

Series 1600

User Manual

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SERIES 1600

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1.00 SERIES 1600

Model No. Frame size.....

Serial No. PSU Serial No.
(as used in final test)

Original Customer..... Works Order No.

PROGRESS	NAME	DATE	SUPERVISORS INSPECTION
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Frame Fitted by.....

Assembled/Wired by.....

First Test by.....

Final Test by.....

Despatch Inspection by.....

EQUIPPED WITH	TYPE	QUANTITY	ISSUE
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Input Modules.....

Output Modules.....

Master Module.....

P.S.U.

OPTIONS - SPECIFY

ALTERATIONS TO SPEC.

SPECIAL INSTRUCTIONS

DESPATCH KIT REQUIRED

1.01 SYSTEM MEASUREMENTS

1. Channel Line Input to Mix Output

CHANNEL	THD (Ref 1kHz, +12dBu)		Frequency Response (Ref 1kHz)	
			20Hz	20kHz
1	0.0	%	-0.	-0.
2	0.0	%	-0.	-0.
3	0.0	%	-0.	-0.
4	0.0	%	-0.	-0.
5	0.0	%	-0.	-0.
6	0.0	%	-0.	-0.
7	0.0	%	-0.	-0.
8	0.0	%	-0.	-0.
9	0.0	%	-0.	-0.
10	0.0	%	-0.	-0.
11	0.0	%	-0.	-0.
12	0.0	%	-0.	-0.
13	0.0	%	-0.	-0.
14	0.0	%	-0.	-0.
15	0.0	%	-0.	-0.
16	0.0	%	-0.	-0.
17	0.0	%	-0.	-0.
18	0.0	%	-0.	-0.
19	0.0	%	-0.	-0.
20	0.0	%	-0.	-0.
21	0.0	%	-0.	-0.
22	0.0	%	-0.	-0.
23	0.0	%	-0.	-0.
24	0.0	%	-0.	-0.
25	0.0	%	-0.	-0.
26	0.0	%	-0.	-0.
27	0.0	%	-0.	-0.
28	0.0	%	-0.	-0.
29	0.0	%	-0.	-0.
30	0.0	%	-0.	-0.
31	0.0	%	-0.	-0.
32	0.0	%	-0.	-0.

2. Channel Line Input to Auxiliary Output

AUXILIARY OUTPUT	THD (Ref 1kHz, +12dBu)	
1	0.0	%
2	0.0	%
3	0.0	%
4	0.0	%
5	0.0	%
6	0.0	%
7	0.0	%
8	0.0	%

3. Channel Line Input to Control Room Outputs

CONTROL ROOM OUTPUT	THD (Ref 1kHz, +12dBu)	
Left (Via PFL)	0.0	%
Right (Via PFL)	0.0	%

4. Channel Line Input to Studio Output (Via all groups)

STUDIO OUTPUT	THD (Ref 1kHz, +12dBu)	
Left	0.0	%
Right	0.0	%

5. Crosstalk (at 10kHz)

Stereo Mix	-	dBu
Channel to Channel	-	dBu
Mute	-	dBu

6. Mix Noise (DIN Audio, all channels and groups at unity gain)

Mix Left	-	dBu
Mix Right	-	dBu

7. Power Supply

OUTPUT	RIPPLE & NOISE		VOLTAGE
+17V Audio	-	dBu	Volts
-17V Audio	-	dBu	Volts
+24V Logic	-	dBu	Volts
+48V Phantom	-	dBu	Volts
+7.5 Logic	-	dBu	Volts
-7.5 Logic	-	dBu	Volts

NOTES

0dBu = 0.775 Volt

0dBV = 1.000 Volt

The constraints and conditions under which the above performance figures have been measured are configured so as to ensure that all signal paths are within specification, with a minimum of separate tests. Many are therefore recorded via very long signal paths or under worst case conditions.

The results should not, therefore, be taken as representative of typical published specifications, which would normally be conducted under standard operative conditions.

DISTORTION

Mic pre-amp, -30dBu in, +4dBu out	40Hz:0.01	1kHz:0.01
	18kHz:0.05	IMD:0.02

Channel line in to mix out, +4dBu in, +4dBu out

40Hz:0.01	1kHz:0.01
18kHz:0.05	IMD:0.02

CROSSTALK

Line in through pan control to stereo mix bus
40Hz:-64dB 1kHz:-63dB
18kHz:-55dB

Adjacent channel
40Hz:-100dB 1kHz:-95dB
18kHz:-85dB

NOISE

Equivalent input ref of 2000hm -127.5dBu
Mix noise; 32 inputs routed to mix at unity gain
-80dB (DIN audio)

INPUT IMPEDANCE

Mic input	2kOhm (5kOhm with pad)
Line input	10kOhm

OUTPUT IMPEDANCE

Any output	<750hm
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OUTPUT CAPABILITY

Any group or mix into 6000ohm +21dBu

GAIN

Max mic	75dB
Max line	40dB

FREQUENCY RESPONSE

```

Mic input at 35dB gain to mix      20Hz:-2dB  1kHz:0dB
                                   20kHz:-0.5dB
Line input at unity gain to mix    20Hz:-1.5dB  1kHz:0dB
                                   20kHz:-0.5dB

```

PHASE RESPONSE

Line input to mix output 25Hz:+30° 1kHz:0°
 20kHz:-20°

DIMENSIONS

16 inputs	42.5"x29.5"x12.5" (108x75x31.75cm)
24 inputs	54.2"x29.5"x12.5" (138x75x31.75cm)
32 inputs	66"x29.5"x12.5" (168x75x31.75cm)
40 inputs	77.8"x29.5"x12.5" (198x75x31.75cm)

NB: $0\text{dBu} = 0.775\text{V}_{\text{rms}}$.

2.00 SERIES 1600 GENERAL DESCRIPTION

The Soundcraft Series 1600 console is designed primarily for 16-track and budget 24-track recording. The console is available with 16, 24, or 32 input channels. There is also a patchbay version available, (24 input only), containing all the facilities required in a modern recording studio.

Key features on the desk include semi-parametric equalisation, up to eight auxiliary sends and dedicated mix outputs, (left and right). An effects return/24-track monitor module is available containing eight identical monitor sections for tape returns 17-24 and eight jack sockets to enable each monitor to be used as an effects return during mix down. All balanced inputs and outputs use an electronic transformerless design to ensure low inherent noise.

The use of electronic balancing reduces the degradation of signal quality which is introduced by more conventional transformer coupled designs, ensuring superior transient response, minimal phase shift and excellent common mode rejection even at high frequencies.

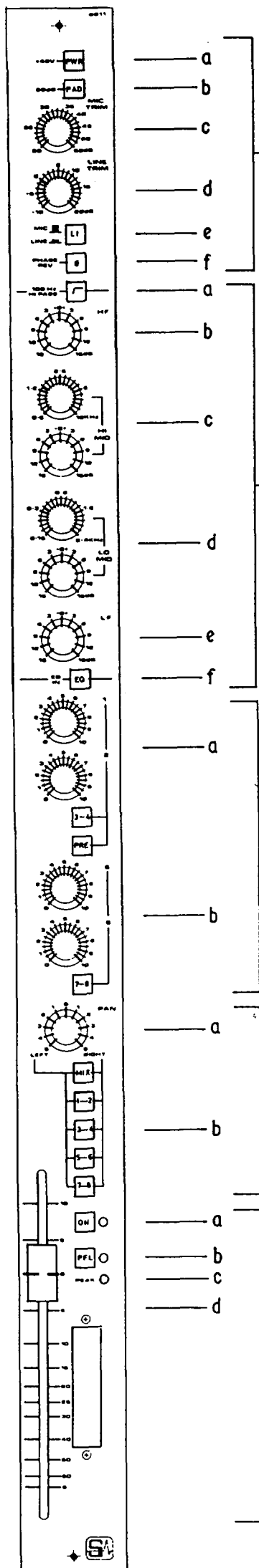
Metering is provided in the form of VU meters for group outputs/tape returns and mix/solo signals. All meters are supplemented by a peak LED set at 8dB above 0VU.

Interfacing to tape machines is in the form of 2 multi-way connectors, each carrying eight tracks, send and return, which is the same standard as used on Soundcraft machines. Connectors may be provided so that cables can be made up to specifications for other tape machines.

Being modular in construction the Series 1600 console is easy to dismantle and any necessary maintenance becomes extremely straight-forward.

The power supply is a 19" rack mounted unit supplying the console with 17 volts positive and negative rails and a +48 volt rail for phantom power of microphones.

On later models a large power supply unit will be used on consoles with 32 or more input channels. This is also a 19" rack mounting unit.



2.01 8011 STANDARD INPUT MODULE

1) Input to Channel

Each channel is individually switchable between the Microphone Input and the Line Input by pressing the Line Input LI switch.

The Microphone input is electronically balanced, using a transformerless design, configured for optimum low noise operation.

The balanced Microphone Input impedance is normally 2kOhms, increasing to 4kOhms when the 20dB Pad is inserted, thus ensuring correct matching for all normally used microphones.

The unbalanced Line Input has an input impedance of greater than 10kOhm, which is high enough to interface to any normal professional peripheral equipment, without causing undue loading of the source.

a) PWR

Pressing the PWR button enables capacitor microphones to be powered by the console's internal 48Volt Phantom Power supply. CAUTION: It is not advisable to use a Direct Injection box when the Phantom Power is on.

3 b) PAD

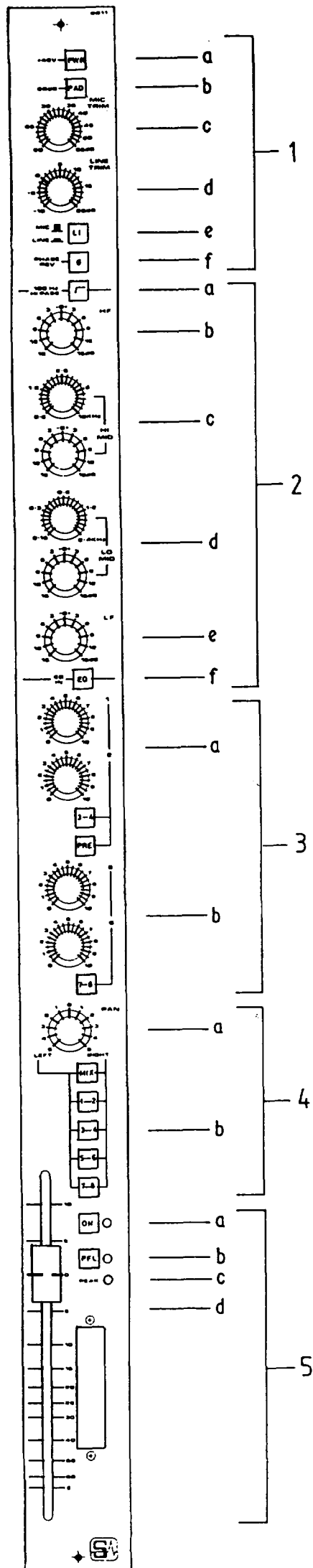
The PAD button inserts a 20dB attenuator into the input of the microphone amplifier, and allows extremely high level input signals to be catered for, without overloading the input stage.

c) MIC TRIM

The Microphone input can be varied between 20dB and 55dB of gain using the MIC TRIM control a 41 position detented potentiometer with essentially continuously variable gain control. When used in conjunction with the 20dB PAD, a 55dB control range is available on the Microphone input.

d) LINE TRIM

The Line input gain can be varied between -10dB and +20dB using a detented potentiometer.



e) LINE

The high level line input is selected by pressing the LI button. This will normally connect the relevant tape return to the input channel for remixing or overdubbing purposes. ie. Tape Return 1 will connect to channel input 1. However, an insert jack for each channel allows access to the line input for other signal sources.

f) PHASE

The phase reverse switch corrects for any mis-wired microphones or for out of phase microphone pick-up in multi-mic situations.

2) The Equalisation Section

The Series 1600 equalizer is a flexible device allowing five areas of control to be exercised. All amplitude pots are centre detented for easy zeroing, and the mid band frequency select controls are 41 detented position types. The equaliser may be switched in or out of circuit, independently of the high pass filter.

a) THE HIGH PASS FILTER

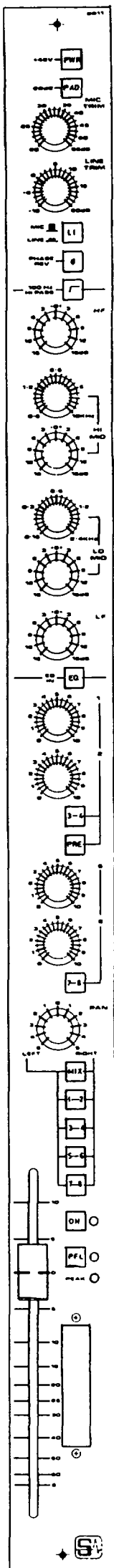
The High Pass Filter operates at 100Hz with an ultimate slope of 12dB/octave. This will effectively remove low frequency stage rumble, and other extraneous signals.

b) HIGH FREQUENCY

15dB of boost or cut is available at 10kHz, with a "shelving" characteristic, ie. the slope of the EQ curve does not keep rising with frequency, but having reached the desired amount, flattens out or "shelves" from that frequency on.

c) HI MID

The Hi Mid Frequency is continuously variable between 600Hz and 10kHz, with 15dB of boost or cut available. The response is of the "bell" type, ie. having reached maximum amplitude (or minimum in the case of cut) at the selected frequency, the amplitude response returns to zero on either side of that frequency. The "Q" (a measure of the bandwidth) of the network is 1.5.



a
b
c
d
e
f
a
b
c
d
e
f
a
b
c
d
a
b
c
d

- d) LO MID
The Low Mid section is identical to the Hi Mid section with the exception that the frequency is variable between 150Hz and 2.4kHz.
- e) LOW FREQUENCY
15dB of boost or cut is available at 60Hz, with a "shelving" characteristic.
- f) EQ BUTTON
The equaliser circuitry can be switched in or out of the signal path, independent of the High Pass filter.

3) The Auxiliary Section

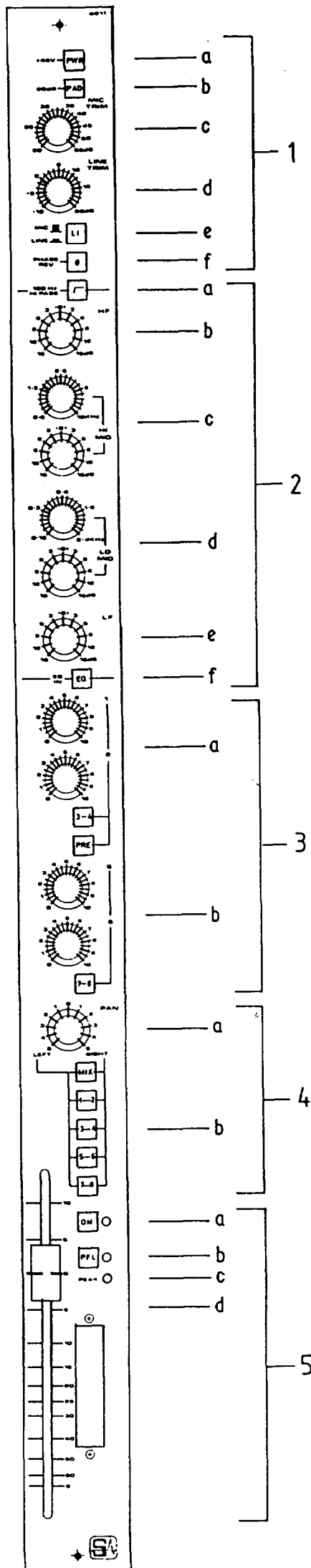
There are 4 Auxiliary send controls available on the standard input module. Each control can be routed to 2 auxiliary mix buses, to give a total of 8 auxiliary sends for use as echo, foldback or other auxiliary effects units. All controls are 41 position, detented potentiometers.

- a) SENDS 1 and 2
Auxiliary sends 1 and 2 are normally post-fader, but can be switched Pre-fader by pressing the appropriate PRE button. Additionally, they can be routed to auxiliary buses 3 and 4. In both cases they are post equaliser, channel insert point, and channel on/off switch.
- b) SENDS 5 and 6
Auxiliary sends 5 and 6 are permanently post-fader and can route to buses 5 and 6 or 7 and 8.

4) Routing Section

The channel input signal can be routed to any or all of the 8 Group Outputs and the stereo Mix by selecting the relevant routing button.

To route the input signal to one particular Group press the relevant routing button. Groups 1,3,5 and 7 correspond to the left-hand side of the pan-pot, and Groups 2,4,6 and 8 the right-hand side.



a) **PAN POT**
The Pan Pot is a centre detented control, with a loss of 4.5dB at its centre point. This is a compromise between the 3dB loss required for constant power panning, and 6dB loss required for constant voltage panning.

b) **ROUTING**
Selection of any routing button assigns the channel signal to a pair of output groups, or to the stereo mix via the Pan Pot.

5) Channel Status Section

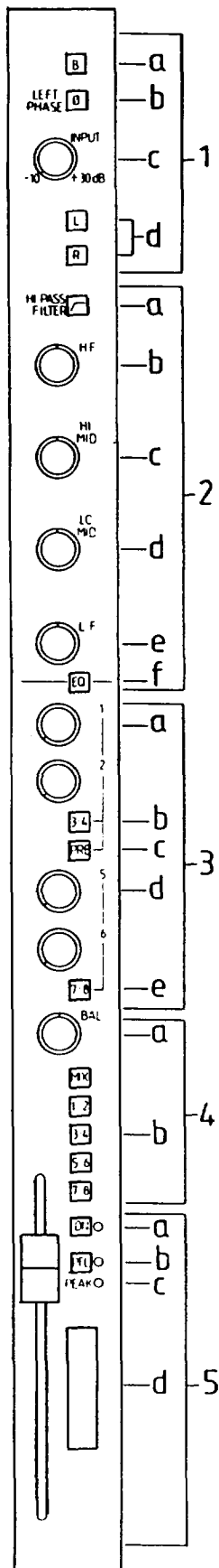
a) **ON**
The channel "ON" status is indicated by a green LED. When a channel is switched off, all auxiliary sends are also switched off, with the exception of the signal to the insert jack.

b) **PFL (Pre Fade Listen)**
PFL solos the pre-fader, post insert jack signal, independently of the "ON" switch. PFL operation is indicated by a red LED on the Master Module.

c) **PEAK**
A red LED indicates the peak signal level at the insert send point, illuminating at a level of approximately 4dB below clipping.

d) **CHANNEL FADER**
The channel fader is a long throw linear fader. Infinity cut off is greater than 90dB.

STEREO INPUT MODULE



2.02 OPTIONAL STEREO INPUT MODULE

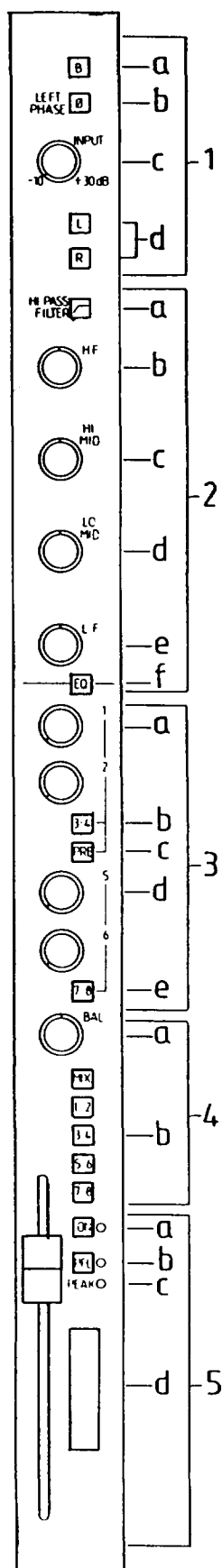
The stereo input module is only available in blocks of 4. The patchbay connections for the stereo input module also only come in blocks of four.

1. Channel Input Section

The Channel can be operated using either Line Input A OR Line Input B OR both. Both Line Inputs are balanced, with an Input Impedance of greater than 10kOhms, which is high enough to interface to any normal professional peripheral equipment without loading the source.

- B**
Line Input B may be selected by pressing the button marked B.
- (Phase)**
Pressing the Phase button will invert the phase on the left-hand input only to correct for any input mismatch.
- INPUT GAIN**
The Input Gain can be varied between -10dB and +30dB of gain using the Gain Trim control.
- L & R.**
 - With both these switches out the module works in stereo mode.
 - With either L or R switched in, both channels of the module are fed by either the left or right input.
 - With both switches pressed, both channels of the module are fed by a mono sum of the left and right input.

STEREO INPUT MODULE

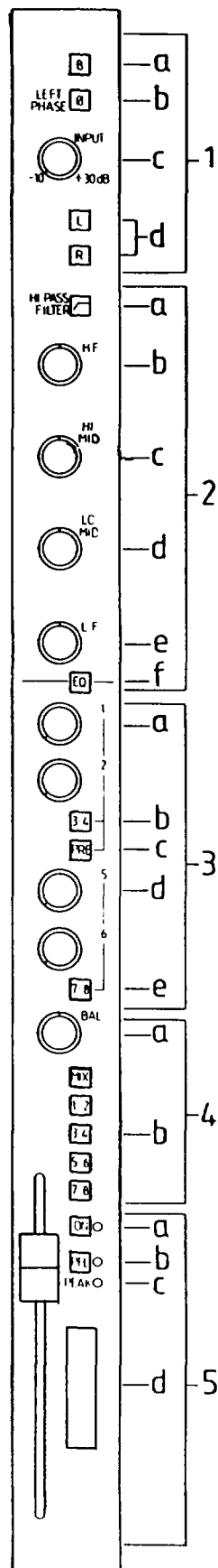


2. Equaliser Section

The Equaliser is a versatile unit, allowing 5 areas of control over the audio spectrum. All amplitude pots are centre detented for easy zeroing.

- a) (High Pass Filter)
The High Pass Filter operates at 100Hz with an ultimate slope of 12dB/Octave. This will effectively remove low frequency stage rumble, and other extraneous signals.
- b) HF (High Frequency)
15dB of boost or cut is available at 10kHz, with a "shelving" characteristic, ie. the slope of the EQ curve does not keep rising with frequency, but having reached the desired amount, flattens out or "shelves" from that frequency on.
- c) HI MID
15dB of boost or cut is available at 2kHz, with a "bell" characteristic, ie. having reached maximum amplitude, (or minimum in the case of cut) the amplitude response returns to zero on either side of the frequency. The shape of the curve, when plotted shows a characteristic "bell" shape. The Q of the net-work (a measure of bandwidth) is 1.5.
- d) LO MID
The Lo Mid section is identical to the Hi Mid section, with the exception that the frequency is 300Hz.
- e) LF (Low Frequency)
15dB of boost or cut is available at 60Hz, with a "shelving" characteristic.
- f) EQ
The Equaliser circuitry can be switched in and out of the signal path, independent of the high pass filter.

STEREO INPUT MODULE



3. Auxiliary Section

There are 4 Auxiliary send controls available. Each control can be routed to 2 auxiliary buses, to give a total of 8 Auxiliary sends for use as echo, foldback or other auxiliary effects units.

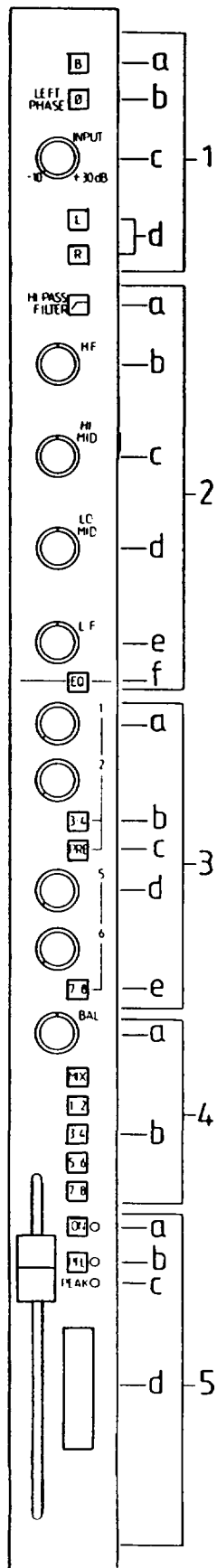
- SENDS 1 and 2**
Auxiliary sends 1 and 2 are normally post-fader, but can be switched Pre-fader by pressing the appropriate PRE button. In both cases they are post equaliser. Auxiliaries 1 and 2 can be selected mono or stereo and dependent/independent of the channel mute by push-on links.
- SENDS 3 and 4**
Auxiliary sends 1 and 2 may be routed to auxiliary buses 3 and 4 by pressing the 3-4 button. Auxiliaries 3 and 4 can be selected mono or stereo by push-on links.
- PRE**
Auxiliary sends 1-4 may be routed Pre-fader by pressing the PRE button.
- SENDS 5 and 6**
Auxiliary sends 5 and 6 are permanently post-fader.
- SENDS 7 and 8**
Auxiliary sends 5 and 6 may be routed to auxiliary buses 7 and 8 by pressing the 7-8 button.

4. Routing Section

The channel input signal may be routed to any of the pairs of Group Outputs (1-2, 3-4, 5-6, 7-8) and the Stereo Mix, by selecting the relevant routing button.

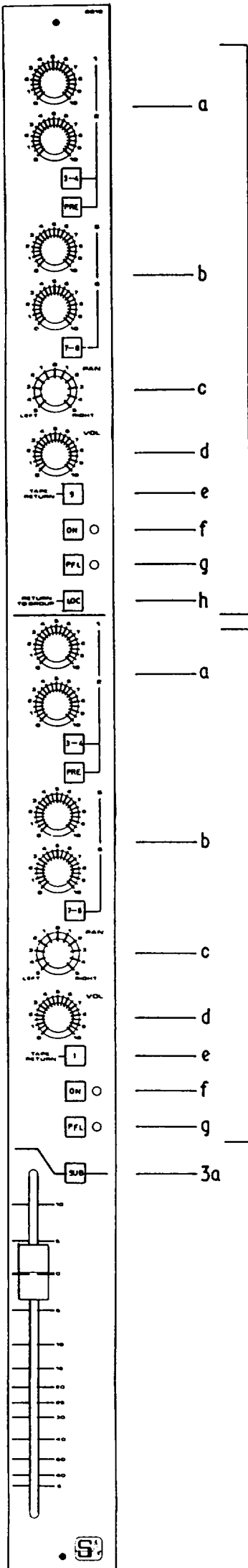
- BALANCE**
The balance control corrects or deliberately creates any errors in stereo matching before the fader and the auxiliary sends.
- ROUTING**
Selection of any routing button assigns the channel signal to a pair of output groups, or the stereo mix, via the balance correction.

STEREO INPUT MODULE



5. Channel Status Section

- a) **ON**
The channel "ON" status is indicated by a green LED. When a channel is switched off the auxiliary sends 1 and 2 are not necessarily cut and depend on the the set up of the push-on links (jumpers).
- b) **PFL**
Pre-fade Listen Soloes the Pre-fader independently of the ON switch. This gives a mono check of signal before the on/off switch. PFL operation is indicated by a red LED on the channel, and a master warning LED on the master module.
- c) **PEAK**
A red LED indicates the peak signal level. This gives visual warning that the higher signal Right or Left is within 5dB of clipping.
- d) **CHANNEL FADER**
The channel fader is an accurately matched, long throw linear fader. Infinity cut off is greater than 90dB.



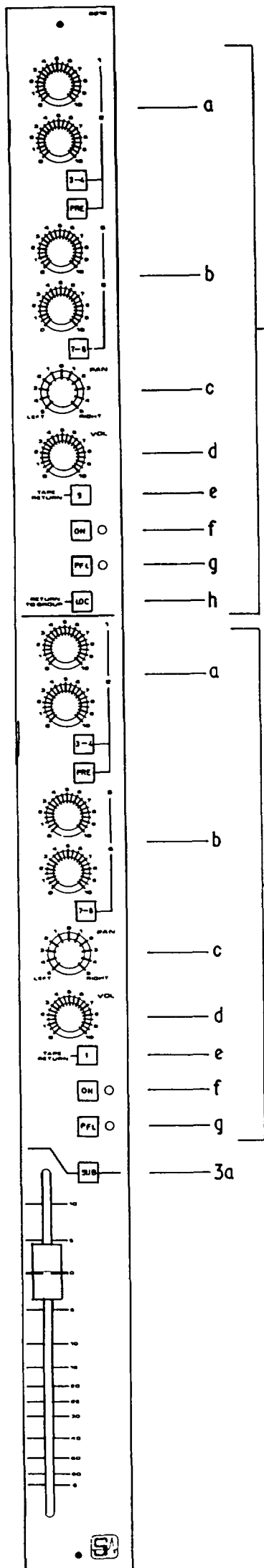
2.03 8012 RECORDING OUTPUT MODULE

The 8012 Recording Output Module contains a group output section and 2 tape return monitor channels. The lower monitor section is used to monitor either its associated group output, or one of the tape return tracks 1-8, depending on its position in the console. The upper monitor section is used to monitor one of the tape return tracks 9-16. Additionally, this section can also be used as a line level input during remixing, with its signal either panned into the main stereo mix or re-routed into its associated group.

1. Upper Monitor Section (Tracks 9-16)

- a) **AUXILIARY SENDS 1 AND 2**
Auxiliary sends 1 and 2 are normally post-fader, but can be switched pre-fader by selecting PRE. In both cases, the auxiliary signal is derived after the monitor ON switch. These auxiliary sends can alternatively be re-routed to auxiliary buses 3 and 4 by selecting the 3-4 button.
- b) **AUXILIARY SENDS 5 AND 6**
Auxiliary sends 5 and 6 are permanently post fader and can alternatively be re-routed to auxiliary buses 7 and 8.
- c) **PAN**
The pan control allows the monitor signal to be panned to the required position within the stereo mix.
- d) **VOL**
The monitor volume control enables the monitor contribution to the stereo mix to be adjusted in level, to allow a satisfactory monitor balance to be achieved during recording or playback of the multitrack tape.

- e) **TAPE RETURN**
The tape return switch selects both the monitor and meter source between either tape send (group output) or tape return (monitor input).



- f) ON
The monitor channel and associated auxiliary sends are activated by pressing the ON button. Operation is indicated by an adjacent green LED.
- g) PFL (Pre-fade listen)
The monitor signal can be soloed, independent of the ON switch. An adjacent red LED and a master solo warning LED on the master module indicates PFL operation.
- h) LOC (Local)
Under normal circumstances, the monitor signal is routed into the stereo mix. However, if local is selected, the monitor signal will be re-routed into the associated group summing bus. This is especially useful during remixing, when the monitor return can be used as an effects return channel, allowing the effects return to be returned to a sub group. The LOC switch does not allow the group output (tape send) to be rerouted itself.

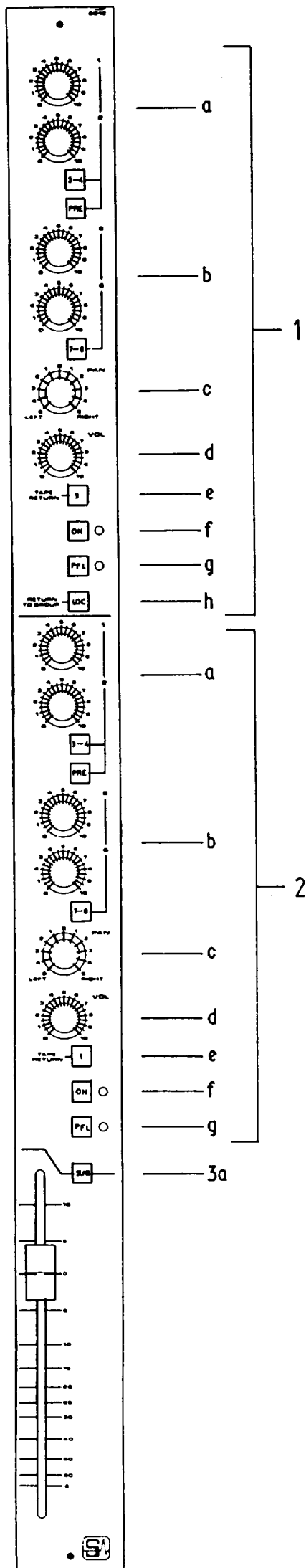
2. Lower Monitor Section

The lower monitor section is similar in operation to the upper section, and provides monitoring of tracks 1-8.

3. Group Output

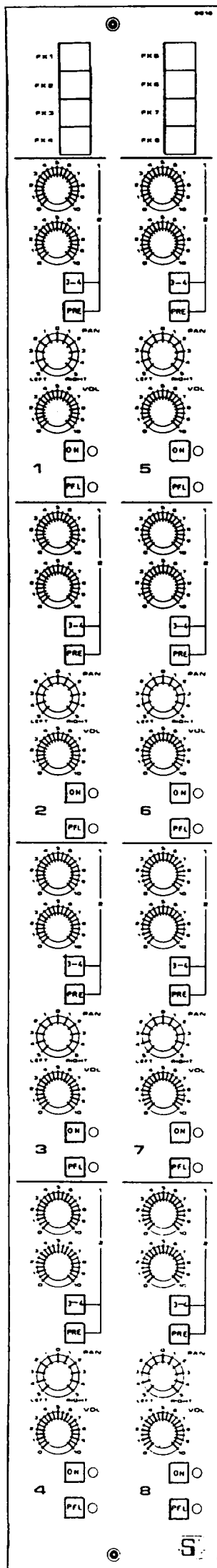
Each group output controls the signal level to 2 tracks of the multitrack recorder during the recording process. ie. group 1 will feed tracks 1 and 9, group 2 will feed tracks 2 and 10 etc. The group output signal is normally monitored by the relevant upper or lower monitor section.

NB: The PFL switches in the monitor sections solo the actual signal level at that point in the circuit, which is 4dB lower than the tape send or return level. If desired, changing the PFL summing resistors from 12K to 7K5 will add back this 4dB loss so that the level on tape and/or return meters will be the same as on the master meters when the PFL is depressed.



a) SUB

During remixing, the group can be used as a sub-group of a number of input channels to provide a sub mix perhaps destined for additional external processing, via the group insert patch point. Operation of the SUB switch allows the group signal to be re-routed directly back into the stereo mix. When SUB is pressed the monitor volume control and tape return switch have no function. Additionally the ON switch controls the group signal path, and the PFL source is the pre-fade, pre ON switch group level.



2.04 8018 24 TRACK MONITOR/FX RETURN MODULE

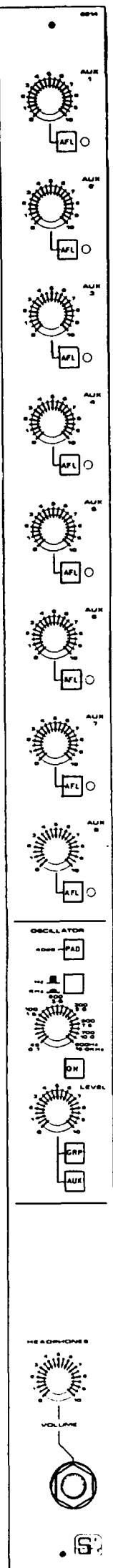
This double width module contains 8 identical sections of monitoring for tape returns 17-24. No tape send/return switching is provided since it is assumed that all 24 track machines already contain this facility, usually under remote control. Each of the monitor sections are identical.

1. Effects Return Input Sockets

8 sockets are provided to allow use of each monitor section as an effects return channel in mix-down. Normally each monitor section will receive the relevant tape return signal from tracks 17-24 of the 24 track machine. However, if a plug is inserted into a socket the tape return signal will be replaced by the signal on the plug.

2. Monitor Section

- a) **AUXILIARY SENDS 1 AND 2**
Auxiliary sends 1 and 2 are normally post-fader, but can be switched pre-fader by selecting PRE. In both cases, the auxiliary signal is derived after the monitor ON switch. These auxiliary sends can be alternatively re-routed to auxiliary buses 3 and 4 by selecting the 3-4 button.
- b) **PAN**
The pan control allows the monitor signal to be panned to the required position within the stereo mix.
- c) **VOL**
The monitor volume control enables the monitor contribution to the stereo mix to be adjusted in level.
- d) **ON**
Enables that particular monitor section. Operation is indicated by a green LED.
- e) **PFL**
The signal in the monitor section can be soloed. Visual indication is given by an associated red LED and warning LED on the Master Module.



2.05 8014 AUXILIARY MASTER MODULE

The 8014 Auxiliary Master module contains the master level controls for the 8 auxiliary outputs, a sweep frequency oscillator, and a stereo headphone drive amplifier. The auxiliary and oscillator outputs are electronically balanced.

1. Auxiliary master 1-8

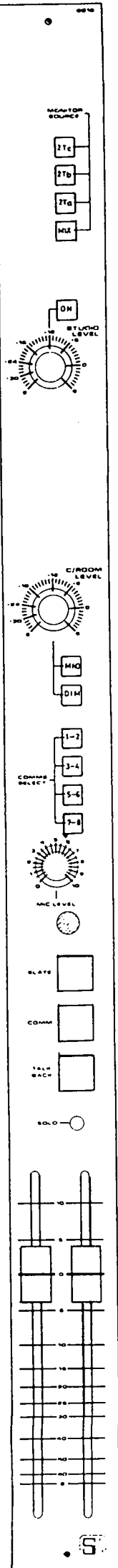
Each of the 8 auxiliary buses has an overall master level control. An associated AFL (after fade listen) button allows the signal at the auxiliary to be monitored.

2. Oscillator

- a) PAD
The oscillator output can be reduced by a 40dB attenuator. This allows the signal at the oscillator jack to be used for testing microphone channels.
- b) FREQUENCY
The oscillator frequency is continuously variable between 45Hz and 15kHz in 2 ranges; 45Hz to 900Hz and 700Hz to 15kHz.
- c) ON
Enables the oscillator.
- d) LEVEL
Adjusts the level of the oscillator. When used in conjunction with the 40dB Pad, a wide range of output levels can be obtained, suitable for testing microphone and line level inputs.
- e) GRP (Group)
The oscillator can be routed to all output groups for alignment and test purposes.
- f) AUX
The oscillator can be routed to all 8 auxiliary buses.

3. Headphone Output

The headphone output allows monitoring of the main stereo mix output, and also of any soloed signal. It will drive headphones of all impedances, though use of 80hm phones at high listening levels may cause slight headphone crosstalk into the stereo mix.



2. Talkback Section

a) COMMS SELECT

The Talkback signal can be routed into any or all pairs of auxiliary outputs, to allow free use of the auxiliaries for either foldback or effects sends purposes.

b) MIC LEVEL

Adjusts the level of the talkback signal.

c) SLATE

Pressing SLATE routes the talkback signal to all group outputs, with the addition of a 30Hz tone. This is useful for identifying sections of the multitrack tape recording, as the low frequency tone can be heard during rewinding of the tape even though the tape is not in contact with the replay head.

d) COMM (Communicate)

The talkback signal can be routed to any or all of the auxiliary buses, (selected by the Comms Select switches), to enable communication to the foldback systems.

e) TALKBACK

This is similar to "Comm" but with the signal also being routed to the studio monitoring system, independently of the level or ON status.

S1600 PATCHBAY

MASTERS

L MIX INSERT SND RET	R MIX INSERT SND RET	RETURNS						(MIX OUT) SENDS					
		A	B	C				A	B	C			
		L	R	L	R	L	R	L	R	L	R	L	R

AUX 1	AUX 2	AUX 3	AUX 4	AUX 5	AUX 6	AUX 7	AUX 8	PARALLEL	OSC	PARALLEL
-------	-------	-------	-------	-------	-------	-------	-------	----------	-----	----------

INPUT CHANNELS

1	2	3	4
LINE INSERT LINE IN SND RET OUT	LINE INSERT LINE IN SND RET OUT	LINE INSERT LINE IN SND RET OUT	LINE INSERT LINE IN SND RET OUT

5	6	7	8
LINE INSERT LINE IN SND RET OUT	LINE INSERT LINE IN SND RET OUT	LINE INSERT LINE IN SND RET OUT	LINE INSERT LINE IN SND RET OUT

9	10	11	12
LINE INSERT LINE IN SND RET OUT	LINE INSERT LINE IN SND RET OUT	LINE INSERT LINE IN SND RET OUT	LINE INSERT LINE IN SND RET OUT

13	14	15	16
LINE INSERT LINE IN SND RET OUT	LINE INSERT LINE IN SND RET OUT	LINE INSERT LINE IN SND RET OUT	LINE INSERT LINE IN SND RET OUT

17	18	19	20
LINE INSERT LINE IN SND RET OUT	LINE INSERT LINE IN SND RET OUT	LINE INSERT LINE IN SND RET OUT	LINE INSERT LINE IN SND RET OUT

21	22	23	24
LINE INSERT LINE IN SND RET OUT	LINE INSERT LINE IN SND RET OUT	LINE INSERT LINE IN SND RET OUT	LINE INSERT LINE IN SND RET OUT

GROUPS/MONITORS

1	2	3	4
INSERT GRP MON SND RET OUT 9	INSERT GRP MON SND RET OUT 10	INSERT GRP MON SND RET OUT 11	INSERT GRP MON SND RET OUT 12

5	6	7	8
INSERT GRP MON SND RET OUT 13	INSERT GRP MON SND RET OUT 14	INSERT GRP MON SND RET OUT 15	INSERT GRP MON SND RET OUT 16

TAPE TRACKS

1	2	3	4	5	6	7	8
TAPE SND RET	TAPE SND RET	TAPE SND RET	TAPE SND RET	TAPE SND RET	TAPE SND RET	TAPE SND RET	TAPE SND RET

9	10	11	12	13	14	15	16
TAPE SND RET	TAPE SND RET	TAPE SND RET	TAPE SND RET	TAPE SND RET	TAPE SND RET	TAPE SND RET	TAPE SND RET

17	18	19	20	21	22	23	24
TAPE SND RET	TAPE SND RET	TAPE SND RET	TAPE SND RET	TAPE SND RET	TAPE SND RET	TAPE SND RET	TAPE SND RET

EFFECTS

1	2	3	4	5	6	7	8
SND RET	SND RET	SND RET	SND RET	SND RET	SND RET	SND RET	SND RET

9	10	11	12	13	14	15	16
SND RET	SND RET	SND RET	SND RET	SND RET	SND RET	SND RET	SND RET

17	18	19	20	21	22	23	24
SND RET	SND RET	SND RET	SND RET	SND RET	SND RET	SND RET	SND RET

25	26	27	28	29	30	31	32
SND RET	SND RET	SND RET	SND RET	SND RET	SND RET	SND RET	SND RET



SERIES 1600

2.07 PATCHBAY

The Patchbay system installed in the 24 channel patchbay version of the Series 1600 greatly enhances the versatility and ease of use by providing convenient, standardised connection points to approximately 200 salient sections of the console circuitry and to 32 pieces of external equipment. This allows rapid insertion of external signal processing equipment into the system, by means of patch chords, and is also very useful for fault-finding.

The Patchbay is clearly divided into 5 sections, thereby making it a simple matter to locate the required connection point in the console.

1. Masters

The first row of the patchbay is devoted to the main stereo outputs and to the stereo tape returns. A signal interrupt point is provided by the Left and Right Mix Insert Send and Return Jacks, which allow a limiter or other device to be inserted into the stereo mix immediately before the stereo fader.

The insert send is normally internally connected (normalled) to the return jack, to maintain signal flow under normal circumstances. When a patch chord is plugged into the insert send, the signal flow is not affected, merely appearing in parallel on the patch chord. However, insertion of a patch chord into the return jack will break the signal flow, and replace it with the signal on the patch head. In this way, the signal on the insert send jack can be connected via one patch chord to the inputs of an effects device, while the output of the effects device can be inserted into the insert return jack to replace the normalled signal.

Patch points are also provided to allow access to the outputs of 3 stereo tape recorders, and to the inputs of the stereo tape recorders.

The second row contains the 8 auxiliary outputs. These are used to patch the auxiliaries into effects devices such as echo and reverberation units, etc. Also on this row are 2 sets of 4 jacks which are connected in parallel with each other. These are used when an output is required to connect to a number of inputs. They must not be used to connect a number of outputs together.

The oscillator jack enables the consoles internal oscillator to be used for fault finding and tape alignment purposes.

2. Input Channels

Each input channel is provided with 4 patch points, allowing access to the channel line input, insert send and return (immediately preceding the channel fader), and the channel direct output, which can be used to provide an additional effects send from a channel. All 24 input channels have identical patch points, split into 4 channels per row, with a total of 6 rows.

3. Optional Stereo Input Channels

Each stereo input channel is provided with 4 patch points to allow access to Line Inputs A and B, left and right. These patch points are available in sets of 4 channels per row.

4. Groups/Monitors

Each group module is equipped with 4 patch points for access to the group insert send and return, the group output and the upper monitor return section of each group module.

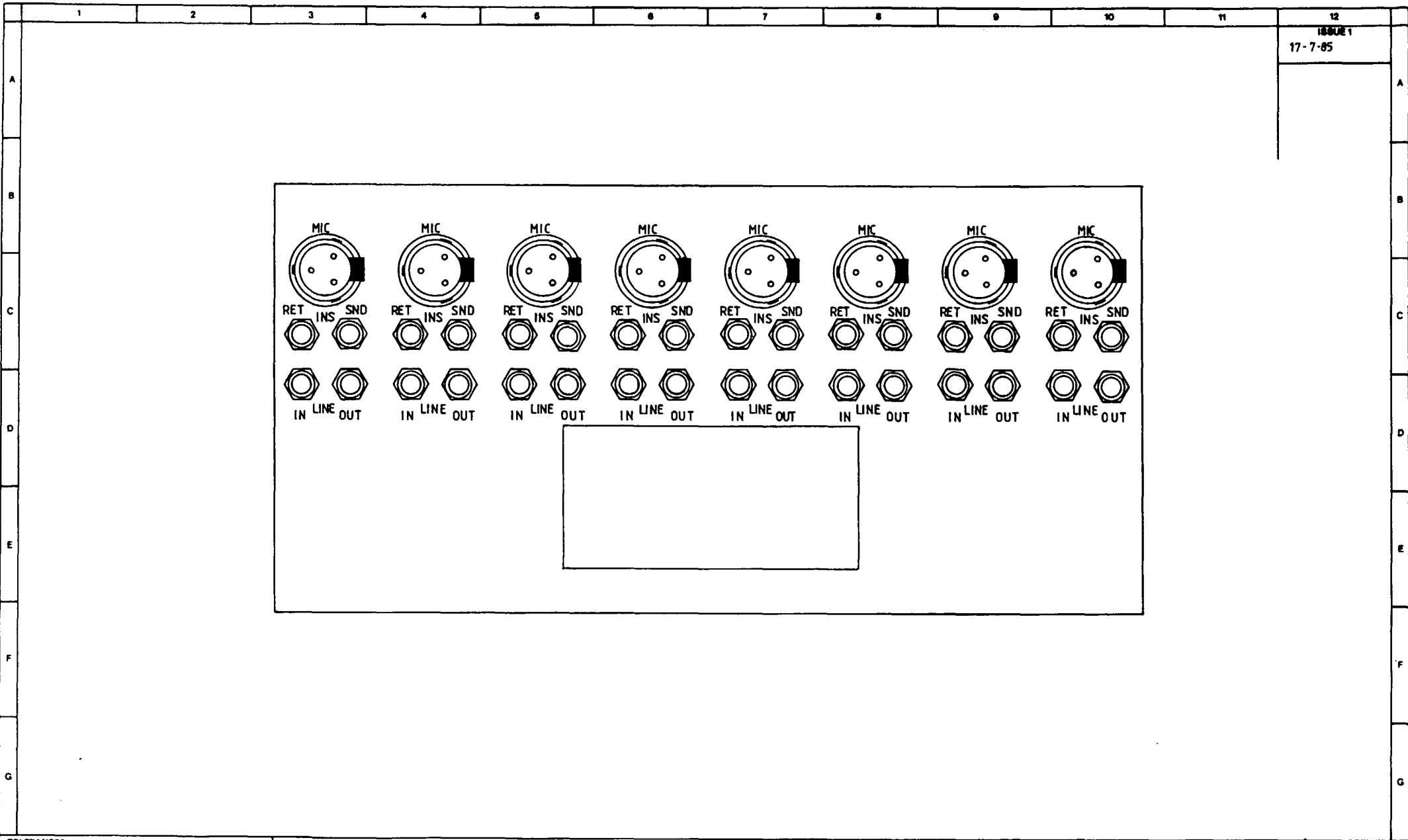
Each group output is normalled to the input of 3 tracks on the multi-track recorder eg. Group 1 normals to tracks 1,9 and 17. The output of the tape machine is normalled to the relevant monitor section, ie. tracks 1-8 normal to monitor return 1-8 (not available on the patchbay); and tracks 17 to 24 normal to the monitor inputs of the 24-track monitor module, if fitted. Patch points are situated at the top of this module for use as line level effects returns.

5. Tape Tracks

Patch points allow access into the input of each tape track. Insertion of a patch chord into the tape send will interrupt the normal signal from the relevant group output and replace it with the signal on the patch chord. Inserting a patch chord into the tape return jack will not interrupt the signal, but allows tape return to be re-routed to alternative input channels or monitor return inputs. Each tape return is normalled to the relevant monitor return, and also to the relevant channel line inputs.

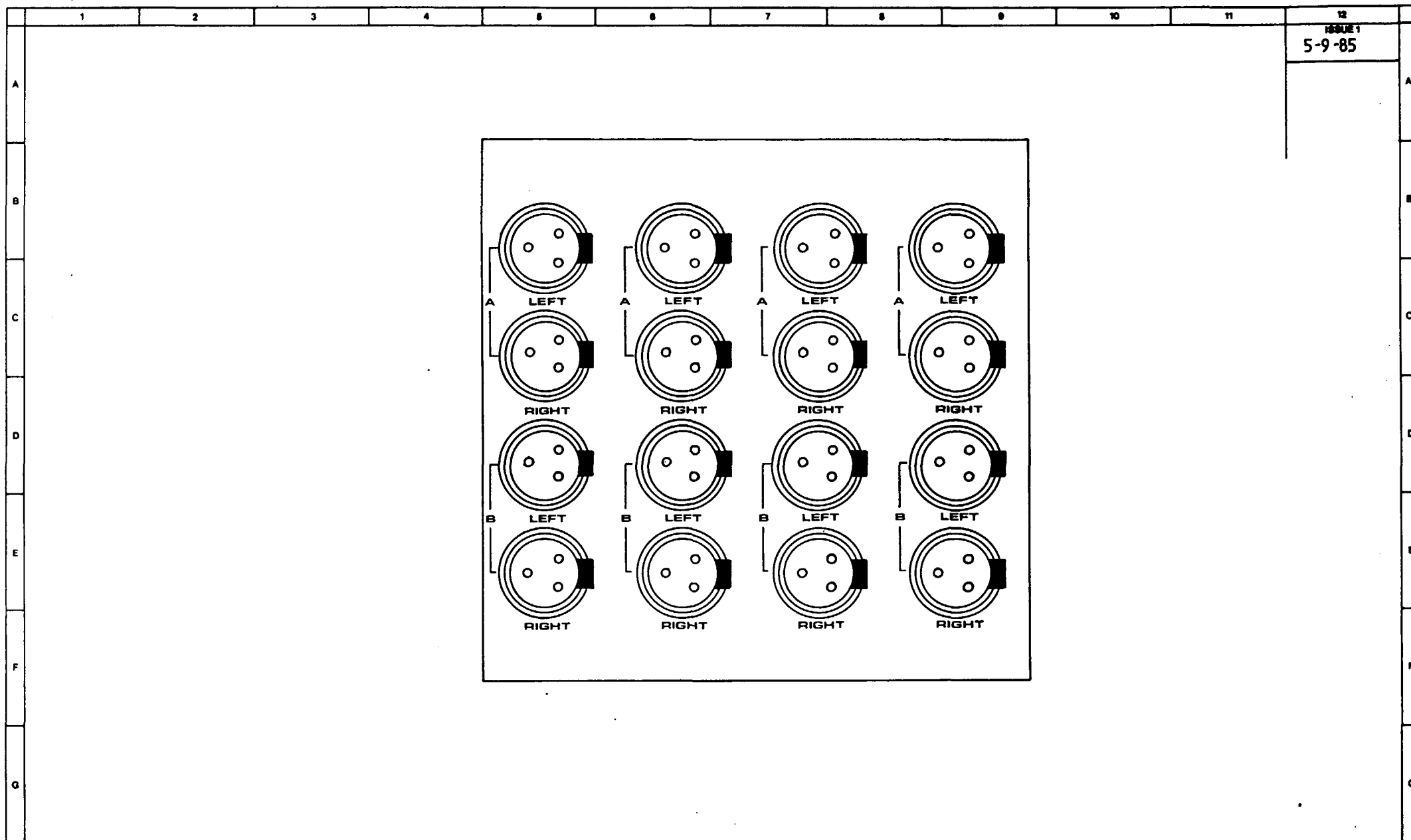
6. Effects

32 pairs of patch points are provided for connection of external peripheral equipment. Interface is by 2 multiway Elco connectors on the underside of the console. Each pair is normally labelled send or return, although they are all connected identically, and can be used to suit the individual purposes of the studio.



TOLERANCES HOLE SIZES AFTER PAINTING	GENERAL TOLERANCE	HOLE INDEX	MATL	DRN	SOUNDRAFT ELECTRONICS LTD	TITLE
0-3mm - + 0.10 - 0.00	Deletes where not applicable.	☐		AB	UNIT 2.	S800B 8WAY I/P
OVER 3-6mm - + 0.12 - 0.00	± 0.06mm (0.002")	☐	FINISH	TRCD	BOREHAMWOOD INDUSTRIAL PARK,	REAR CONN PANEL
OVER 6-10mm - + 0.15 - 0.00	± 0.25mm (0.010")	☐	SCALE	CHKD	ROWLEY LANE,	
OVER 10-16mm - + 0.18 - 0.00	± 0.12mm (0.005")	☐			BOREHAMWOOD,	
OVER 16-25mm - + 0.21 - 0.00	HOLE CENTRES ± 0.004"	☐			HERTFORDSHIRE WD6 5PZ.	
OVER 25mm - + 0.25 - 0.00	ALL ANGLES ± 0.05°	☐			TELEPHONE: 01-207-5050	
	Unless otherwise stated.	☐			FACSIMILE No. 2070194	
						DRG. No. M1 2495

THIRD ANGLE PROJECTION
THIS DRAWING TO COMPLY
TO BS308.



TOLERANCES HOLE SIZE AFTER PAINTING 0-3mm - + 0.10 - 0.05 OVER 3-6mm - + 0.12 - 0.05 OVER 6-10mm - + 0.15 - 0.05 OVER 10-15mm - + 0.15 - 0.05 OVER 15-25mm - + 0.21 - 0.10 OVER 25mm - + 0.25 - 0.10	GENERAL TOLERANCE Delete where not applicable. ± 0.05mm (0-005") ± 0.08mm (0-010") ± 0.12mm (0-005") HOLE CENTRES ± 0.004" ALL ANGLES ± 0.5° Unless otherwise stated.	HOLE INDEX <div style="display: flex; flex-direction: column; align-items: center;"> ☐ ☐ ☐ ☐ ☐ </div>	MATL FINISH SCALE <div style="display: flex; align-items: center;"> <div style="margin-left: 5px;"> THIRD ANGLE PROJECTION THIS DRAWING TO COMPLY TO BS308. </div> </div>	<div style="display: flex; flex-direction: column;"> <div style="display: flex; justify-content: space-between;"> <div>DRN AB</div> <div>TRCD</div> </div> <div style="display: flex; justify-content: space-between;"> <div>CHKD</div> <div></div> </div> </div>	SOUNDCRAFT ELECTRONICS LTD UNIT 2, BOREHAMWOOD INDUSTRIAL PARK, ROWLEY LANE, BOREHAMWOOD, HERTFORDSHIRE WD6 8PZ. TELEPHONE: 01-207-5050 FACSIMILE No. 2070194	TITLE S800B 4WY STEREO REAR CONN PANEL. DRG. No. M1250B
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2.08 INPUT CONNECTOR PANEL

1. Line Inputs

These stereo standard jacks carry the unbalanced Line Inputs, and are normalled to the tape returns. They are wired as follows:-

Tip: HOT
Ring: Signal common
Sleeve: Signal common

2. Line Outputs

These stereo standard jacks carry the unbalanced Line outputs, they are wired as follows:-

Tip: HOT
Ring: Signal common
Sleeve: Signal common

3. Channel insert sends

These stereo standard jacks carry the Channel insert sends and are unbalanced, they are wired as above.

4. Channel Insert Returns

These stereo standard jacks carry the Channel insert returns and are unbalanced. They are wired the same as the Line Outputs.

5. Mic Inputs

These carry the electronically balanced Microphone Inputs and are wired as follows:-

Pin 1: Ground
Pin 2: COLD (Out of phase signal)
Pin 3: HOT (In phase signal)

STEREO INPUT CONNECTOR PANEL

The Stereo Input Rear Connector Panel provides the inputs for Channels A and B Left and Right.

These XLRs are wired as follows:-

Pin 1: Ground
Pin 2: COLD (Out of phase signal)
Pin 3: HOT (In phase signal)

2.09 OUTPUT CONNECTOR PANEL (Matrix)

1. Monitors (L&R)

These stereo standard jacks carry the signal to the control room monitor speakers, they are unbalanced and are wired as follows:-

Tip: HOT
Ring: Common Ground
Sleeve: Common Ground

2. Studio (L&R)

These stereo standard jacks carry the signal to the studio speakers and are wired as above.

3. Mix Inserts (L&R)

These stereo standard jacks carry the insert sends and returns. The insert send is normalled to the insert return, inserting a jack into the insert return breaks the signal flow from the insert send jack and replaces it with the signal on the jack plug. They are wired as the Monitors.

4. Monitor Inputs

The Monitor inputs are unbalanced and are wired the same as the Monitors.

5. Group Insert Sends

These stereo standard jacks carry the group insert sends and are normalled to the insert returns, they are wired the same as the Monitors.

6. Group Insert Returns

These stereo standard jacks carry the group insert returns and are wired the same as the Monitors sockets. The group insert sends are normalled to the returns, inserting a jack into the group insert returns breaks the signal flow from the insert send jack and replaces it with the signal on the jack plug.

7. Mix Outputs

These electronically balanced outputs carry the main mix outputs and are wired as follows:-

Pin 1: Ground
Pin 2: COLD (Out of phase signal)
Pin 3: HOT (In phase signal)

8. 2-track Returns

These electronically balanced inputs carry the signals either from three 2-track machines or any external peripheral devices and are wired the same as the Mix outputs.

9. Aux Outputs

The Auxiliary Outputs are electronically balanced and are wired the same as the Mix Outputs.

10. Multitrack Tape sends and returns

These are unbalanced and are available on multi-way connectors.

3.00 INSTALLATION

3.01 APPLYING POWER

Before switching on the Series 800B check that the mains voltage selector on the power supply unit is set to the correct mains voltage for your area, and that the fuse is of the correct rating.

For operation on voltages between 220 and 240VAC, the fuse should be rated at 3.15 amps, 20mm anti-surge.

For operation on voltages between 100 and 120 VAC, the fuse should be rated at 6.3 amp, 20mm.

Do not replace the fuse with any other type, as this could become a safety hazard, and will void the warranty.

3.02 Interface levels

The Series 1600 is normally supplied to provide compatible level interfacing with standard professional equipment. ie. +4dBu (ref 0.775V). However, provision has been made to allow the user to modify the tape interface levels for use with semi-professional equipment, operating at -10dBV (ref 1.00volt), or other levels.

The change in tape interface level operating level is accomplished by reducing the console group output level by the required amount, and increasing the console monitor gain by an identical amount, and can be done by the addition of 3 resistors and the removal of a link on each group output circuit board.

GROUP OUTPUT LEVEL

1. Remove link 18
2. Add resistor in position RX1.

MONITOR RETURN GAIN

Add resistor in position RX2 and RX3.

The value of the resistor must be the same for RX1, RX2 and RX3 for correct operation. For interface to the normal Teac/Tascam level of -10dBV, a value of 1kOhms is suitable.

CONTROL ROOM, STUDIO AND AUXILIARY OUTPUTS

Powerful amplifiers are often rated at 300mV sensitivity, for full output. In such cases, an attenuator should be installed at the input of the power amplifier, to attenuate the +4dBu (1.228) signal from the console, by approximately 10 to 15dB. This can be achieved by using a 2.2kOhm series resistor, and a 680 Ohm, shunt resistor across the amplifier input.

3.03. Connector Conventions

All XLR type connections are normally wired to the following standard:-

Pin 1	GROUND
Pin 2	COLD (Out of phase signal)
Pin 3	HOT (In phase signal)

All main outputs are electronically balanced. The Soundcraft output stage allows either the Hot or Cold to be grounded, without any change in output level or other adverse effects, in the same way as a transformer coupled output. This allows much greater freedom when interfacing to a variety of unbalanced and balanced equipment and a minimisation of earth loop problems.

In most cases, the output can be viewed in the same way as a transformer coupled output, but without the signal degradation inherent in transformer design. However, if the output is driving a long cable run into an unbalanced input, it is usually beneficial to unbalance the output directly at the console to avoid instability.

NB: During the currency of this manual, the XLR standard may be changed to the European convention of:

Pin 1:	GROUND
Pin 2:	HOT (In phase signal)
Pin 3:	COLD (Out of phase signal)

If in doubt, check with your dealer or the manufacturer at time of purchase.

3.04. General Wiring Procedures

To take full advantage of the excellent signal to noise ratio and low distortion of Soundcraft consoles care must be taken to ensure that incorrect installation and wiring does not degrade the performance of the desk. Hum, buzz, instability and Radio Frequency Interference can usually be traced to earth loops and inferior earthing systems. In some areas, especially heavily industrial areas, the incoming mains earth will not be adequate, and a separate technical earth for all the audio equipment must be supplied. However, check with your local electricity supply company to ensure that safety regulations are not infringed or negated.

The successful, hum free, installation of a system requires forethought, and the establishment of a set of ground rules, which must be consistently adhered to at all stages of installation.

1) Initial Wiring Considerations.

- a) For optimum performance, it is essential for the earthing system to be clean and noise free, as all signals are referenced to this earth. A central point should be decided on for the main earth point system, and all earths should be "star fed" from this point. It is common electrical practice to "daisy chain" the earths to all electrical outlets but this method is unsuitable for audio installations. The preferred method is to run an individual earth wire from each outlet, back to the system star point to provide a safety earth of screen reference for each piece of equipment.

A separate earth wire should also be run from each equipment rack and area, to the star point. This may or may not be used depending on circumstances, but it is easier to install in the first place, than later when problems arise.

The location of the star point should be a convenient, easily accessible place preferably at the rear of the console, or in the main equipment rack.

- b) Install separate "clean" and "dirty" mains outlets, wired individually back to the incoming mains distribution box. Use the "clean" supply for all audio equipment and the "dirty" supply for all lighting, vending machines etc. Never mix the two systems.
- c) If necessary, to provide sufficient isolation from mains borne interference, install an isolating transformer for the "clean" supply. The isolation transformer should be provided with a Faraday Shield which must be connected to earth.
- d) Never locate the incoming mains distribution box near audio equipment, especially tape recorders, which are very sensitive to electro-magnetic fields.
- e) Ensure that all equipment racks are connected to earth, via a separate wire back to the star point.
- f) Equipment which has unbalanced inputs and outputs may need to be isolated from the rack to prevent earth loops.

2) Audio Wiring

Having provided all equipment with power and earthing connections, consideration must be given to the method of providing audio interconnection, and adequate screening of those interconnections. This must be done in a logical sequence to avoid problems, and assist in the localisation of problem equipment.

- a) Connect Control Room Monitor system to the console, and check for any hum, buzz, or RFI. Only when you are satisfied with the quietness of the console and the monitor system should you proceed with the next step.
- b) Connect multitrack tape recorder, via noise reduction system if applicable, and again check that the system is still clean.
- c) Connect stereo tape recorders, studio monitors, echo and foldback sends one at a time, checking and isolating any connection which degrades performance.
- d) Connect all peripheral devices.
- e) Connect all microphone lines.

By following this sequence much time and future trouble will be saved, and the result will be a quiet, stable system.

3) Shielding

Audio equipment is supplied with a variety of input and output configurations, which must be taken into consideration when deciding where the screen connections should be made. There are three sources of unwanted signal being impressed on the screen, which are as follows:-

- i Extraneous electrostatic or electromagnetic fields.
- ii Noise and interference on the earth line.
- iii Capacitive coupling between the screen and signal wires.

To minimise the adverse affects of the unwanted coupling to the signal wires, it is important that the screen is connected at one end only, i.e. the screen must not carry any signal current. Any signal on the wires within the screen will be capacitively coupled to the screen, and this current will ultimately be returned to the source of the signal, either directly, if the screen is connected at the signal source end, or indirectly via the earthing system, if the signal is connected at the signal destination end. The indirect connection will cause an increase in high frequency cross-talk, and should be avoided wherever possible.

Therefore, in general, always connect the shield only at the signal source end. In high RF areas, the screen can also be connected to earth via a 0.01 micro Farad capacitor. This will present a short circuit at RF frequencies, thus lowering the effective shield impedance to ground. However, at low audio frequencies the reactance of the capacitor will be sufficiently high not to cause an earth loop problem.

Combinations of unbalanced, balanced and electronically balanced, (differential), systems mean that there are nine interconnection permutations. The optimum of the screen in each case is shown in Table 1.

TABLE 1

	OUTPUT	INPUT	SCREEN
1	Unbalanced	Unbalanced	Source
2	Unbalanced	Balanced	Source
3	Unbalanced	Differential	Source
4	Balanced (Note 1)	Unbalanced	Destination
5	Balanced	Balanced	Source
6	Balanced (Note 2)	Differential	Destination
7	Differential (Note 3)	Unbalanced	Source
8	Differential	Balanced	Source
9	Differential	Differential	Source

Note 1 - The shield is connected to the destination earth point, which is opposite to normal practice, because the signal wires being shielded are referenced to the input earth, not the output earth.

Note 2 - If the output transformer is centre tapped to earth, the screen should be connected at the source.

Note 3 - When an active differential output is operated in unbalanced mode, it is very important that the output current returns to earth via the shortest, least reactive route. Check for instability at the output.