band equaliser and then a monitor level control. Since the upper section has no equaliser, the signal goes directly to the monitor level control after feeding the group VU meter and pre-fade auxiliary sends. The signal then passes through a line amplifier which provides an extra 5dB of gain to the monitoring circuitry. After this comes the illuminated monitor 'Mute' switch. By using this switch it is possible to instantly switch in or out of the monitoring system output groups or tape returns if they are not required.

After the 'Mute' switch a feed is taken for the post-fader auxiliary sends and then goes to the monitor pan control. This centre detented potentiometer makes it possible to place the monitor signal anywhere in the stereo perspective. From here the signal passes through the monitor 'Solo' switch which makes it possible to hear any monitor channel in isolation during recording. Because this is a stereo facility it can be very useful for not only checking whether a signal is distorted etc. but also its position in the stereo field. The 'Solo' function purely affects the monitor system so if used during recording will not mute any group outputs. After the 'Solo' switch the signal feeds the stereo monitor/remix groups. Because the monitor/remix groups share the same mixing amplifiers, it is possible to use this to advantage during mixdown whereby the monitor section can become a sub-mixer with up to 16 inputs, 8 of which are provided with 3-band equalisation. This facility increases the versatility of the Series 65 enormously as it can virtually double the amount of inputs available during mixdown.

Up to five auxiliary sends are available from each monitor section, corresponding to sends 1 to 5 from the input modules. Three level controls are provided, auxiliary send 1 is controlled by the top level control and is permanently pre-fade. Auxiliary sends 2 and 3 are controlled by the next two controls which can in turn be routed to become auxiliary sends 4 and 5 and are also selectable pre or post the monitor level control. Because the auxiliary sends are selected after the 'Tape' switch they are particularly useful during recording and overdubbing. Since, for example, when recording a drum track, several microphones will be mixed and equalised there is very little point in creating a headphone mix from each of the appropriate input modules when a composite mix is available from the Sub-Master modules that are being used to send and monitor the feed to a multi-track recorder. It makes sense, therefore, to send the foldback from the output groups, which also has another advantage not possible when sending from the input modules. Because the output group auxiliary sends follow the monitoring mode when overdubbing, there is no need to re-balance the foldback levels once the monitor source switches have been selected to 'Tape' and the recorder to 'sync' playback. The musicians who were previously hearing themselves as they recorded will instantly receive a playback of their recording together with any new track they are about to record as a composite mix. Multi-track recording is, therefore, much simplified and far less time consuming as far as headphone balancing is concerned.

As mentioned earlier, the 'Group Assign' switch makes it possible for either the upper or lower section to monitor the group output and this feature makes the Series 65 an extremely versatile multi-track mixing console. When recording, for example, with a 16-track recorder, the first 8 tracks would be recorded in the normal manner using the lower monitor section and associated group output faders. When it is required to record on groups 9-16, all that is necessary is to depress the appropriate 'Group



Assign' switch. This immediately routes the group output to another X-L-R (for example in the case of group 1 it would become group 9, group 2 would become group 10, etc., up to 16). This signal is then metered and monitored by the appropriate upper section of monitor. The group has, therefore, to all intents and purposes become the 'Assigned' group and by this method no cross plugging or paralleling of connections is necessary when recording on multi-track recorders.

Reference to the Output/Monitor module system flow diagram will help to give a greater understanding of the facilities available.

#### 4.2 OPERATIONAL DESCRIPTION

First of all make sure that all rotary controls are at their default positions, i.e. all level controls at minimum and centre detent controls such as pan and EQ level are at the centre of their travel. All push buttons should be un-depressed.

Assuming that an input module has been routed to an output group via the input module routing buttons (located next to the fader) and pan-pot, pushing the appropriate group master fader to the top of its travel will cause the associated group output V.U. meter to indicate in accordance with the level. When the desired level has been set (this should ideally be when the signal level peaks travel just into the red sector of the scale), the fader can then be set at this position. If however in order to achieve the required output level the group fader has to be set to a position lower than -10 on the fader scale, the input module faders should be attenuated equally until the group fader can be set nearer the top. All input modules routed to the same output group will now be controlled simultaneously by the group master fader. To monitor the programme on control room speakers in stereo, adjust the monitor pan control so that signal will appear out of the required speaker and advance the monitor level control until the desired amount of monitor signal from that particular instrument (or group of instruments) is obtained.

If after advancing the monitor level control no signal is heard, check that the master monitor level control situated in the Remix Master Module is advanced fully clockwise as this controls the overall control room monitor level. Adjustments of any of the monitor level controls will have no effect whatsoever on the signal feeding the tape recorder, etc.

To send a headphone feed via the auxiliary send systems, the appropriate send should be selected to the 'pre-fade' position and the aux level control advanced until the required balance is achieved in the musicians headphones.

For echo the same procedure is followed except that the 'pre/post' switch is selected to the 'post' position.

The 'Solo' function can be used at any time during recording

since its operation is purely a monitor function that does not affect the group output signal. When the 'Solo' button is depressed it is essential to make sure that the Master Solo level control (situated in the Remix Master module) is adjusted for a comfortable monitoring level.

The lower section 3-band equaliser can be brought into operation by depressing the 'EQ IN' pushbutton located below the equaliser section. When this switch has been activated, a yellow L.E.D. indicates that the equaliser circuitry is in operation. When using equalisation it is important (as with the input module equaliser) to make sure that if a significant amount is used, the monitor level is adjusted accordingly to correct for any possible overload that may be caused by its use. In its normal mode of operation, the equalisation is purely a monitor function and will not affect the signal feeding the tape recorder. However, at the top of the equaliser section is a pushbutton marked 'EQ TO GROUP' which, when depressed, will insert the equaliser into the group output so that it can be recorded. Again, when this pushbutton is used it is important to make sure that the group level via the VU meter is adjusted to allow for any overload that could occur owing to its use.

When a track (or number of tracks) have been recorded, it is a simple matter to listen to a playback by simply selecting the recorder to playback and depressing the appropriate Output/Monitor module 'Tape' pushbutton. In this mode the module no longer monitors the master group output but is connected to the output of the tape recorder instead. Because each monitor section has its own 'Tape' switch, each track can be selected individually to monitor either the tape machine send or return. Overdubbing, therefore, is a simple matter of selecting the previously recorded tracks to 'Tape' (and the recorder to 'sync') and the tracks to be recorded are left in the group monitor mode ('Tape' switch un-depressed).

Once the first four tracks (or eight tracks - depending on whether the four or eight track version of Series 65 is being used) have been recorded using the lower monitor section, it will be necessary to use the upper monitor section in order to record and monitor either tracks 5 to 8 or 9 to 16. This is accomplished very easily by depressing the 'GROUP ASSIGN' pushbutton situated below the upper section 'MUTE' switch. When the 'GROUP ASSIGN' pushbutton is depressed, the output of the lower section group fader is re-routed to the appropriate upper section output, i.e. group fader 1 becomes group fader 5 in the 4-track version or group fader 9 in the 16-track version. At the same time, the signal is routed to an X-L-R of the appropriate designation and the signal is metered on a corresponding VU meter. It then follows that use of the 'Tape' switch in the upper section will allow the operator to switch between the console output and the tape machine replay in exactly the same manner as was previously possible with the lower monitor section. If a 'Tape' pushbutton is selected to monitor a group output in a

monitor section that does not have a group assigned to it, the operator will hear nothing as there will be no signal present.

In order to insert an effects device such as a limiter/compressor or outboard equaliser in the output group of the console, the 'Group Insert Send' and 'Group Insert Return' jacks located on the rear of the meter panel may be used in exactly the same manner as the Input Module Insert send and return jacks. These jackpoints operate before the master group faders so that the 'Limit/compression' ratio is unaffected by alteration of the fader.

Because the Series 65 shares the monitor and remix busses, it is possible to utilise the entire monitor section as additional line inputs during the remix process. This is accomplished by means of the 'MIX' button located in the Remix/Master module and as a consequence will be described more fully in the Remix/Master section of this handbook.

SERIES 65 MONITOR MODULE

UPPER E/C

P1	-	1	METER (UPPER)	
	-	2	EARTH	
	-	3	TAPE RETURN (LOWER)	+ve
	-	4	" " "	-ve
	-	5	" " (UPPER)	+ve
	-	6	" " "	-ve
	-	7	METER (LOWER)	
	-	8	GROUP OUTPUT (UPPER)	+ve
	-	9	" " "	-ve
	-	10	" " (LOWER)	+ve
	-	11	" " "	-ve
	-	12	GROUP INSERT SEND	
	-	13	" " RETURN	

LOWER E/C

P2	-	1	+18V	
	-	2	-18V	
	-	3	ELECTRONIC EARTH	
	-	4	" "	
	-	5	LED AND CASE EARTH	
	-	6	+5V	
	-	7	AUTO MUTE D.C.	
	-	8	AUX 1	
	-	9	" 2	
	-	10	" 3	
	-	11	" 4	
	-	12	" 5	
	-	13	N/C	
	-	14	N/C	
	-	15	N/C	
	-	16	SOLO D.C.	
	-	17	" LEFT	
	-	18	" RIGHT	
	-	19	REMIX LEFT	
	-	20	" RIGHT	
	-	21	GROUP ASSIGNMENT 1	
	-	22	" " 2	
	-	23	" " 3	
	-	24	" " 4	
	-	25	" " 5	
	-	26	" " 6	
	-	27	" " 7	
	-	28	" " 8	

## COMPONENT SCHEDULE

<b>MODULE</b>	SERIES 65 MONITOR - CB 9351		
<b>SHEET</b>	1 OF	6	<b>ISSUE</b> 5
		<b>DATE</b>	18/6/86



P.C.B No	DESCRIPTION	PART No
R1	RESISTOR 1/4W 1%	7K5
R2	" 1/4W 1%	7K5
R3	" 1/4W 1%	16K
R4	" 1/4W 1%	16K
R5	" 1/4W 1%	7K5
R6	" 1/4W 1%	7K5
R7	" 1/4W 1%	16K
R8	" 1/4W 1%	16K
R9	" 1/4W 1%	7K5
R10	" 1/4W 1%	16K
R11	" 1/4W 1%	7K5
R12	" 1/4W 1%	16K
R13	" 1/4W 1%	47K
R14	" 1/4W 1%	47K
R15	" 1/4W 1%	7K5
R16	" 1/4W 1%	16K
R17	" 1/4W 1%	7K5
R18	" 1/4W 1%	270Ω
R19	" 1/4W 1%	16K
R20	" 1/4W 1%	100K
R21	" 1/4W 1%	10K
R22	" 1/4W 1%	7K5
R23	" 1/4W 1%	47K
R24	" 1/4W 1%	270Ω
R25	" 1/4W 1%	1K
R26	" 1/4W 1%	12K
R27	" 1/4W 1%	1K
R28	" 1/4W 1%	150K
R29	" 1/4W 1%	12K
R30	" 1/4W 1%	150K
R31	" 1/4W 1%	12K
R32	" 1/4W 1%	4K7
R33		
R34	" 1/4W 1%	2K7
R35	" 1/4W 1%	10K

# COMPONENT SCHEDULE

MODULE SERIES 65 MONITOR - CB 9351  
 SHEET 2 OF 6 ISSUE 5 DATE 18/6/86



P.C.B No	DESCRIPTION	PART No
R36	RESISTOR 1/4W 1%	10K
R37	" 1/4W 1%	2K4
R38	" 1/4W 1%	2K4
R39	" 1/4W 1%	12K
R40	" 1/4W 1%	12K
R41	" 1/4W 1%	1K
R42	" 1/4W 1%	4K7
R43	" 1/4W 1%	12K
R44	" 1/4W 1%	1K
R45		
R46	" 1/4W 1%	100Ω
R47	" 1/4W 1%	36K
R48	" 1/4W 1%	18K
R49	" 1/4W 1%	270Ω
R50	" 1/4W 1%	36K
R51	" 1/4W 1%	36K
R52	" 1/4W 1%	18K
R53	" 1/4W 1%	100Ω
R54	" 1/4W 1%	18K
R55	" 1/4W 1%	36K
R56	" 1/4W 1%	18K
R57	" 1/4W 1%	47K
R58	" 1/4W 1%	47K
R59		A.O.T.
R60		A.O.T.
R61	" 1/4W 1%	12K
R62	" 1/4W 1%	12K
R63	" 1/4W 1%	12K
R64	" 1/4W 1%	12K
R65	" 1/4W 1%	12K
R66	" 1/4W 1%	12K
R67	" 1/4W 1%	12K
R68	" 1/4W 1%	12K
R69	" 1/4W 1%	12K
R70	" 1/4W 1%	12K

# COMPONENT SCHEDULE

MODULE SERIES 65 MONITOR - CB 9351

SHEET 3 OF 6

ISSUE 5

DATE 18/6/86



P.C.B No	DESCRIPTION	PART No
R71		
R72	RESISTOR 1/4W 1%	12K
R73	" 1/4W 1%	12K
R74	" 1/4W 1%	12K
R75	" 1/4W 1%	12K
R76	" 1/4W 1%	12K
R77	" 1/4W 1%	12K
R78	" 1/4W 1%	12K
R79	" 1/4W 1%	12K
R80	" 1/4W 1%	270Ω
R81	" 1/4W 1%	100Ω
R82	" 1/4W 1%	100K
R83	" 1/4W 1%	10K
R84	" 1/4W 1%	7K5
R85	" 1/4W 1%	270Ω
R86	" 1/4W 1%	47K
R87	" 1/4W 1%	47K
R88	" 1/4W 1%	12K
R89	" 1/4W 1%	4K7
R90	" 1/4W 1%	4K7
R91		LINK
R92	" 1/4W 1%	3K6
R93	" 1/4W 1%	3K6
R94	" 1/4W 1%	12K
R95	" 1/4W 1%	12K
R96	" 1/4W 1%	47K
R97	" 1/4W 1%	47K
R98	" 1/4W 1%	47K
R99	" 1/4W 1%	47K
R100	" 1/4W 1%	12K
R101	" 1/4W 1%	12K
C1	CAPACITOR	22μF 25V
C2	"	22μF 25V
C3		
C4	"	100μF 25V RADIAL

## COMPONENT SCHEDULE

MODULE SERIES 65 - MONITOR - CB 9351

SHEET 4 OF 6

ISSUE 5

DATE 18/6/86



P.C.B No	DESCRIPTION	PART No		
C5	CAPACITOR	22 $\mu$ F	25V	RADIAL
C6	"	22 $\mu$ F	25V	RADIAL
C7	"	100 $\mu$ F	25V	RADIAL
C8	"	100 $\mu$ F	25V	RADIAL
C9				
C10	"	100 $\mu$ F	25V	RADIAL
C11	"			
C12	"	22 $\mu$ F	25V	RADIAL
C13	"	22 $\mu$ F	25V	RADIAL
C14				
C15	"	100 $\mu$ F	25V	RADIAL
C16	"	22 $\mu$ F	25V	RADIAL
C17				
C18	"	100 $\mu$ F	25V	RADIAL
C19	"	100 $\mu$ F	25V	RADIAL
C20				
C21	"	10pF		C/D
C22	"	560pF		SUF
C23	"	2200pF		MYLAR
C24	"	100 $\mu$ F	25V	RADIAL
C25	"	100 $\mu$ F	25V	RADIAL
C26	"	0.47 $\mu$ F		
C27	"	2200pF		MYLAR
C28	"	33pF		C/D
C29	"	100 $\mu$ F	25V	RADIAL
C30	"	100 $\mu$ F	25V	RADIAL
C31	"	100 $\mu$ F	25V	RADIAL
C32	"	100 $\mu$ F	25V	RADIAL
C33				
C34	"	33pF		C/D
C35	"	22 $\mu$ F	25V	RADIAL
C36	"	22 $\mu$ F	25V	RADIAL
C37	"	33pF		C/D
C38	"	22 $\mu$ F	25V	RADIAL
C39	"	22 $\mu$ F	25V	RADIAL
C40				



# COMPONENT SCHEDULE

MODULE SERIES 65 MONITOR - CB 9351

SHEET 5	OF	6	ISSUE 5	DATE 18/6/86
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P.C.B No	DESCRIPTION	PART No		
C41	CAPACITOR	100µF	25V	RADIAL
C42	"	0.1µF		C/D
C43	"	470µF	10V	RADIAL
C44	"	47µF	25V	RADIAL
C45	"	47µF	25V	RADIAL
C46				
C47	"	33pF		C/D
C48	"	100pF		C/D
C49	"	0.1µF		C/D
C50	"	100µF	25V	RADIAL
C51	"	470µF	25V	AXIAL
C52	"	470µF	25V	AXIAL
S1 - 3	SWITCH	SUN	2	
S4	"	SUN	4	
S5	"	SUN	2	
S6	"	SUN	4	
S7	"	SUN	4	
S8 - 13	"	SUN	2	
	LED SQUARE	TLSY	5301	YELLOW
	LED SQUARE	TLSR	5301	RED
D1 - 2	DIODE	IN	4148	
	I-C	TL	071	
	FADER ALPS	10K	LOG	MONO



## SECTION 5. AUX MASTER / ECHO RETURN MODULE

### 5.1 GENERAL DESCRIPTION

This module contains two separate sections, the master controls for the eight auxiliary sends and four individual echo return channels.

The upper section of the module contains the mixing amplifiers and balanced group output amplifiers that constitute the eight auxiliary sends. The front panel controls consist of eight auxiliary master level controls each of which have an associated 'Solo' pushbutton. The master level controls make it possible to control the overall signal level being sent to an auxiliary device such as a headphone amplifier or reverberation generator. The 'Solo' pushbutton makes it possible to monitor in isolation the output of any of the auxiliary sends (or combination) in order to check that either the balance or signal quality is correct. As with all the other 'Solo' functions on the console, it operates in conjunction with the 'Solo Master' level control situated in the Remix/Master module.

Each of the four echo return channels are identical and consist of an echo return level control, pan, mute, solo and 'To Aux' routing. This latter function makes it possible to utilise the echo return channel to provide the musicians with echo that appears only on the headphone mix. Without this button depressed, the signal normally feeds the stereo remix groups so that the echo returns can be used during the mixdown process. Because the monitor and stereo remix busses are shared in the Series 65, the output of the echo return channels appear on monitor only whilst the console is being used for multi-track recording. This is a great advantage of the shared monitor/remix buss concept as it is often required during initial recording to listen to programme with echo but without it being recorded, whilst during mixdown it is of course essential to record the echo signals.

Access to the four echo return channels is via jack sockets located at the rear of the meter overbridge. In keeping with all other line level inputs on the Series 65 console, these inputs are electronically balanced.

Reference to the Aux/Echo Return module system flow diagram will help to give a better understanding of the way in which the auxiliary master sends and echo return channels function.

### 5.2 OPERATIONAL DESCRIPTION - AUXILIARY MASTER SECTION

According to which Auxiliary send system is being used, the master level controls should be set to approximately three-quarters of their maximum travel so that the best headroom and signal to noise ratio is maintained.

The individual sends (from either an input or output module) should then be advanced until the required amount of level is achieved at the device to which it is being sent.

The 'Solo' switch associated with each Auxiliary master level control can be used to monitor the output of the particular Auxiliary send on the control room speakers in isolation. It is important when using this facility to make sure that the 'Solo' master level control situated in the Remix/Master module is set for a comfortable listening level.

### 5.3 OPERATIONAL DESCRIPTION - ECHO RETURN SECTION

In order to operate the Echo Return section of this module it will be necessary to connect either a balanced or unbalanced line level signal to the input of the appropriate section via the rear panel jack socket. By advancing the echo return level control, the signal will be heard either on the monitor speakers only or via the remix buss depending on the position of the 'Mix' button situated in the Remix Master module. Adjustment of the 'Pan' control will place the signal in the correct stereo perspective.

The 'Solo' pushbutton operates in exactly the same manner as for the Input or Monitor modules and can be used to monitor the echo return signal in isolation, in conjunction with the 'Solo' master level control situated in the Remix Master module.

The 'To Aux' pushbutton disconnects the echo return signal from the remix buss and instead routes the signal to the appropriate Auxiliary busses so that echo can then be heard in stereo in the musicians headphones.

The mute pushbutton as with the Input and Monitor modules, will completely attenuate the echo return signal.

SERIES 65 ECHO RETURN PIN CONNECTIONS

P1	-	1	AUX 1 OUTPUT	+ve
	-	2	" "	-ve
	-	3	AUX 2 OUTPUT	+ve
	-	4	" "	-ve
	-	5	AUX 3 OUTPUT	+ve
	-	6	" "	-ve
	-	7	AUX 4 OUTPUT	+ve
	-	8	" "	-ve
P2	-	1	AUX 5 OUTPUT	+ve
	-	2	" "	-ve
	-	3	AUX 6 OUTPUT	+ve
	-	4	" "	-ve
	-	5	) - EARTH	
	-	6	)	
	-	7	) - N/C	
	-	8	)	
P3	-	1	AUX 7 OUTPUT	+ve
	-	2	" "	-ve
	-	3	AUX 8 OUTPUT	+ve
	-	4	" "	-ve
P4	-	1	ECHO RETURN 1 INPUT	-ve
	-	2	" " "	+ve
	-	3	ECHO RETURN 2 INPUT	-ve
	-	4	" " "	+ve
	-	5	ECHO RETURN 3 INPUT	-ve
	-	6	" " "	+ve
	-	7	ECHO RETURN 4 INPUT	-ve
	-	8	" " "	+ve
P5	-	1	+18V	
	-	2	-18V	
	-	3	)	
	-	4	) - 0V	
	-	5	LED EARTH	
	-	6	+5V	
	-	7		
	-	8	AUX 1	
	-	9	AUX 2	
	-	10	AUX 3	
	-	11	AUX 4	
	-	12	AUX 5	
	-	13	AUX 6	
	-	14	AUX 7	
	-	15	AUX 8	
	-	16	SOLO D.C.	
	-	17	" OUTPUT LEFT	
	-	18	" OUTPUT RIGHT	
	-	19		

# COMPONENT SCHEDULE

MODULE      SERIES 65 ECHO RETURN

SHEET 1    OF      8

ISSUE    5

DATE 18/6/86



P.C.B No	DESCRIPTION	PART No
R1	RESISTOR    1/4W 1%	100Ω
R2	"                1/4W 1%	36K
R3	"                1/4W 1%	18K
R4	"                1/4W 1%	18K
R5	"                1/4W 1%	18K
R6	"                1/4W 1%	36K
R7	"                1/4W 1%	18K
R8	"                1/4W 1%	36K
R9	"                1/4W 1%	100Ω
R10	"                1/4W 1%	100Ω
R11	"                1/4W 1%	36K
R12	"                1/4W 1%	12K
R13	"                1/4W 1%	270Ω
R14	"                1/4W 1%	36K
R15	"                1/4W 1%	120Ω
R16	"                1/4W 1%	36K
R17	"                1/4W 1%	18K
R18	"                1/4W 1%	18K
R19	"                1/4W 1%	18K
R20	"                1/4W 1%	36K
R21	"                1/4W 1%	18K
R22	"                1/4W 1%	120Ω
R23	"                1/4W 1%	12K
R24	"                1/4W 1%	100Ω
R25	"                1/4W 1%	36K
R26	"                1/4W 1%	270Ω
R27	"                1/4W 1%	36K
R28	"                1/4W 1%	120Ω
R29	"                1/4W 1%	36K
R30	"                1/4W 1%	18K
R31	"                1/4W 1%	18K
R32	"                1/4W 1%	18K
R33	"                1/4W 1%	36K
R34	"                1/4W 1%	18K
R35	"                1/4W 1%	120Ω
R36	"                1/4W 1%	100Ω

## COMPONENT SCHEDULE

MODULE SERIES 65 ECHO RETURN

SHEET 2 OF 8

ISSUE 5

DATE 18/6/86



P.C.B No	DESCRIPTION	PART No
R37	RESISTOR 1/4W 1%	12K
R38	" 1/4W 1%	36K
R39	" 1/4W 1%	270Ω
R40	" 1/4W 1%	36K
R41	" 1/4W 1%	120Ω
R42	" 1/4W 1%	36K
R43	" 1/4W 1%	18K
R44	" 1/4W 1%	18K
R45	" 1/4W 1%	18K
R46	" 1/4W 1%	36K
R47	" 1/4W 1%	18K
R48	" 1/4W 1%	120Ω
R49	" 1/4W 1%	12K
R50	" 1/4W 1%	100Ω
R51	" 1/4W 1%	36K
R52	" 1/4W 1%	270Ω
R53	" 1/4W 1%	120Ω
R54	" 1/4W 1%	36K
R55	" 1/4W 1%	36K
R56	" 1/4W 1%	18K
R57	" 1/4W 1%	18K
R58	" 1/4W 1%	18K
R59	" 1/4W 1%	36K
R60	" 1/4W 1%	18K
R61	" 1/4W 1%	120Ω
R62	" 1/4W 1%	12K
R63	" 1/4W 1%	100Ω
R64	" 1/4W 1%	36K
R65	" 1/4W 1%	270Ω
R66	" 1/4W 1%	120Ω
R67	" 1/4W 1%	36K
R68	" 1/4W 1%	36K
R69	" 1/4W 1%	18K
R70	" 1/4W 1%	18K
R71	" 1/4W 1%	18K
R72	" 1/4W 1%	36K

# COMPONENT SCHEDULE

**MODULE** SERIES 65 ECHO RETURN  
**SHEET** 3 **OF** 8      **ISSUE** 5      **DATE** 18/6/86



P.C.B No	DESCRIPTION	PART No
R73	RESISTOR 1/4W 1%	18K
R74	" 1/4W 1%	120Ω
R75	" 1/4W 1%	12K
R76	" 1/4W 1%	100Ω
R77	" 1/4W 1%	36K
R78	" 1/4W 1%	270Ω
R79	" 1/4W 1%	120Ω
R80	" 1/4W 1%	36K
R81	" 1/4W 1%	36K
R82	" 1/4W 1%	18K
R83	" 1/4W 1%	18K
R84	" 1/4W 1%	18K
R85	" 1/4W 1%	36K
R86	" 1/4W 1%	18K
R87	" 1/4W 1%	120Ω
R88	" 1/4W 1%	12K
R89	" 1/4W 1%	100Ω
R90	" 1/4W 1%	36K
R91	" 1/4W 1%	270Ω
R92	" 1/4W 1%	120Ω
R93	" 1/4W 1%	36K
R94	" 1/4W 1%	36K
R95	" 1/4W 1%	18K
R96	" 1/4W 1%	18K
R97	" 1/4W 1%	18K
R98	" 1/4W 1%	36K
R99	" 1/4W 1%	18K
R100	" 1/4W 1%	120Ω
R101	" 1/4W 1%	12K
R102	" 1/4W 1%	100Ω
R103	" 1/4W 1%	270Ω
R104	" 1/4W 1%	12K
R105	" 1/4W 1%	12K
R106	" 1/4W 1%	12K
R107	" 1/4W 1%	3K9
R108	" 1/4W 1%	3K



# COMPONENT SCHEDULE

MODULE SERIES 65 ECHO RETURN

SHEET 4 OF 8 ISSUE 5 DATE 18/6/86



PC.B No	DESCRIPTION	PART No
R109	RESISTOR 1/4W 1%	12K
R110	" 1/4W 1%	47K
R111	" 1/4W 1%	12K
R112	" 1/4W 1%	12K
R113	" 1/4W 1%	12K
R114	" 1/4W 1%	270Ω
R115	" 1/4W 1%	12K
R116	" 1/4W 1%	12K
R117	" 1/4W 1%	12K
R118	" 1/4W 1%	100K
R119	" 1/4W 1%	100K
R120	" 1/4W 1%	100K
R121	" 1/4W 1%	270Ω
R122	" 1/4W 1%	12K
R123	" 1/4W 1%	12K
R124	" 1/4W 1%	12K
R125	" 1/4W 1%	3K9
R126	" 1/4W 1%	3K
R127	" 1/4W 1%	47K
R128	" 1/4W 1%	12K
R129	" 1/4W 1%	12K
R130	" 1/4W 1%	12K
R131	" 1/4W 1%	12K
R132	" 1/4W 1%	270Ω
R133	" 1/4W 1%	12K
R134	" 1/4W 1%	12K
R135	" 1/4W 1%	12K
R136	" 1/4W 1%	100K
R137	" 1/4W 1%	100K
R138	" 1/4W 1%	100K
R139	" 1/4W 1%	270Ω
R140	" 1/4W 1%	12K
R141	" 1/4W 1%	12K
R142	" 1/4W 1%	12K
R143	" 1/4W 1%	12K
R144	" 1/4W 1%	3K9

## COMPONENT SCHEDULE

MODULE	SERIES 65 ECHO RETURN		
SHEET 5 OF 8	ISSUE 5	DATE	18/6/86



P.C.B No	DESCRIPTION	PART No
R145	RESISTOR 1/4W 1%	3K
R146	" 1/4W 1%	47K
R147	" 1/4W 1%	12K
R148	" 1/4W 1%	12K
R149	" 1/4W 1%	12K
R150	" 1/4W 1%	270Ω
R151	" 1/4W 1%	12K
R152	" 1/4W 1%	12K
R153	" 1/4W 1%	12K
R154	" 1/4W 1%	100K
R155	" 1/4W 1%	100K
R156	" 1/4W 1%	270Ω
R157	" 1/4W 1%	100K
R158	" 1/4W 1%	12K
R159	" 1/4W 1%	12K
R160	" 1/4W 1%	12K
R161	" 1/4W 1%	12K
R162	" 1/4W 1%	3K9
R163	" 1/4W 1%	3K
R164	" 1/4W 1%	47K
R165	" 1/4W 1%	12K
R166	" 1/4W 1%	12K
R167	" 1/4W 1%	12K
R168	" 1/4W 1%	270Ω
R169	" 1/4W 1%	12K
R170	" 1/4W 1%	12K
R171	" 1/4W 1%	12K
R172	" 1/4W 1%	100K
R173	" 1/4W 1%	100K
R174	" 1/4W 1%	270Ω
R175	" 1/4W 1%	100K
R176	" 1/4W 1%	12K
R177	" 1/4W 1%	12K
R178	" 1/4W 1%	12K
R179	" 1/4W 1%	36K

# COMPONENT SCHEDULE

MODULE SERIES 65 ECHO RETURN

SHEET 6 OF 8

ISSUE 5

DATE 18/6/86



P.C.B No	DESCRIPTION	PART No	
C1	CAPACITOR	68pF	C/D
C2	"	68pF	C/D
C3	"	22μF 25V	RADIAL
C4	"	22μF 25V	RADIAL
C5	"	22μF 25V	RADIAL
C6	"	100μF 25V	RADIAL
C7	"	22μF 25V	RADIAL
C8	"	22μF 25V	RADIAL
C9	"	68pF	C/D
C10	"	68pF	C/D
C11	"	22μF 25V	RADIAL
C12	"	22μF 25V	RADIAL
C13	"	100μF 25V	RADIAL
C14	"	22μF 25V	RADIAL
C15	"	22μF 25V	RADIAL
C16	"	68pF	C/D
C17	"	68pF	C/D
C18	"	22μF 25V	RADIAL
C19	"	22μF 25V	RADIAL
C20	"	100μF 25V	RADIAL
C21	"	22μF 25V	RADIAL
C22	"	22μF 25V	RADIAL
C23	"	68pF	C/D
C24	"	68pF	C/D
C25	"	22μF 25V	RADIAL
C26	"	22μF 25V	RADIAL
C27	"	100μF 25V	RADIAL
C28	"	22μF 25V	RADIAL
C29	"	22μF 25V	RADIAL
C30	"	68pF	C/D
C31	"	68pF	C/D
C32	"	22μF 25V	RADIAL
C33	"	22μF 25V	RADIAL
C34	"	100μF 25V	RADIAL
C35	"	22μF 25V	RADIAL
C36	"	22μF 25V	RADIAL

## COMPONENT SCHEDULE

MODULE    SERIES 65 ECHO RETURN  
 SHEET 7 OF 8    ISSUE 5    DATE 18/6/86



P.C.B No	DESCRIPTION	PART No		
C39	CAPACITOR	22 $\mu$ F	25V	RADIAL
C40	"	22 $\mu$ F	25V	RADIAL
C41	"	100 $\mu$ F	25V	RADIAL
C42	"	22 $\mu$ F	25V	RADIAL
C43	"	22 $\mu$ F	25V	RADIAL
C44	"	68pF		C/D
R45	"	68pF		C/D
R46	"	22 $\mu$ F	25V	RADIAL
C47	"	22 $\mu$ F	25V	RADIAL
C48	"	100 $\mu$ F	25V	RADIAL
C49	"	22 $\mu$ F	25V	RADIAL
C50	"	22 $\mu$ F	25V	RADIAL
C51	"	68pF		C/D
C52	"	68pF		C/D
C53	"	22 $\mu$ F	25V	RADIAL
C54	"	22 $\mu$ F	25V	RADIAL
C55	"	100 $\mu$ F	25V	RADIAL
C56	"	22 $\mu$ F	25V	RADIAL
C57	"	100 $\mu$ F	25V	RADIAL
C58	"	100 $\mu$ F	25V	RADIAL
C59	"	22 $\mu$ F	25V	RADIAL
C60	"	22 $\mu$ F	25V	RADIAL
C61	"	22 $\mu$ F	25V	RADIAL
C62	"	22 $\mu$ F	25V	RADIAL
C63	"	100 $\mu$ F	25V	RADIAL
C64	"	100 $\mu$ F	25V	RADIAL
C65	"	22 $\mu$ F	25V	RADIAL
C66				
C67	"	22 $\mu$ F	25V	RADIAL
C68	"	22 $\mu$ F	25V	RADIAL
C69	"	100 $\mu$ F	25V	RADIAL
C70	"	100 $\mu$ F	25V	RADIAL
C71	"	22 $\mu$ F	25V	RADIAL
C72				
C73	"	22 $\mu$ F	25V	RADIAL
C74	"	22 $\mu$ F	25V	RADIAL

# COMPONENT SCHEDULE

MODULE SERIES 65 ECHO RETURN  
 SHEET 8 OF 8 ISSUE 5 DATE 18/6/86



PC.B No	DESCRIPTION	PART No		
C75	CAPACITOR	100μF	25V	RADIAL
C76	"	100μF	25V	RADIAL
C77	"	22μF	25V	RADIAL
C78				
C79	"	22μF	25V	RADIAL
C80	"	22μF	25V	RADIAL
C81	"	470μF	25V	RADIAL
C82	"	22μF	25V	RADIAL
C83	"	22μF	25V	RADIAL
	LED SQUARE	TLSY	5301	YELLOW
	LED SQUARE	TLSR	5301	RED
	SWITCH	FO2UEE		
	SWITCH	FO4UEE		
VR1 - VR8	POTENTIOMETER	10K	LOG	
VR9,11,13,15	"	10K	LOG/ALOG	C/D
VR10,12,14,16	"	10K	LOG	
	I-C	TL071		

## SECTION 6. REMIX MASTER MODULE

### 6.1 GENERAL DESCRIPTION

This module contains seven separate sections which each have a different function. These individual functions are described as follows, starting from the bottom of the module.

### 6.2 REMIX MASTER FADER

This is an accurately matched stereo fader which acts as the overall level control for the stereo remix buss.

### 6.3 TALKBACK SYSTEM

This consists of a highly sensitive omni-directional microphone and level control plus three non-latching pushbuttons which route the microphone output to either the studio (via the studio playback speakers), the main output groups (this is referred to as 'Slate') and the eight Auxiliary outputs so that communication with the musicians (if wearing headphones) can be maintained. When any of these pushbuttons are activated, the control room monitor level is automatically attenuated by 20dB in order to avoid feedback but still maintain audible continuity.

### 6.4 AUTO MUTE MASTER

This is the master pushbutton for the Auto-Mute system which is fully described in the Input module section.

### 6.5 CONTROL ROOM MONITOR SYSTEM

This consists of an accurately matched twin gang potentiometer to adjust the overall level of the control room monitor signal and seven associated pushbuttons. These pushbuttons have the following functions: 'Mute' kills the control room monitor signal; 'Dim' attenuates the control room signal by 20dB; 'Mono' reduces the control room signal from stereo to mono; 2TK1 to 3, these pushbuttons in conjunction with the 'Mix' switch make it possible to monitor and meter the output from any one of three stereo tape recorders; 'Mix' switches the monitor mode of the console to either multi-track or stereo mix. This latter control is of fundamental importance to the operation of the console and therefore merits a more detailed explanation. Because the console utilises the same busses for both monitor and remix it is necessary to select the particular mode of operation via the 'Mix' pushbutton. In the un-depressed mode, the monitor signal is taken directly after the stereo remix amplifier and so bypasses the remix master fader and 2TK 1 to 3 selection switches. In this mode of operation the monitor system is,

therefore, best suited to monitor the inputs and outputs of a multi-track recorder via the Output/Monitor modules. The stereo remix buss is still, however, fully operational but is not monitored via the control room speaker system. When the 'Mix' button is depressed, the control room signal is then taken after the remix master fader and 2TK 1 to 3 pushbuttons making it possible to monitor and meter the outputs of any of the chosen two track recorders. A clear understanding of the system can be gained by reference to the Remix/Master Module section of the overall system flow diagram at the beginning of this handbook.

#### 6.6 STUDIO PLAYBACK SYSTEM

This consists of an accurately matched two gang level control and associated Mute switch. The Studio Playback system provides an independent unbalanced stereo feed to the musicians in the studio via two separate X-L-R sockets on the rear of the mixer. The Studio Playback signal is exactly the same as that heard in the control room except that it will be interrupted when the 'Talkback' system is used. The 'Talkback' signal is then routed through the Studio Playback speakers and the Studio Playback level control will have no effect on the 'Talkback' signal.

#### 6.7 SOLO MASTER

This two track level control is used for adjusting the level of the stereo 'Solo' system so that when a signal is heard in isolation the level can be adjusted to a comfortable level on the control room monitor speakers.

#### 6.8 OSCILLATOR SECTION

This consists of a level control and four associated pushbuttons. Two of these buttons make it possible to select any one of three frequencies, 50, 700 or 12000 Hz for calibration purposes. An 'ON' button is provided to enable the oscillator, and a 'Slate' pushbutton routes the output of the oscillator across the main output groups for recorder alignment purposes.

#### 6.9 OPERATIONAL DESCRIPTION

Since this module contains seven independent sections they will be described operationally on an individual basis starting from the bottom of the module.

#### 6.10 REMIX MASTER FADER

This should be operated in the same manner as any of the group master faders and should be set as near to the top as possible in order to maintain the best possible signal-to-noise ratio versus

headroom performance. Since this fader will often be used to slowly fade a mix it is obviously ideally desirable to operate with the fader at maximum so it can always be returned to the original setting. If this is not always possible, the fader should be aligned with one of the calibrated front panel markings as a reference point.

#### 6.11 TALKBACK SYSTEM

The appropriate Talkback destination should be selected via either of the three talkback pushbuttons and the level control adjusted until the desired talkback level is achieved.

#### 6.12 AUTO-MUTE MASTER

This pushbutton should be depressed in conjunction with the Input Module Auto-Mute pushbuttons to enable the Auto-Mute system.

#### 6.13 CONTROL ROOM MONITOR SYSTEM

First, it should be decided whether the operator wishes to monitor the multi-track outputs of the console or the stereo mixdown buss. In order to do this, the 'Mix' pushbutton should be undepressed for multi-track mode or depressed to monitor the remix buss. The control room master level control should then be advanced for the required level through the control room speakers. The Mute, Dim, Mono and 2TK 1 to 3 pushbuttons can then be used according to the operators requirements.

#### 6.14 STUDIO PLAYBACK SYSTEM

If Studio Playback is not required, it is always good practice to keep the system muted in order to avoid any possibility of accidental breakthrough of signal into the studio. To operate the Studio Playback system, the level control should be advanced so that the musicians can hear the signal in the studio at a comfortable level. Whilst the Talkback system utilises the Studio Playback speakers, it is completely independent of both the Studio Playback level control and Mute.

#### 6.15 SOLO MASTER

This level control should be advanced so that whenever a Solo pushbutton is depressed, the signal is heard at a comfortable level on the control room speakers.



## 6.16 OSCILLATOR SECTION

The desired frequency should first of all be selected via the two middle pushbuttons and the oscillator 'ON' button should then be depressed. The output of the oscillator appears on an unbalanced jack on the rear connector panel of the console and the level control should be advanced until a suitable level appears at this output. If it is desired to route the oscillator to the main output groups for the purpose of, for example, aligning a multi-track recorder, the 'Slate' pushbutton should be depressed. The output of the oscillator will, however, still appear at the oscillator jack on the rear panel of the console.

SERIES 65 MASTER MODULE

P1	-	1	OSCILLATOR OUTPUT	P2	-	1	+18V
	-	2	REMIX METER FEED LEFT		-	2	-18V
	-	3	" " " RIGHT		-	3	)
	-	4	MONITOR SEND LEFT		-	4	) ELECTRONIC EARTH
	-	5	" " RIGHT		-	5	) L.E.D. EARTH
	-	6	2TK1 L		-	6	+5V
	-	7	2TK1 R		-	7	AUTO MUTE D.C.BUSS
	-	8	2TK2 L		-	8	
	-	9	2TK2 R		-	9	
	-	10	2TK3 L		-	10	
	-	11	2TK3 R		-	11	
	-	12	STUDIO PLAY LEFT		-	12	
	-	13	" " RIGHT		-	13	
	-	14	REMIX OUTPUT LEFT -ve		-	14	
	-	15	" " " +ve		-	15	
	-	16	REMIX OUTPUT RIGHT -ve		-	16	SOLO D.C.
	-	17	" " " +ve		-	17	" MIX BUS LEFT
	-	18	REMIX INSERT RETURN LEFT		-	18	" " " RIGHT
	-	19	" " " RIGHT		-	19	REMIX BUS LEFT
	-	20	REMIX INSERT SEND LEFT		-	20	
	-	21	" " " RIGHT		-	21	REMIX BUS RIGHT
	-	22			-	22	

# COMPONENT SCHEDULE

<b>MODULE</b>	SERIES 65 MASTER		
<b>SHEET 1</b>	<b>OF</b>	8	<b>ISSUE</b>
			4
			<b>DATE</b>
			18/6/86



P.C.B No	DESCRIPTION	PART No
R1	RESISTOR 1/4W 1%	12K
R2	" 1/4W 1%	12K
R3	" 1/4W 1%	12K
R4	" 1/4W 1%	12K
R5	" 1/4W 1%	560K
R6	" 1/4W 1%	2K2
R7	" 1/4W 1%	47K
R8	" 1/4W 1%	12K
R9	" 1/4W 1%	12K
R10	" 1/4W 1%	12K
R11	" 1/4W 1%	12K
R12	" 1/4W 1%	3K6
R13	T.C.W.	LINK
R14		
R15	" 1/4W 1%	100K
R16	" 1/4W 1%	1K5
R17	" 1/4W 1%	1M
R18	" 1/4W 1%	620K
R19	" 1/4W 1%	47K
R20	" 1/4W 1%	620K
R21	" 1/4W 1%	47K
R22	" 1/4W 1%	2K7
R23	" 1/4W 1%	2K7
R24	" 1/4W 1%	3K6
R25	T.C.W.	LINK
R26		
R27	" 1/4W 1%	100K
R28	" 1/4W 1%	100K
R29	" 1/4W 1%	10Ω
R30	" 1/4W 1%	10Ω
R31	" 1/4W 1%	33K
R32	" 1/4W 1%	33K
R33	" 1/4W 1%	100Ω
R34	" 1/4W 1%	100Ω
R35		

# COMPONENT SCHEDULE

MODULE SERIES 65 MASTER

SHEET 2 OF 8

ISSUE 4

DATE 18/6/86



P.C.B No	DESCRIPTION	PART No
R36		
R37		
R38		
R39		
R40		
R41		
R42		
R43	RESISTOR 1/4W 1%	12K
R44	" 1/4W 1%	12K
R45	" 1/4W 1%	18K
R46	" 1/4W 1%	18K
R47	" 1/4W 1%	100Ω
R48	" 1/4W 1%	100Ω
R49	" 1/4W 1%	2K7
R50	" 1/4W 1%	1K6
R51	" 1/4W 1%	2K7
R52	" 1/4W 1%	100K
R53	" 1/4W 1%	2K
R54	" 1/4W 1%	100K
R55	" 1/4W 1%	100K
R56	" 1/4W 1%	100K
R57	" 1/4W 1%	100K
R58	" 1/4W 1%	100K
R59	" 1/4W 1%	100K
R60	" 1/4W 1%	270Ω
R61	" 1/4W 1%	1K6
R62	" 1/4W 1%	2K
R63	" 1/4W 1%	100K
R64	" 1/4W 1%	12K
R65	" 1/4W 1%	12K
R66	" 1/4W 1%	12K
R67	" 1/4W 1%	12K
R68	" 1/4W 1%	12K
R69	" 1/4W 1%	12K
R70	" 1/4W 1%	12K
R71	" 1/4W 1%	12K

# COMPONENT SCHEDULE

MODULE SERIES 65 MASTER

SHEET 3 OF 8

ISSUE 4

DATE 18/6/86



P.C.B No	DESCRIPTION	PART No
R72	RESISTOR 1/4W 1%	18K
R73	" 1/4W 1%	2K7
R74	" 1/4W 1%	18K
R75	" 1/4W 1%	2K7
R76	" 1/4W 1%	12K
R77	" 1/4W 1%	12K
R78	" 1/4W 1%	12K
R79	" 1/4W 1%	12K
R80	" 1/4W 1%	120Ω
R81	" 1/4W 1%	36K
R82	" 1/4W 1%	18K
R83	" 1/4W 1%	120Ω
R84	" 1/4W 1%	36K
R85	" 1/4W 1%	18K
R86	" 1/4W 1%	36K
R87	" 1/4W 1%	36K
R88	" 1/4W 1%	36K
R89	" 1/4W 1%	36K
R90	" 1/4W 1%	18K
R91	" 1/4W 1%	120Ω
R92	" 1/4W 1%	18K
R93	" 1/4W 1%	120Ω
R94	" 1/4W 1%	36K
R95	" 1/4W 1%	18K
R96	" 1/4W 1%	18K
R97	" 1/4W 1%	36K
R98	" 1/4W 1%	18K
R99	" 1/4W 1%	18K
R100	" 1/4W 1%	12K
R101	" 1/4W 1%	12K
R102	" 1/4W 1%	12K
R103	" 1/4W 1%	12K
R104	" 1/4W 1%	12K
R105	" 1/4W 1%	12K
R106	" 1/4W 1%	12K
R107	" 1/4W 1%	12K

# COMPONENT SCHEDULE

MODULE SERIES 65 MASTER

SHEET 4 OF 8

ISSUE 4

DATE 18/6/86



PC.B No	DESCRIPTION	PART No
R108	RESISTOR 1/4W 1%	12K
R109	" 1/4W 1%	12K
R110	" 1/4W 1%	12K
R111	" 1/4W 1%	12K
R112	" 1/4W 1%	12K
R113	" 1/4W 1%	12K
R114	" 1/4W 1%	12K
R115	" 1/4W 1%	12K
R116	" 1/4W 1%	12K
R117	" 1/4W 1%	12K
R118	" 1/4W 1%	12K
R119	" 1/4W 1%	12K
R120	RESISTOR 1/4W 1%	12K
R121	" 1/4W 1%	12K
R122	" 1/4W 1%	100K
R123	" 1/4W 1%	12K
R124	" 1/4W 1%	4K7
R125	" 1/4W 1%	4K7
R126	T.C.W.	LINK
R127	" 1/4W 1%	100K
R128	" 1/4W 1%	10Ω
R129	" 1/4W 1%	12K
R130	" 1/4W 1%	4K7
R131	" 1/4W 1%	4K7
R132	T.C.W.	LINK
R133	" 1/4W 1%	10Ω
R134	" 1/4W 1%	100K
R135	" 1/4W 1%	100K
R136	" 1/4W 1%	12K
R137	" 1/4W 1%	12K
R138	" 1/4W 1%	12K
R139	" 1/4W 1%	20K
R140	" 1/4W 1%	20K
R141	" 1/4W 1%	20K
R142	" 1/4W 1%	20K
R143	" 1/4W 1%	12K



## COMPONENT SCHEDULE

MODULE      SERIES 65 MASTER

SHEET 6 OF 8

ISSUE 4

DATE 18/6/86



P.C.B No	DESCRIPTION	PART No		
C1	CAPACITOR	100µF	25V	RADIAL
C2	"	33pF		C/D
C3	"	100µF	25V	RADIAL
C4	"	22µF	25V	RADIAL
C5	"	22µF	25V	RADIAL
C6	"	33pF		C/D
C7	"	68pF		C/D
C8	"	100µF	25V	RADIAL
C9	"	100µF	25V	RADIAL
C10	"	22µF	25V	RADIAL
C11	"	22µF	25V	RADIAL
C12	"	100µF	25V	RADIAL
C13	"	33pF		C/D
C14	"	22µF	25V	RADIAL
C15	"	22µF	25V	RADIAL
C16	"	100µF	25V	RADIAL
C17	"	33pF		C/D
C18	"	22µF	25V	RADIAL
C19	"	100µF	25V	RADIAL
C20	"	100µF	25V	RADIAL
C21	"	100µF	25V	RADIAL
C22				
C23	"	22µF	25V	RADIAL
C24				
C25	"	22µF	25V	RADIAL
C26				
C27	"	RESISTOR 10K		
C28				
C29	"	22µF	25V	RADIAL
C30	"	22µF	25V	RADIAL
C31				
C32				
C33				
C34	"	100µF	25V	RADIAL
C35	"	33pF		C/D
C36	"	22µF	25V	RADIAL



# COMPONENT SCHEDULE

MODULE	SERIES 65 MASTER		
SHEET 7 OF 8	ISSUE 4	DATE 18/6/86	



P.C.B No	DESCRIPTION	PART No		
C37	CAPACITOR	100μF	25V	RADIAL
C38	"	33pF		C/D
C39	"	22μF	25V	RADIAL
C40	"	100μF	25V	RADIAL
C41	"	100μF	25V	RADIAL
C42	"	33pF		C/D
C43	T.C.W.	LINK		
C44	CAPACITOR	33pF		C/D
C45	T.C.W.	LINK		
C46	T.C.W.	LINK		
C47	T.C.W.	LINK		
C48	CAPACITOR	33pF		C/D
C49	"	33pF		C/D
C50	"	100μF	25V	RADIAL
C51	"	100μF	25V	RADIAL
C52	"	100μF	25V	RADIAL
C53	"	100μF	25V	RADIAL
C54	"	33pF		C/D
C55	"	33pF		C/D
C56	"	100μF	25V	RADIAL
C57				
C58	"	33pF		C/D
C59	"	100pF		SUFLEX
C60	"	0.1		C/D
C61	"	100μF	25V	RADIAL
C62	"	100μF	25V	RADIAL
C63	"	100μF	25V	RADIAL
C64	"	100μF	25V	RADIAL
C65	"			

## COMPONENT SCHEDULE

**MODULE** SERIES 65 MASTER

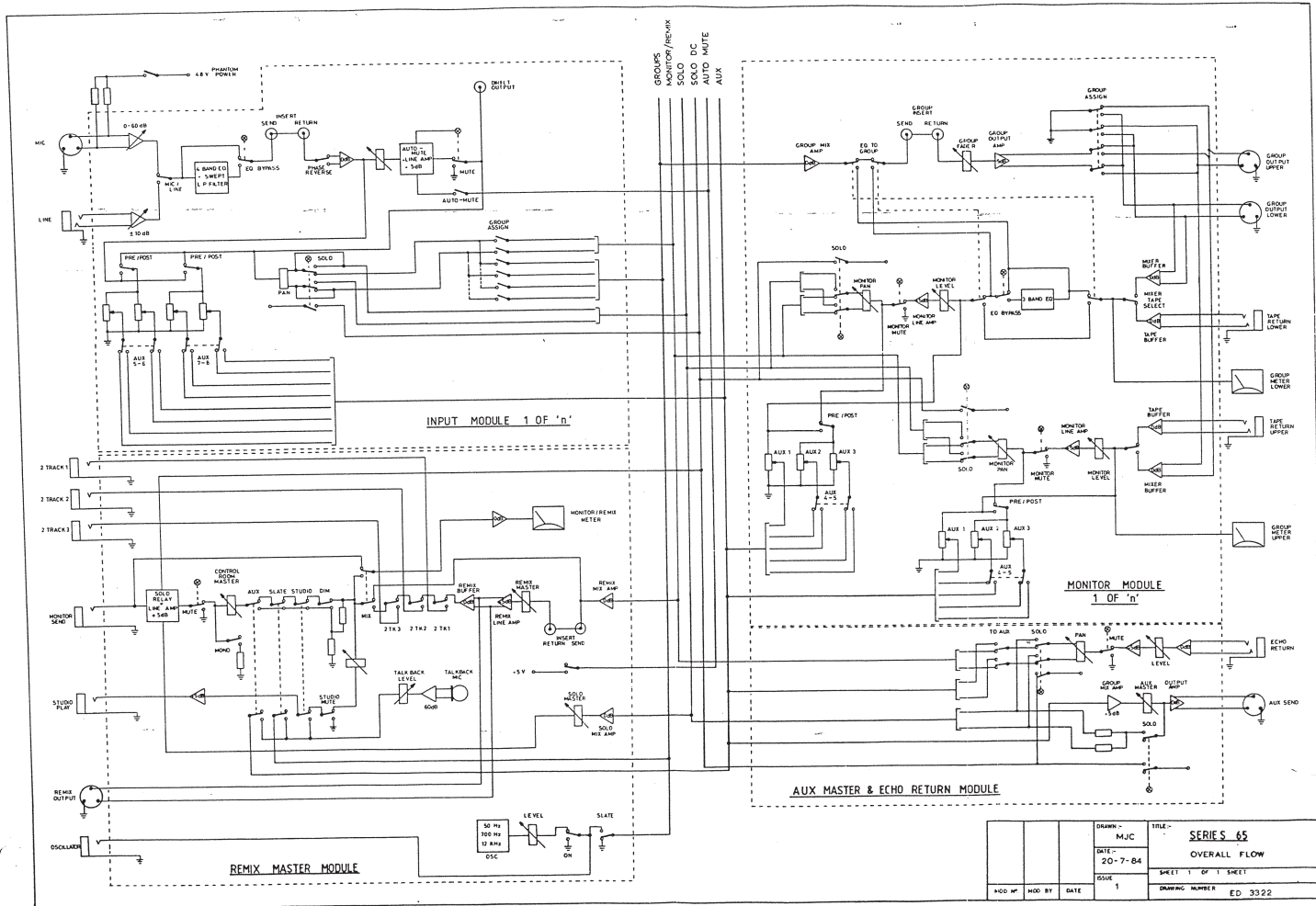
**SHEET** 8 OF 8

**ISSUE** 4

**DATE** 18/6/86

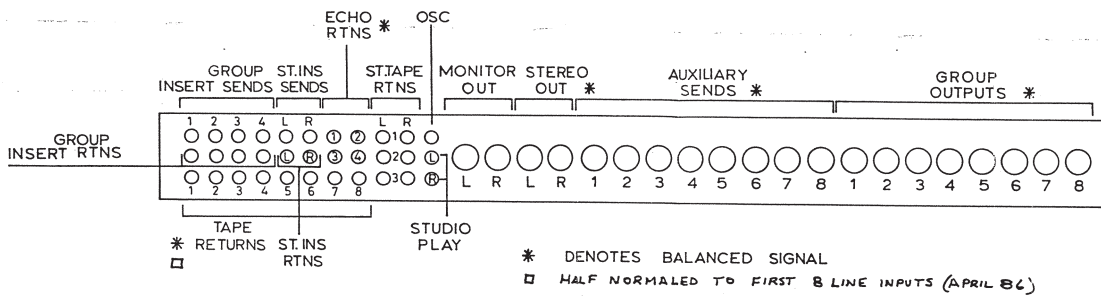


P.C.B No	DESCRIPTION	PART No		
C66	CAPACITOR	0.1		C/D
C67	"	33pF		C/D
C68	"	100pF		SUFLEX
C69	"	100 $\mu$ F	25V	RADIAL
C70	"	470 $\mu$ F	25V	AXIAL
C71	"	470 $\mu$ F	25V	AXIAL
C72	"	4N7	10mm	S.I.E.
C73	"	4N7	10mm	S.I.E.
S1 - 2	SWITCH	ALPS SUN	2	
S3 & 5	"	ALPS SUN	4	
S4	"	ALPS SUN	2	
S6 - 11	"	ALPS SUN	2	
S12	"	ALPS SUN	4	
S13	"	FU2EE		
S14 - 16	"	FU4EE		
	I - C	TL 071		
	LED SQUARE	TLSR	5301	RED
	T.C.W.	LINK		
	THERMISTOR RS			
	FADER ALPS	STEREO		
VR1 & 5	POTENTIOMETER	10K	LOG	
VR2 - 4	"	10K	LOG/LOG	PREH
ZD1-ZD2	T.C.W.	LINK		

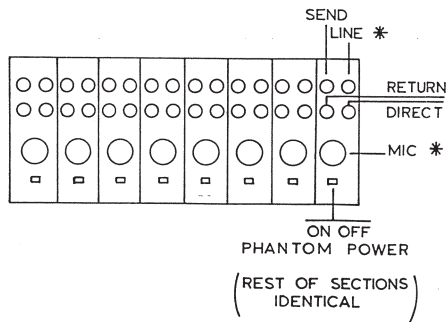


NO. 1	NO. 2	DATE	20-7-84	DRAWN -	MJC	TITLE -	SERIES 65
NO. 3	NO. 4	DATE		DRAWN -		TITLE -	OVERALL FLOW
NO. 5	NO. 6	DATE		DRAWN -		TITLE -	SHEET 1 OF 1 SHEET
NO. 7	NO. 8	DATE		DRAWN -		TITLE -	DRAWING NUMBER ED 3322

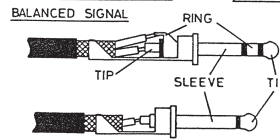
METER OVERBRIDGE REAR PANEL



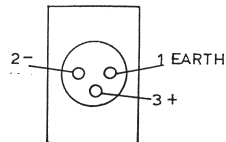
8 WAY INPUT PANEL



1/4" JACK WIRING



CONNECTOR WIRING



CONNECTOR VIEWED FROM FRONT FACE.

BALANCED JACK PLUG : RING NEGATIVE PHASE, TIP POSITIVE, SLEEVE EARTH.  
 UNBALANCED JACK PLUG : TIP POSITIVE PHASE, SLEEVE EARTH.

X-L-R CONNECTORS : PIN 1 EARTH, PIN 2 NEGATIVE PHASE, PIN 3 POSITIVE PHASE.

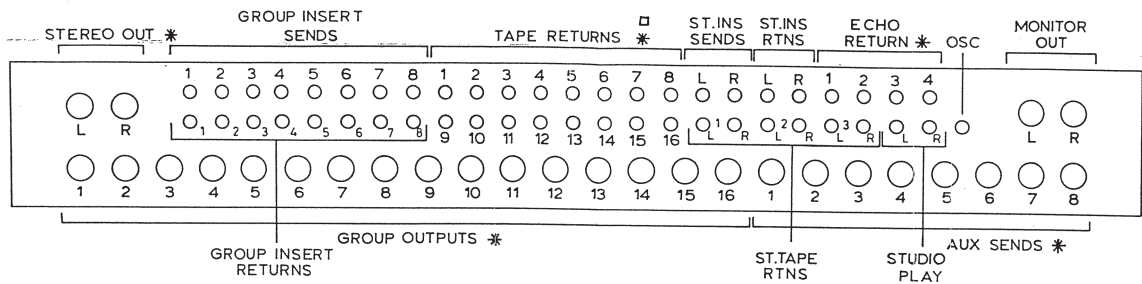
BALANCED SIGNAL



MONO SIGNAL

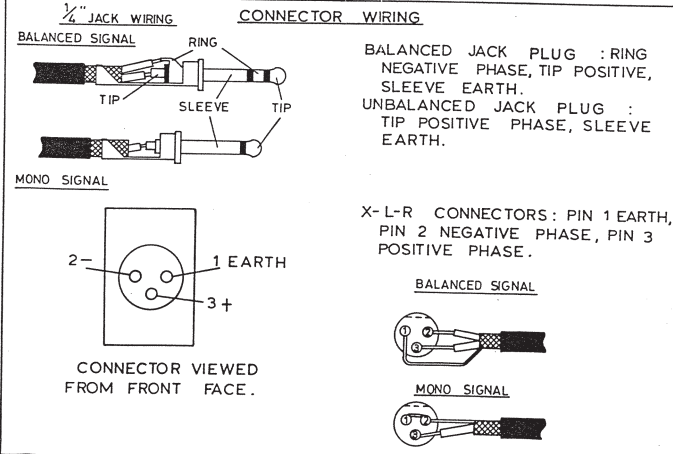
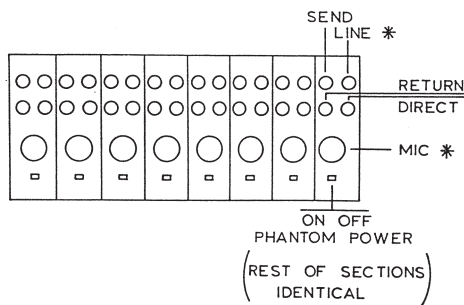


METER OVERBRIDGE REAR PANEL

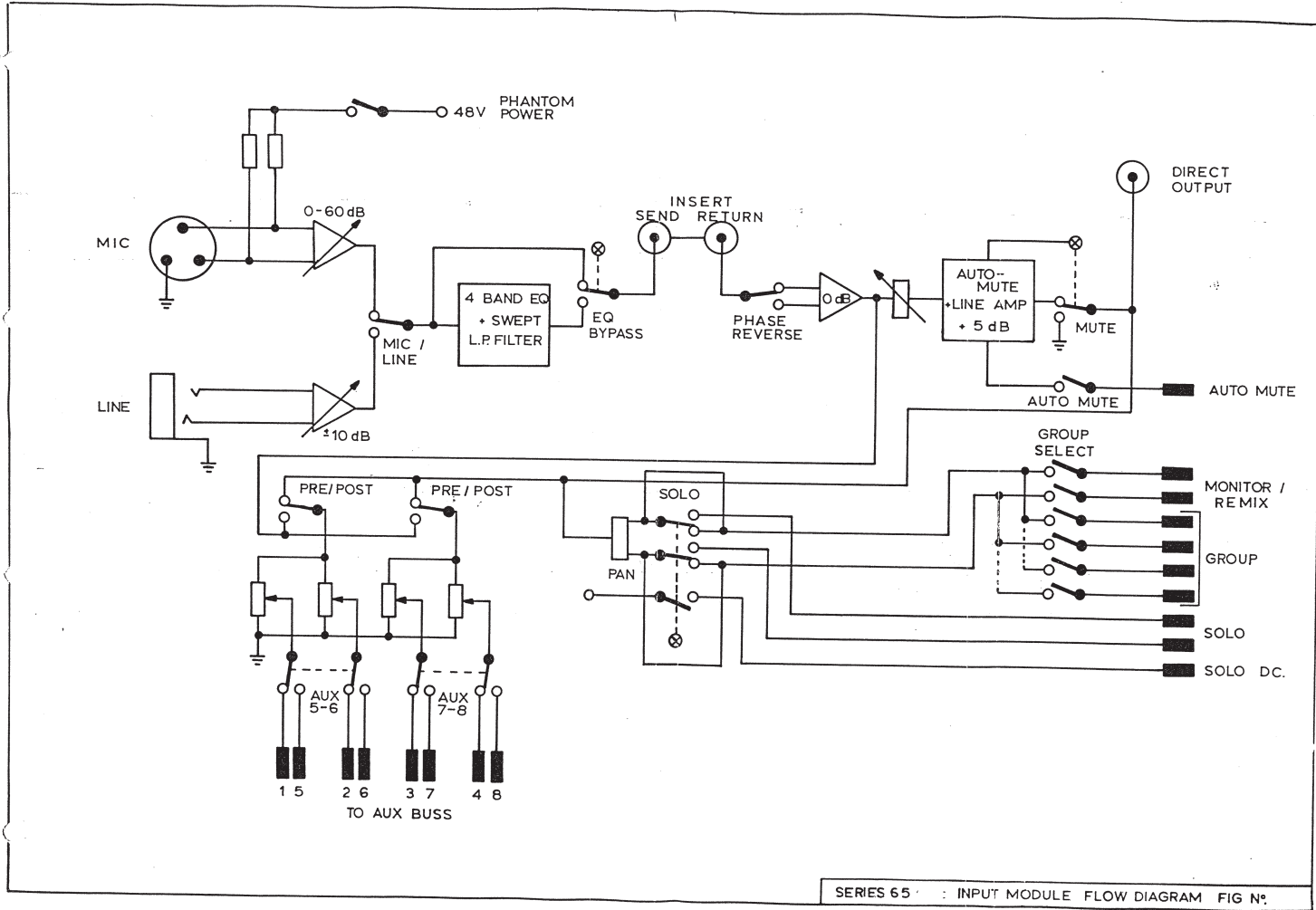


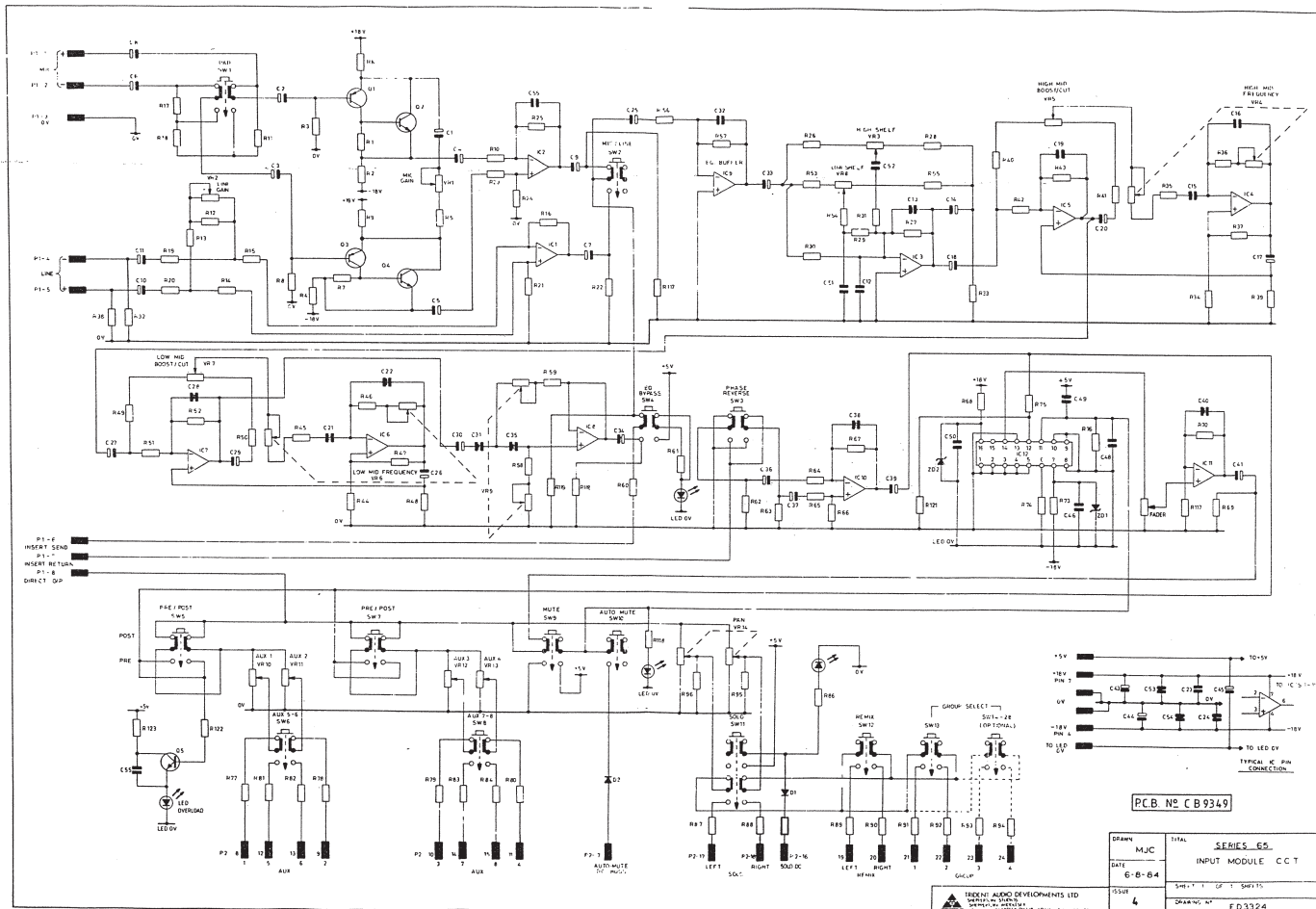
\* DENOTES BALANCED SIGNAL ◻ HALF NORMALIZED TO FIRST 16 LINE INPUTS (APR/66)

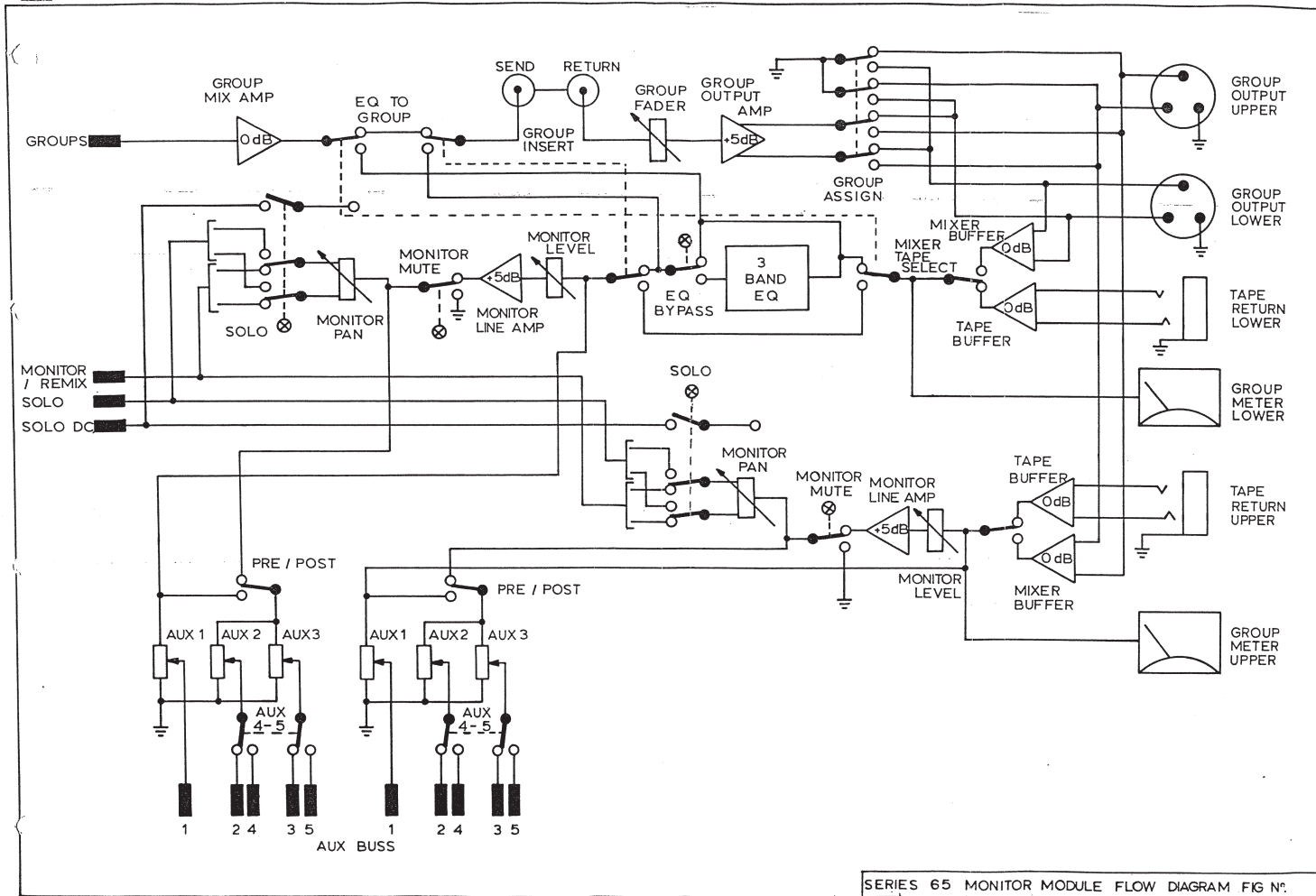
8 WAY INPUT PANEL



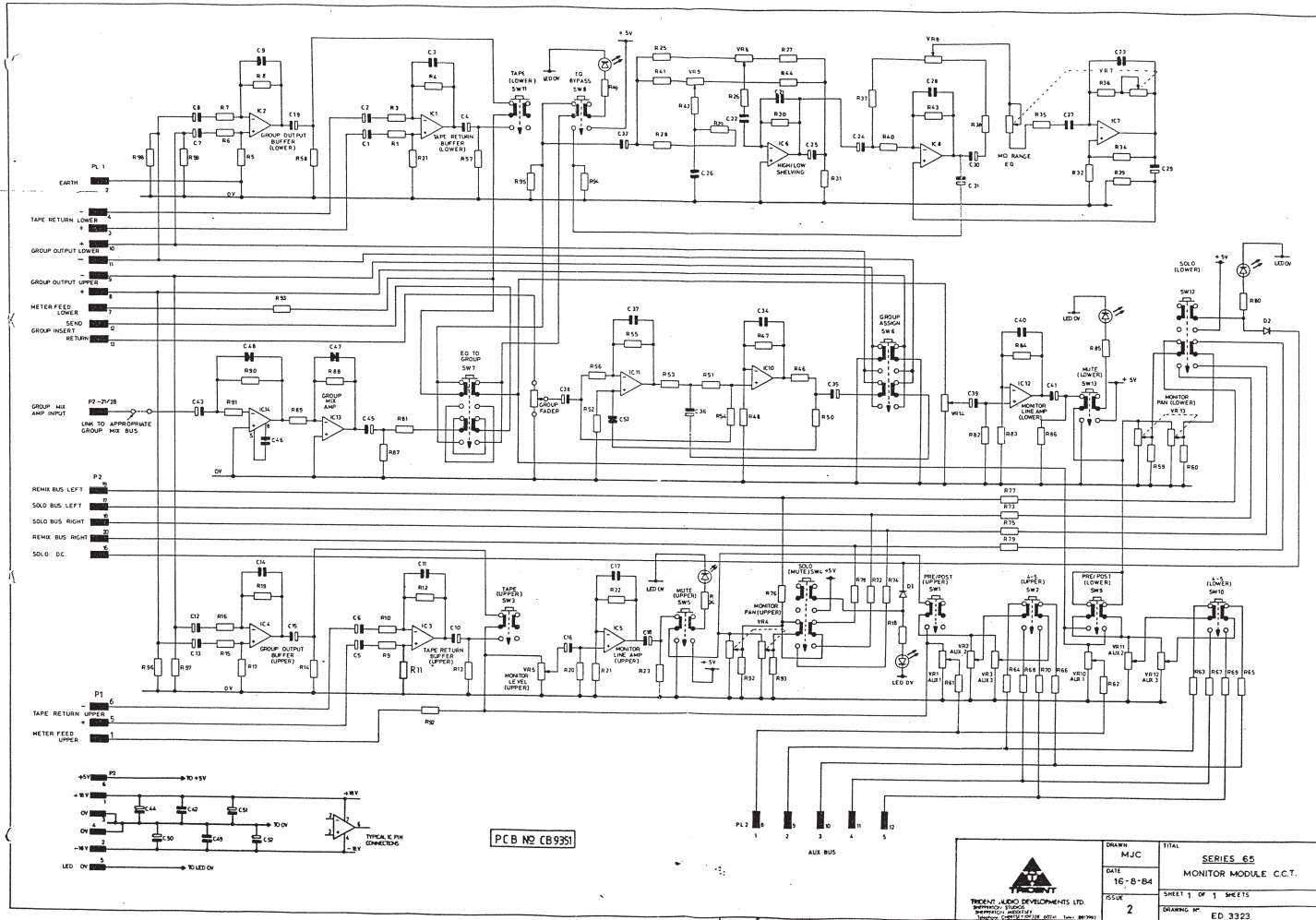
SERIES 65 8 GROUP 16 MONITOR REAR PANEL CONNECTIONS FIG. N°



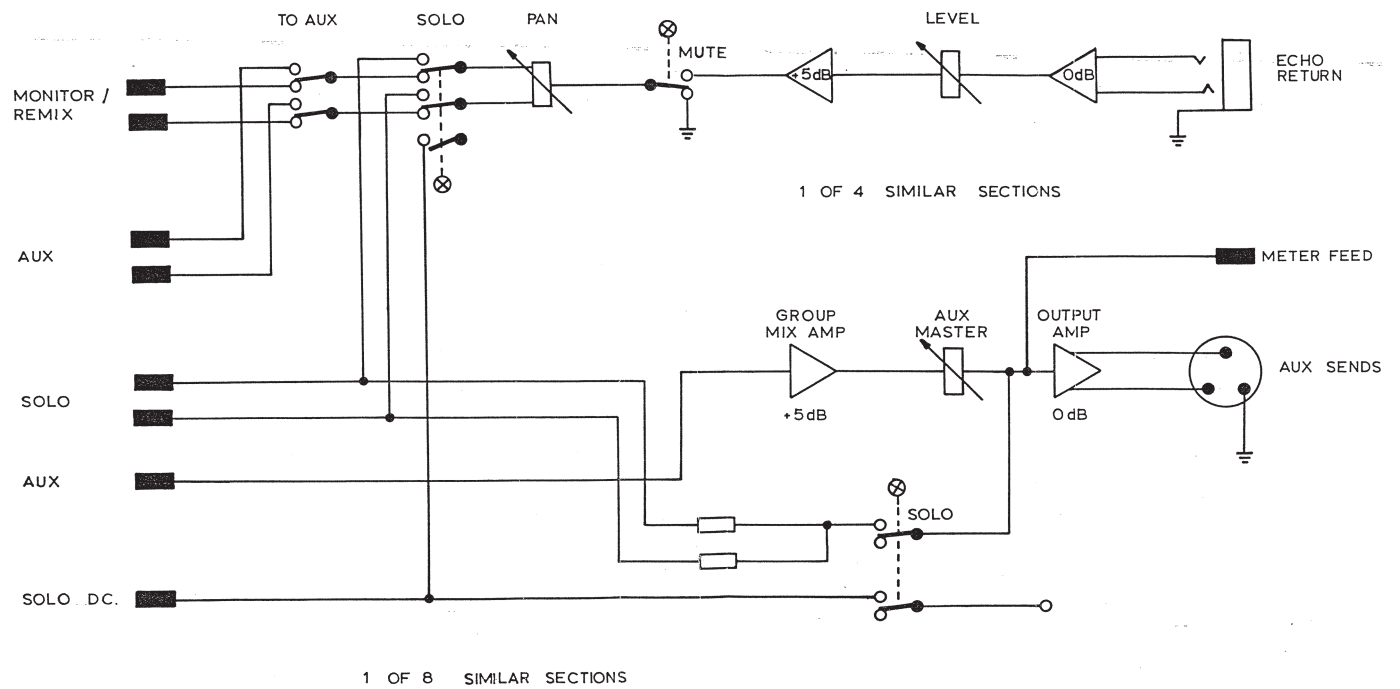






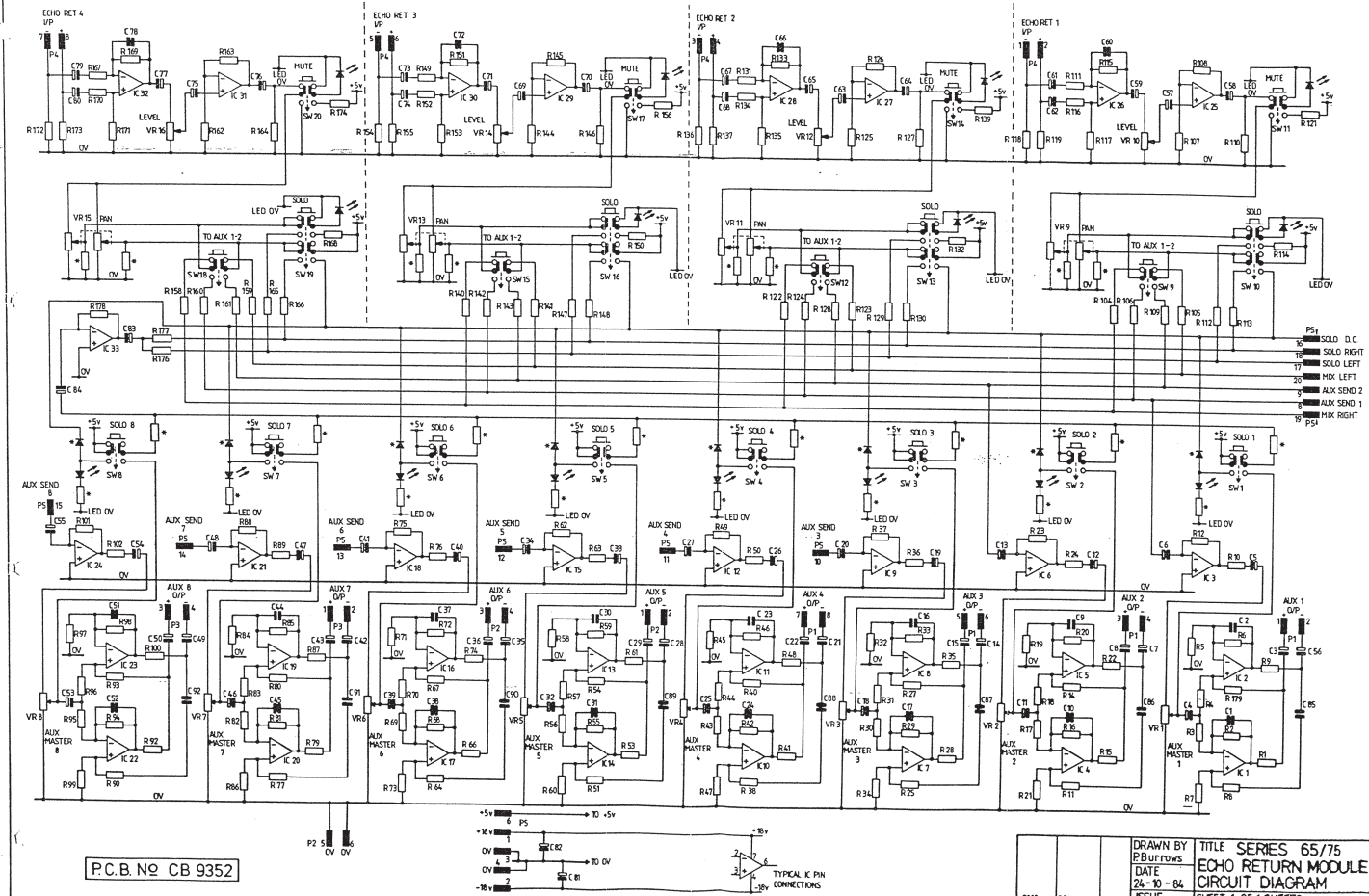


 <small>TRENT LEO DEVELOPMENTS LTD.          16-B-84          255X</small>	DRAWN	MJC	TITL	SERIES 65
	DATE	16-B-84		MONITOR MODULE C.C.T.
	SHEET	1	OF 1	SHEETS
	DRAWING NO.	2		ED 3323



SERIES 65/75 AUX MASTER & ECHO RETURN FLOW DIAGRAM FIG. N°.

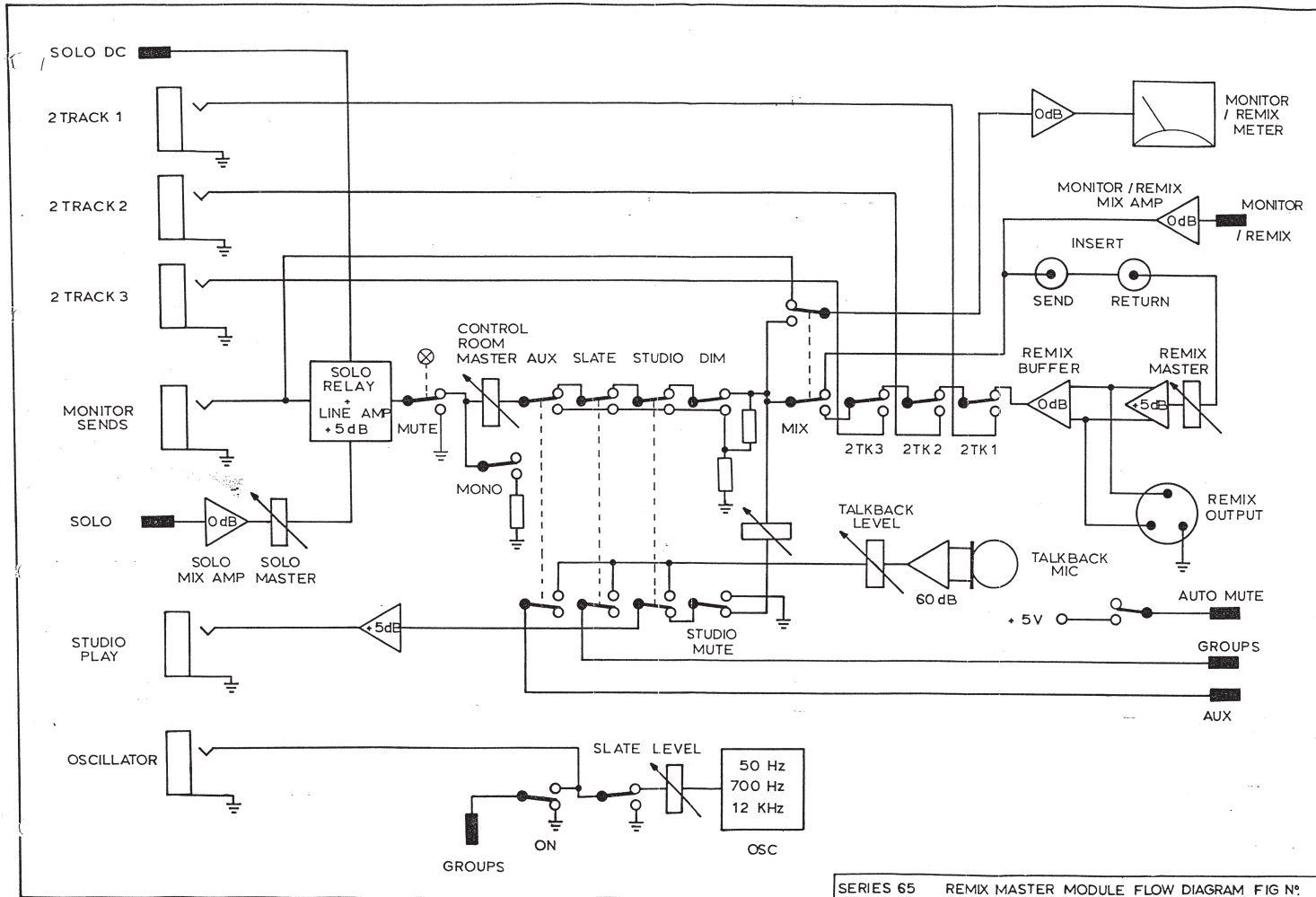
TRIDENT AUDIO DEVELOPMENTS LTD.



P.C.B. No. CB 9352

DRAWN BY	P.Burrows	DATE	24-10-84	TITLE	SERIES 65/75
ISSUE					

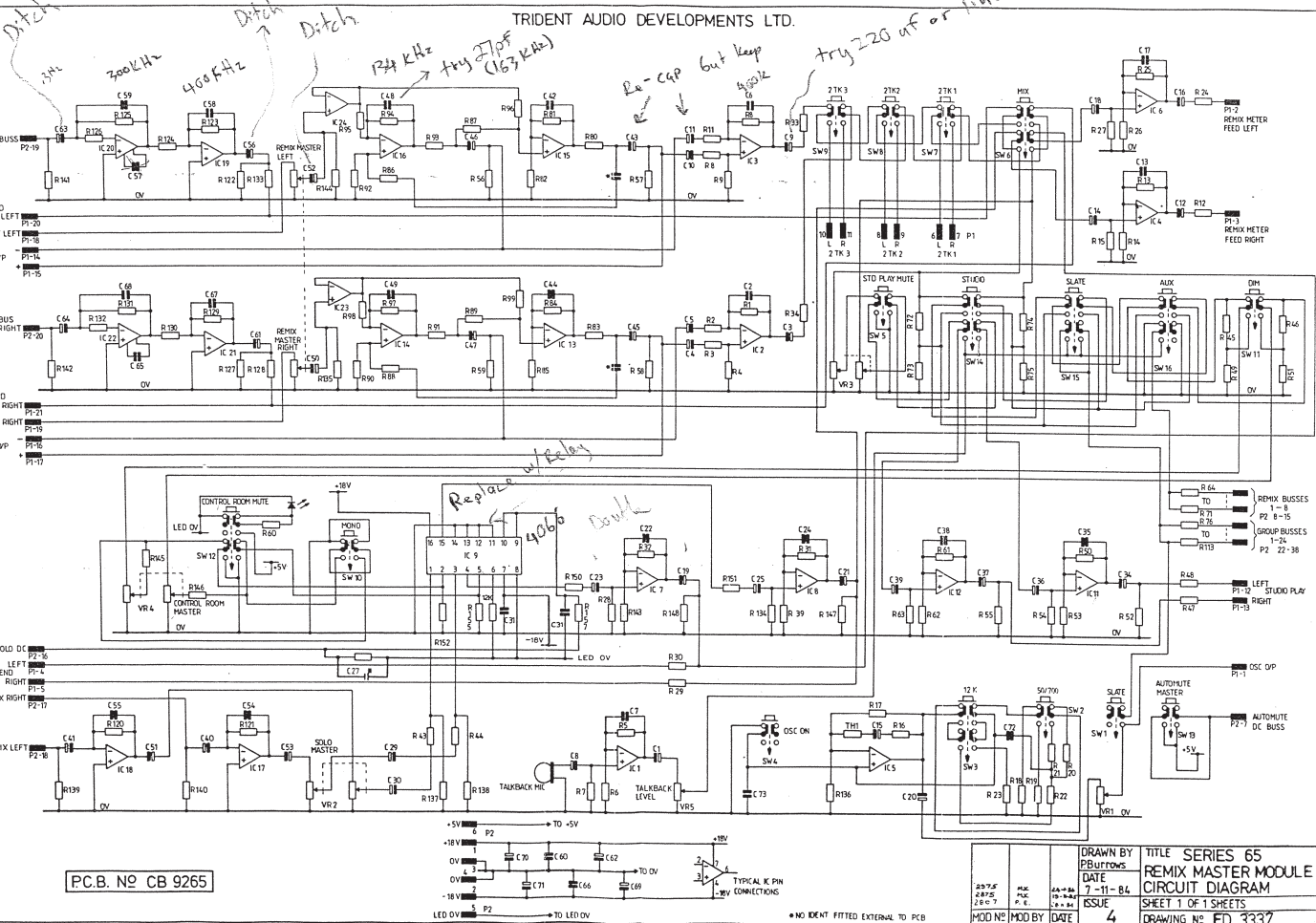
ECHO RETURN MODULE  
CIRCUIT DIAGRAM  
SHEET 1 OF 1 SHEETS



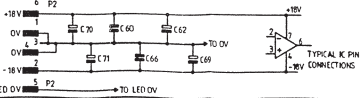
SERIES 65 REMIX MASTER MODULE FLOW DIAGRAM FIG N°

A=10  
P=10-12  
K=103

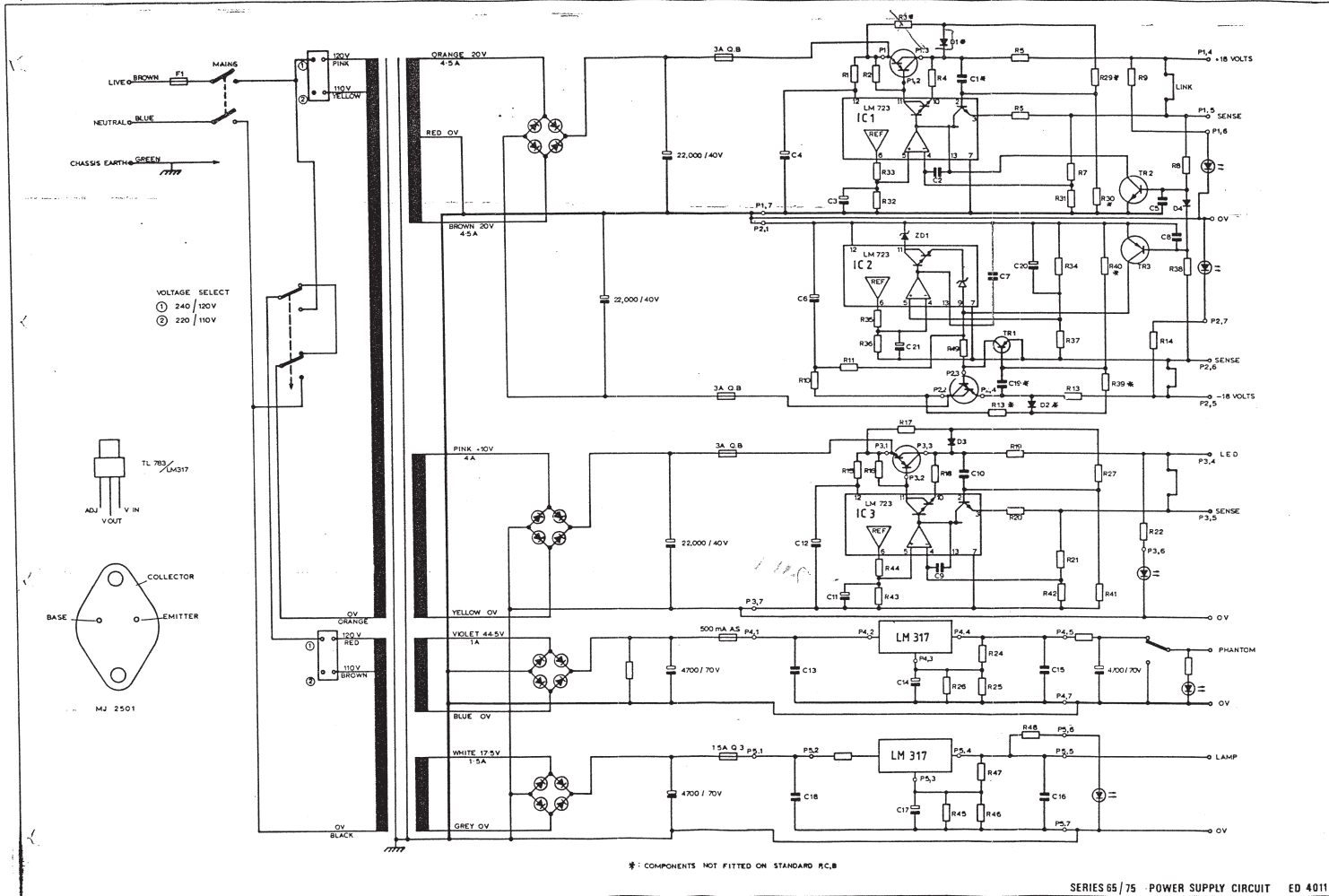
if Lowend Roll off w/summit then double cap (try Removing 1')

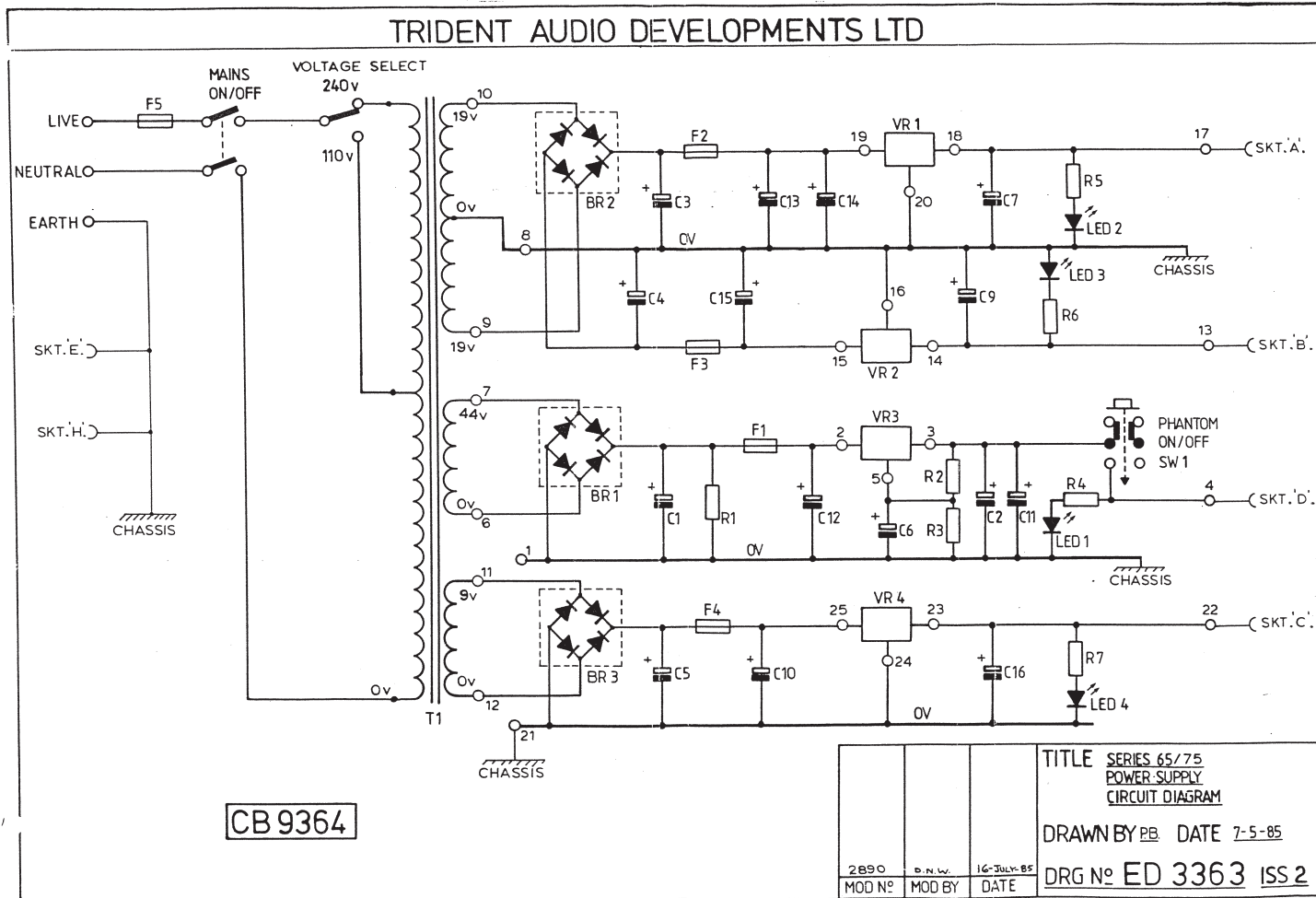


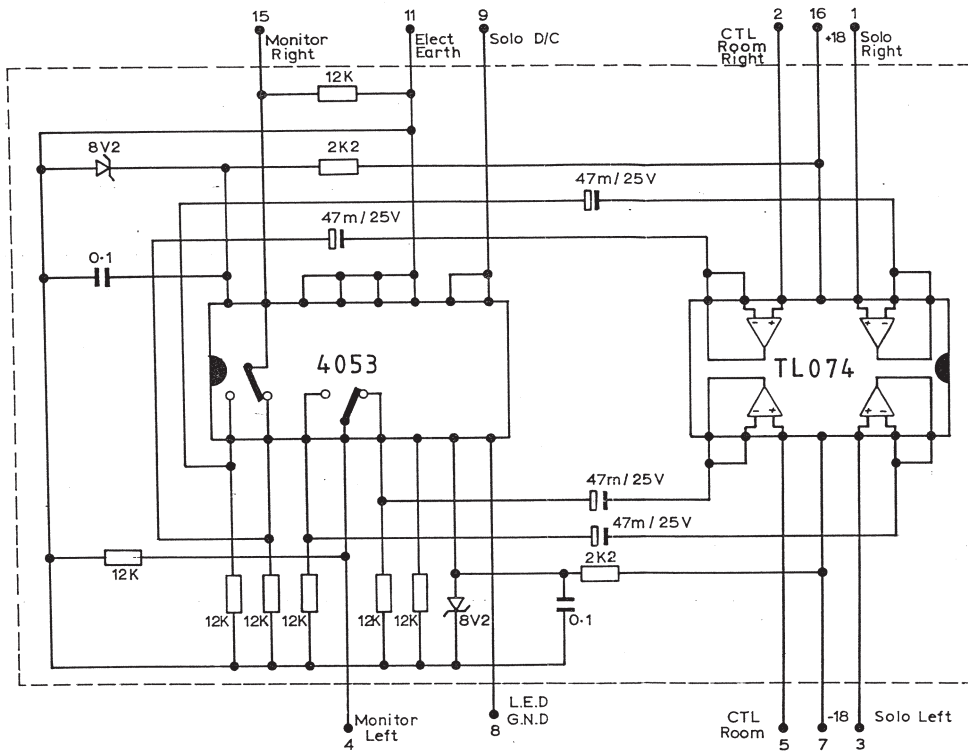
PC.B. NO CB 9265




DRAWN BY IP/STW		TITLE SERIES 65	
DATE 7-11-84		REMIX MASTER MODULE	
ISSUE		CIRCUIT DIAGRAM	
MOD NO		SHEET 1 OF 1 SHEETS	
MOD BY		DRAWING NO ED 3337	
DATE		4	







			DO NOT FOLD OR BEND THIS DRAWING	LAST REF USED	SCALE	TITLE	
				R	N.T.S	<u>SOLO RELAY</u>	
				C	DRAWN	<u>SUB BOARD</u>	
				IC	R.F		
				DATE		DRAWING NO	ISSUE
				9/6/86		ED 4001	1
MOD NO	MOD BY	DATE		CHECKED	SHEET OF SHEETS		


**TRIDENT AUDIO DEVELOPMENTS LTD.**  
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