

LIVE 8



User Guide





IMPORTANT
**Please read this manual carefully before using
your mixer for the first time.**



This equipment complies
with the EMC directive
89/336/EEC
Modified by
92/31/EEC
93/68/EEC
91/263/EEC
and LVD 73/23/EEC
modified by 93/68/EEC

This product is approved to
safety standards:

IEC 60065: 2001
EN60065:2002
UL6500 7th Edition: 2003
CAN/CSA-E60065-03

And EMC standards
EN55103-1: 1996 (E2)
EN55103-2: 1996 (E2)

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IMPORTANT SAFETY INSTRUCTIONS

Read these instructions.

Keep these instructions.

Heed all warnings.

Follow all instructions.

Do not use this apparatus near water.

Clean only with a dry cloth.

Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.

Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.

Do not defeat the safety purpose of a polarised or grounding type plug. A polarised plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles and the point where they exit from the apparatus.

Only use attachments/accessories specified by the manufacturer.



Use only with the cart, stand, tripod, bracket or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.

Unplug this apparatus during lightning storms or when unused for long periods of time.

Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

Note: It is recommended that all maintenance and service on the product should be carried out by Soundcraft or its authorised agents. Soundcraft cannot accept any liability whatsoever for any loss or damage caused by service, maintenance or repair by unauthorised personnel.

WARNING: To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.

Do not expose the apparatus to dripping or splashing and do not place objects filled with liquids, such as vases, on the apparatus.

No naked flame sources, such as lighted candles, should be placed on the apparatus.

Ventilation should not be impeded by covering the ventilation openings with items such as newspapers, table cloths, curtains etc.

THIS APPARATUS MUST BE EARTHED. Under no circumstances should the safety earth be disconnected from the mains lead.

The mains supply disconnect device is the mains plug. It must remain accessible so as to be readily operable when the apparatus is in use.

If any part of the mains cord set is damaged, the complete cord set should be replaced. The following information is for reference only.

The wires in the mains lead are coloured in accordance with the following code:

Earth (Ground):	Green and Yellow (US - Green/Yellow)
Neutral:	Blue (US - White)
Live (Hot):	Brown (US - Black)

As the colours of the wires in the mains lead may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

The wire which is coloured Green and Yellow must be connected to the terminal in the plug which is marked with the letter E or by the earth symbol. 

The wire which is coloured Blue must be connected to the terminal in the plug which is marked with the letter N

The wire which is coloured Brown must be connected to the terminal in the plug which is marked with the letter L

Ensure that these colour codes are followed carefully in the event of the plug being changed

This unit is capable of operating over a range of mains voltages as marked on the rear panel.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This Class A digital apparatus meets the requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la Classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

For your own safety and to avoid invalidation of the warranty please read this section carefully.

SAFETY SYMBOL GUIDE

For your own safety and to avoid invalidation of the warranty all text marked with these symbols should be read carefully.



WARNINGS

The lightning flash with arrowhead symbol, is intended to alert the user to the presence of un-insulated “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



CAUTIONS

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.



NOTES

Contain important information and useful tips on the operation of your equipment.



HEADPHONES SAFETY WARNING

Contain important information and useful tips on headphone outputs and monitoring levels.

Recommended Headphone Impedance ≥ 200 Ohms.

Introduction

Congratulations on your purchase of a LIVE 8 mixer. Owning a Soundcraft console brings you the expertise and support of one of the industry's leading manufacturers and the results of over 22 years experience supporting some of the biggest names in the business.

Designed by engineers who understand the individual needs of musicians, LIVE 8 has been built to the highest standards using quality components and employing automated assembly techniques beyond the reach of most manufacturers of compact mixers.

A rugged steel chassis is combined with moulded side trims to give protection and distinctive appearance. Custom moulded controls, designed for the best 'feel' and visual clarity complement the styling, resulting in a truly professional product which is ideal for both touring and fixed PA installations.

LIVE 8 is available in 24, 32 & 40 channel frame sizes. All frame sizes incorporate removeable side cheeks to enable the console to be fitted compactly in a flight case.

LIVE 8 incorporates circuit technology identical to that used on some of the most sophisticated Soundcraft consoles, including new surface mount component techniques. The input channels are able to accept a wide range of Microphone and Line level signals from separate input sockets. Every channel features the UltraMic+™ input with wide range gain control, Phase switch, 4-band Equalisation with swept Hi and Lo Mid ranges, plus a Hi-Pass Filter, 6 Auxiliary Sends (2 pre-fade, 2 pre or post and 2 post-fade), PFL (Pre Fade Listen), Peak LED, Panning to a Stereo Bus and routing in pairs to eight Output Groups. Each channel has a separate Direct Output and is controlled by a high-quality long throw fader. All input channels may be assigned to a choice of four Mute Groups.

All frame sizes are provided as standard with 2 dedicated stereo inputs. Each stereo input comprises two separate input sections, one provided with comparable facilities to the mono inputs, and one more basic input for a cassette or CD player which routes to the stereo mix and two of the Aux outputs only.

The eight Output Groups provide submixing to the Mix L/R, either as stereo pairs or as mono sends to L & R. The Group outputs are available on separate connectors to feed external equipment directly. Each Group section incorporates matrix sends, PFL monitoring & bargraph metering. Eight external Stereo Return inputs are provided for effects or submixing from external sources and these route to Mix or to a pair of Groups.

Two Matrix outputs receive sends from each Group or Mix L & R as required.

The Master section provides master level control for the Left, Right, Matrix and Auxiliary Send buses, with separate AFL monitoring on each Matrix and Auxiliary output.

The Mix L/R and Group outputs all have insert points for the connection of external signal processing or graphic equalisation.

Comprehensive Talkback facilities are provided, which allow a talkback microphone to be routed to Mix L/R, Groups and Auxes 1-2 or 3-4. Ten 12-segment, 3-colour peak reading LED bargraph meters provide clear display of Mix L/R, Group and PFL signals. Pressing any PFL or AFL switch puts the selected signal onto both sides of the headphones output and the L & R bargraph meters in place of the Mix signal. Two LEDs monitor the status of the console power supply.

LIVE 8 is designed to be as user-friendly as possible, but a few minutes spent reading through this manual will help you become familiar with the product away from the pressure of a live session, and allow you to gain full benefit from the superb performance offered by your new mixer.

Above all, remember that your Soundcraft mixer is designed to extend your creativity. The more you explore the controls and the effect they have on the sound output, the more you will appreciate how you can influence and enhance the final sound.

Installation

For your own safety and to avoid invalidation of the warranty please read this section carefully.

General Precautions

Avoid storing or using the mixing console in conditions of excessive heat or cold, or in positions where it is likely to be subject to vibration, dust or moisture. Do not use any liquids to clean the fascia of the unit: a soft dry cloth is ideal.

Avoid using the console close to strong sources of electromagnetic radiation (e.g. video monitors, high-power electric cabling): this may cause degradation of the audio quality due to induced voltages in connecting leads and chassis.



Caution! In all cases, refer servicing to qualified personnel.

Handling and Transport

The console is supplied in a strong carton. If it is necessary to move it any distance after installation it is recommended that this packing is used to protect it. Be sure to disconnect all cabling before moving. If the console is to be regularly moved we recommend that it is installed in a foam lined flightcase. At all times avoid applying excessive force to any knobs, switches or connectors.

Power Cable

Always use the power supply cable supplied with the mixer: the use of alternative cables may cause damage and voids the warranty.

Warning! In the event of an electrical storm, or large mains voltage fluctuations, immediately switch off the mixer and unplug from the mains.

Signal Levels

It is important to supply the correct input levels to the console, otherwise signal to noise ratio or distortion performance may be degraded; and in extreme cases, damage to the internal circuitry may result. Likewise, on all balanced inputs avoid sources with large common mode DC, AC or RF voltages, as these will reduce the available signal range on the inputs. Note that $\text{OdBu} = 0.775\text{V RMS}$.

Refer to the Specifications section for details of input and output levels.

DPS-3 POWER SUPPLY



The LIVE 8 is supplied with a DPS-3 power supply unit. Consult the DPS-3 manual before making any connections. Always use the power supply which is supplied with the console.

Ensure that the DPS-3 power supply is NOT connected to the Mains and is turned OFF.

The power supply can be positioned anywhere within reach of the LIVE 8 and an available power socket, but it is best rack-mounted in a position where airflow through the vents is not obstructed, and where the power switch or cables cannot be accidentally knocked.

Connect the multi-way power cable between the DPS-3 and the LIVE 8 power connector. Screw the connector locking rings clockwise on both units to secure the cable. The locking rings should be firm, but not tight. Connect the IEC type mains cable to the mains input socket on the DPS-3. Connect the other end to the nearest plug socket and switch on the power to the DPS-3.

MAINS INSTALLATION



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.

Initial Wiring Considerations



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 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.

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, etc. Never mix the two systems.

If necessary, to provide sufficient isolation from mains borne interference, install an isolating transformer. This should be provided with a Faraday Shield which must be connected with earth.

Never locate the incoming mains distribution box near audio equipment, especially tape recorders, which are very sensitive to electro-magnetic fields.

Ensure that all equipment racks are connected to earth, via a separate wire back to the star point.

Equipment which has unbalanced inputs and outputs may need to be isolated from the rack to prevent earth loops.

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.

Connect the FOH or 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 PA system should you proceed with the next step.

Connect stereo or Multitrack Tape recorders, FX and foldback sends one at a time, checking and isolating any connection which degrades performance.

Connect all other peripheral devices.

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.

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:

Extraneous electrostatic or electromagnetic fields.

Noise and interference on the earth line.

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. 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 screen 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 mF 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.

Points to Remember



In all cases, use good quality twin screened audio cable. Check for instability at the output.

Always connect both conductors at both ends, and ensure that the screen is only connected at one end.

Do not disconnect the mains earth from each piece of equipment. This is needed to provide both safety and screen returns to the system star point.

Equipment which has balanced inputs and outputs may need to be electrically isolated from the equipment rack and/or other equipment, to avoid earth loops.

It is important to remember that all equipment which is connected to the mains is a potential source of hum and interference and may radiate both electrostatic or electromagnetic radiation. In addition, the mains will also act as a carrier for many forms of RF interference generated by electric motors, air-conditioning units, thyristor light dimmers etc. Unless the earth system is clean, all attempts to improve hum noise levels will be futile. In extreme cases there will be no alternative but to provide a completely separate and independent 'technical earth' to replace the incoming 'noisy earth'. However, always consult your local electricity supply authority to ensure that safety regulations are not being infringed.



WORKING SAFELY WITH SOUND

Although your new console will not make any noise until you feed it signals, it has the capability to produce sounds which when monitored through an amplifier or headphones can damage hearing over time.

The table below is taken from the Occupational Safety & Health Administration directive on Occupational noise exposure (1926.52):

PERMISSIBLE NOISE EXPOSURE

DURATION PER DAY, HOURS	SOUND LEVEL dBA SLOW RESPONSE
8	90
6	92
4	95
3	97
2	100
1.5	102
1	105
0.5	110
<0.25	115

Conforming to this directive will minimise the risk of hearing damage caused by long listening periods. A simple rule to follow is the longer you listen the lower the average volume should be.

Please take care when working with your audio - if you are manipulating controls which you don't understand (which we all do when we are learning), make sure your monitors are turned down. Remember that your ears are the most important tool of your trade, look after them, and they will look after you.

Most importantly - don't be afraid to experiment to find out how each parameter affects the sound - this will extend your creativity and help you to get the best results.

Recommended Headphone Impedance 200-600 ohms.

INTERNAL JUMPER SETTINGS

MONO INPUT CHANNELS

The Mono Input channels are provided with three selectable options, using push-on jumpers on the circuit board.

To change the settings, simply pull off the jumper and replace on the adjacent pair of pins. The default settings are shown as shaded on the diagram below.

AUXILIARY PRE SOURCE

Default is POST-EQ, optionally Pre-EQ

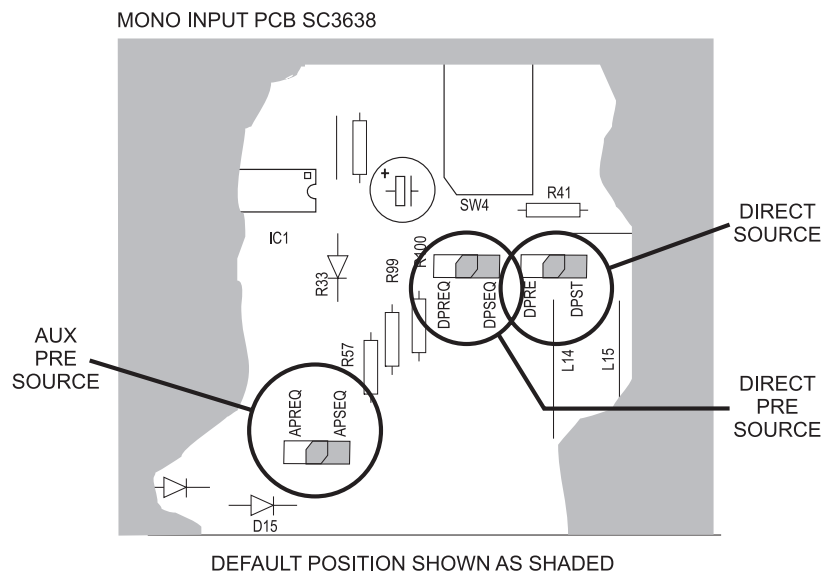
DIRECT OUTPUT SOURCE

Default is POST-FADE, optionally Pre-fade

DIRECT OUTPUT PRE SOURCE

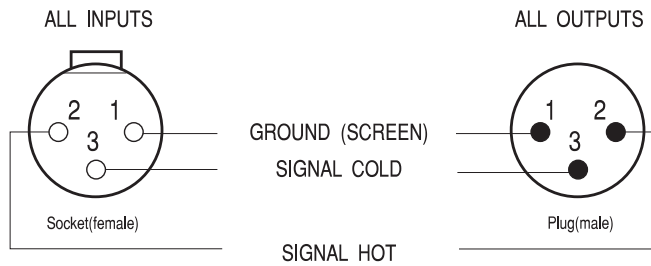
Default is POST-EQ, optionally pre-EQ

The diagram below shows the location of the jumpers on the circuit board, and with care can be changed without removing the circuit board from the mixer.



AUDIO CONNECTOR PINOUTS

3-pole XLR



Mono input channel's mic input.
Talkback Mic Input

Master section:
Mix L, Mix R.
Matrix A out
Matrix B out
Groups 1-8 out

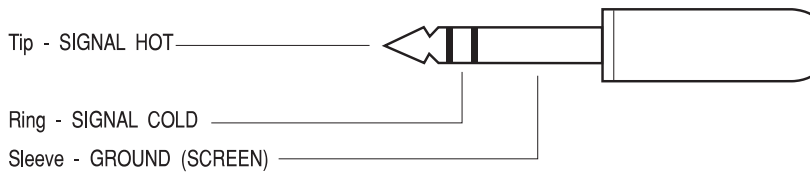
1/4" Stereo Jack Plug used as balanced Input/Output:

All Jacks except headphones and insert points as listed below.

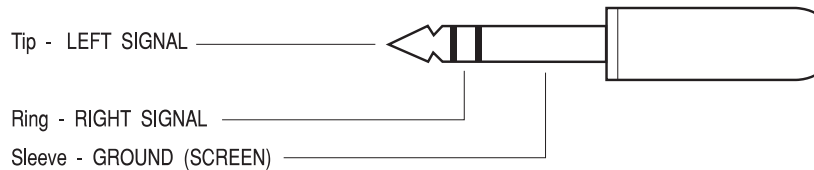
Mono Input Channel: Line Input. Direct Output

Stereo Input Channel: L & R Line Inputs. L & R Cass/Cd Inputs

Master Section: L & R Stereo Return Inputs 1-8, Aux 1-6 Outputs, L & R Record Outputs

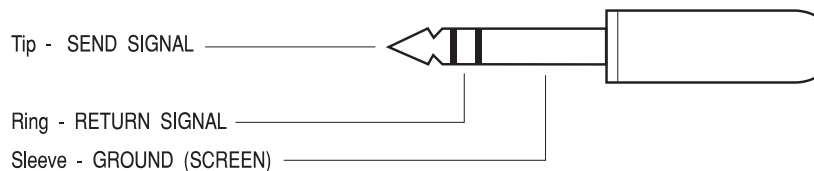


1/4" Stereo Jack Plug used for Headphones



1/4" Stereo Jack Plug used for Insert Points as listed below:

Mono Inputs, Mix L, Mix R, Groups 1 - 8



TYPICAL CONNECTING LEADS

Connectors used with audio equipment



XLR



3-pole 1/4"
(A guage TRS) jack

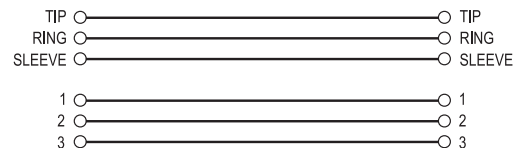


2-pole 1/4"
(A guage TS) jack

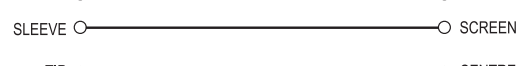
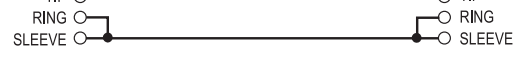
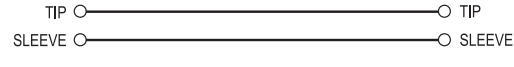


RCA phono

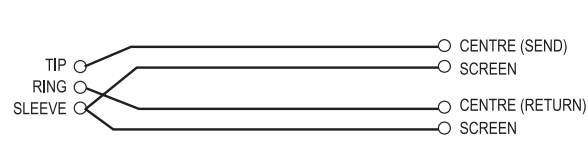
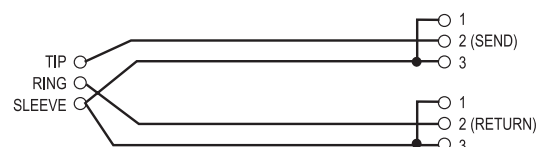
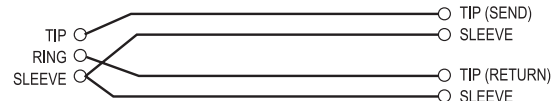
Balanced



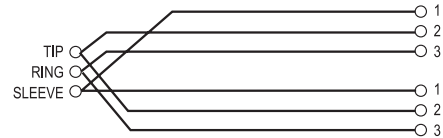
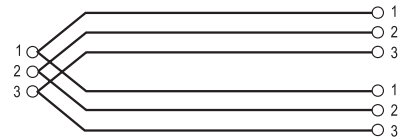
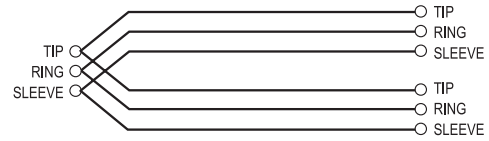
Unbalanced



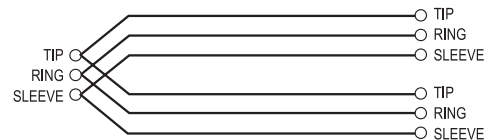
Insert Leads



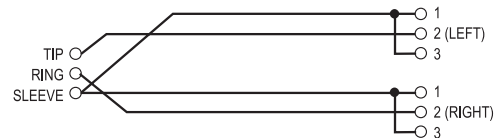
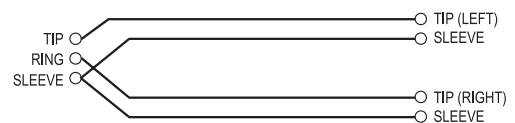
'Y' Leads (Balanced)



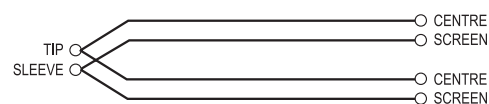
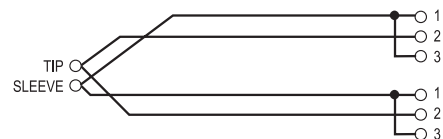
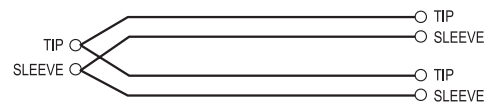
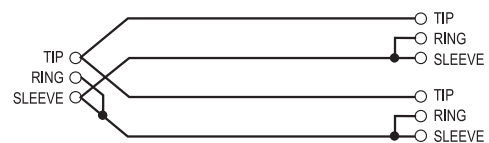
Headphone Splitter



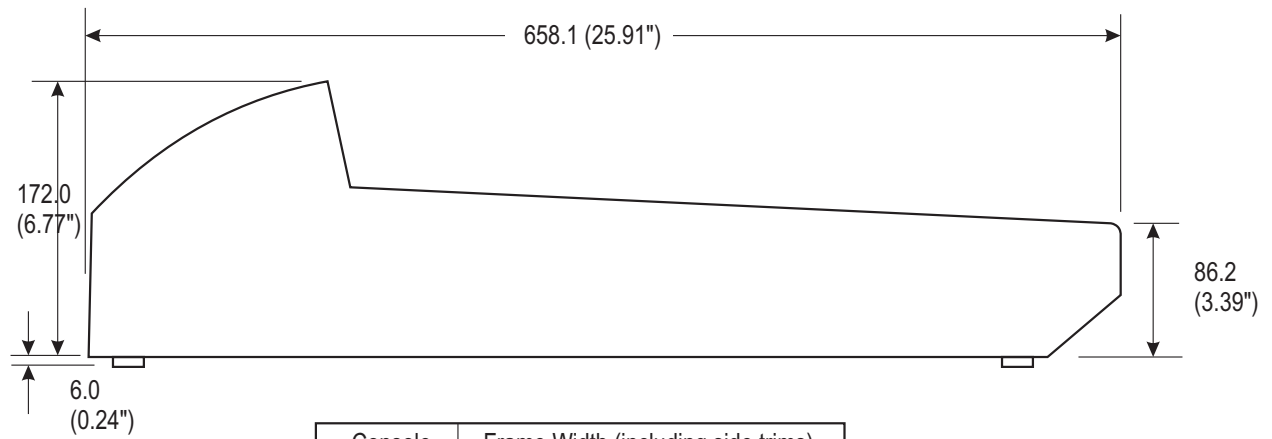
Headphone Separator



'Y' Leads (Unbalanced)

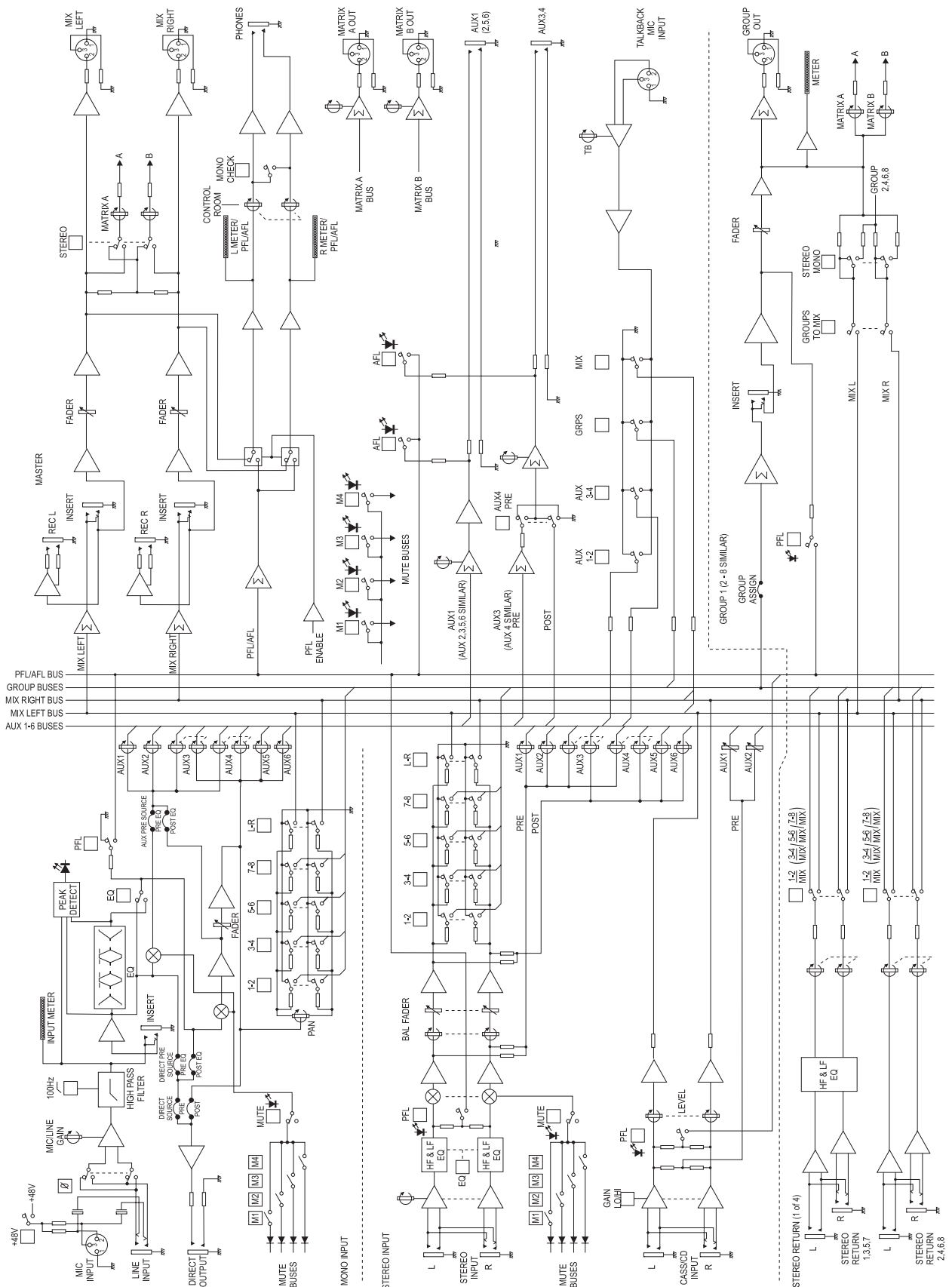


DIMENSIONS

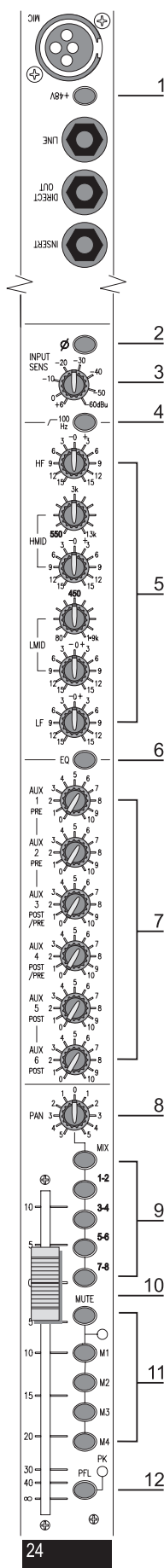


Console	Frame Width (including side trims)
24 Input	1114 (43.86")
32 Input	1347 (53.03")
40 Input	1581 (62.24")

Block Diagram



Using The Console



MONO INPUT CHANNEL

Two inputs are available to the mono input channel, via XLR connector (normally for microphone sources) or 3-pole 1/4" 'A' gauge jack socket for signals needing a higher input impedance such as keyboards, drum machines, synths or tape machines. Both input sockets are permanently active, and may be used simply by plugging the source into the required input. You do not need to unplug anything in the MIC socket if you want to use the LINE input. The UltraMic+™ input provides very wide gain control (without the need for a pad), high CMRR and +28dBu input capability.

An impedance balanced DIRECT output is provided, fed from the output of the fader buffer, which is therefore unaffected by the position of the ROUTING switches or PAN control. This provides an ideal source for external processing units, the output of which may be brought back to the console through the STEREO INPUTS or STEREO RETURNS, or to directly send to the tracks of a tape machine for multitrack recording. This provides as many Tape Sends as there are mixer channels, without using the group or mix outputs.

An unbalanced INSERT is provided which is a break point in the input channel signal path. It allows the signal to be taken out of the mixer, through an external piece of equipment and then back into the mixer to continue through to the final output. The Insert is a 3-pole 1/4" 'A' gauge Jack Socket, which is normally by-passed. When a jack plug is inserted, the signal path is broken at a point just after the Hi-Pass Filter, but before the EQ section. The signal from the channel appears on the TIP of the plug and is returned on the RING. The insert point allows limiters, compressors and other signal processing units to be added as required to particular input channels and because it is located PRE EQ, noise generated by the external equipment may be reduced by a small amount of H.F. cut in the Equaliser.

1 +48V

The +48V switch applies phantom powering to the MIC input socket for condenser microphones. Transformer-coupled dynamic microphones may be used without causing damage, even when the +48V power is connected, but care must be taken when using unbalanced sources, because of the voltage present on pins 2 and 3 of the XLR connector.



NOTE: Phantom powered mics should not be plugged in with the +48V switched on. Also you should be aware that some microphones draw an unusually large current which may overload the power supply, resulting in distortion. Consult your microphone supplier for guidance if necessary.

2 PHASE SWITCH

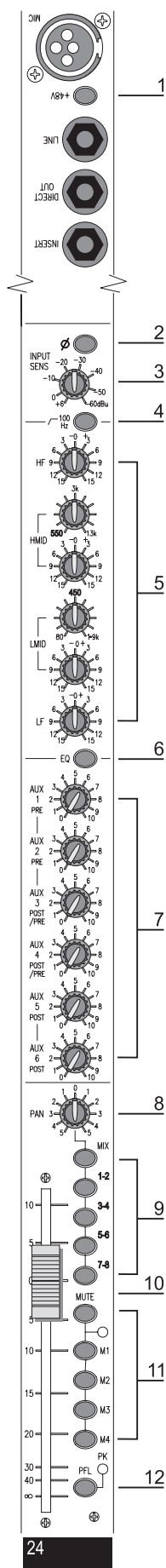
The Phase switch reverses the polarity of the input signal to compensate for phase differences due to microphone placement or incorrect wiring of input cables. This switch should be released for normal operation.

3 INPUT SENSITIVITY

This knob sets how much of the source signal is sent to the rest of the mixer. Too high and the signal will distort as it overloads the channel (shown by illumination of the PEAK LED), and causes clipping. Too low, and the level of any background hiss will be more noticeable and you may not be able to get enough signal level to the output of the mixer. Set the knob fully anticlockwise as a preliminary position for LINE level sources. An individual channel meter monitors the input level at the Insert point, making it easy to spot input overload.

4 HI-PASS FILTER

Pressing this switch inserts an 18dB per octave 100Hz Hi-Pass Filter in the signal path, immediately after the input amplifier. This is particularly useful in live PA situations to reduce stage rumble or 'popping', and its use is strongly recommended, even on male vocals. It can also be used for filtering



out low frequency hum.

5 EQUALISER

The Equaliser(EQ) comprises four sections. The upper control provides H.F.(treble) boost and cut of +/-15dB at 13kHz, and the lower control provides L.F. (bass) boost and cut of +/-15dB at 60 Hz.

The centre two pairs of knobs are arranged as HI and LO MID frequency sections, with a cut/boost control (lower knob) of +/- 15dB, and a SWEEP(frequency) control which determines at which frequency the boost/cut action will be centered. These MID sections, with a combined frequency range from 80Hz to 13kHz are particularly versatile for vocals, enabling particular characteristics of the singer to be lifted or suppressed very precisely.

Set the cut/boost control of each section to the centre-detented position when not required.

6 EQ SWITCH

The EQ switch bypasses the Equalisation section when released. Alternately pressing and releasing the switch provides an easy way of comparing the equalised and unequalised signals.

7 AUXILIARY SENDS

These controls route the input channel signal to any one or more Auxiliary buses. These are separate from the main outputs and can therefore provide additional outputs for foldback, echo units or extra loudspeaker 'fills'.

AUX 1 & 2 are normally derived after the EQ section and before the channel fader (PRE FADE, POST EQ), and are therefore unaffected by the fader position and mute status. This makes them particularly suitable for foldback or monitor feeds, which need to be controlled separately from the main P.A. mix.

Aux 3 & 4 are normally POST EQ, POST FADE, but may be selected globally to be PRE FADE, POST EQ by pressing the appropriate AUX PRE switch on the Master section. The AUX PRE source may also be selected as PRE EQ by internal jumpers as described in Appendix 2 later in this manual.

AUX 5 and 6 are derived after the EQ and channel fader (POST FADE, POST EQ), and therefore follow any changes in fader level. They are normally used to drive effects processing units which are fed back into the mixer and which must fade out with the input channel.

All of the post-fade Aux Sends are muted when the MUTE switch is pressed.

8 PAN

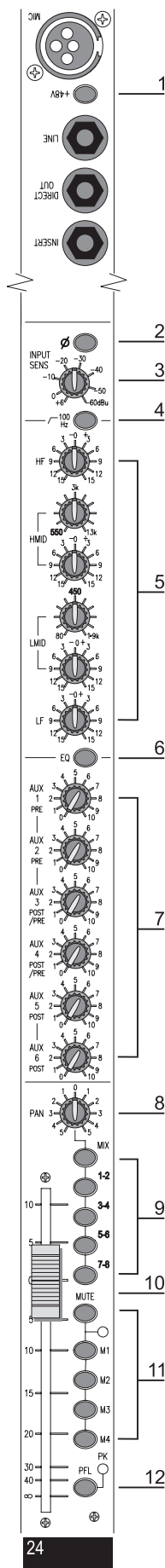
The PAN control determines the position of the signal within the stereo mix image or may be used to route the channel signal to particular output GROUPS# as selected by the ROUTING SWITCHES (see below). Rotation fully anticlockwise feeds the signal solely to the Left mix buss or Groups 1, 3, 5 and 7, while rotation clockwise sweeps the image to the Right buss or Groups 2, 4, 6 and 8.

9 ROUTING SWITCHES

The input channel signal may be routed to the main Stereo MIX (L-R) or pairs of GROUP busses (1-2, 3-4 etc.), by pressing the respective switches. These may be used in conjunction with the PAN control (8 above) to route the channel signal proportionately to any of the selected busses.

10 FADER

This 100mm long-throw fader determines the proportion of the channel in the mix and provides a clear visual indication of channel level. Normal operating position is at the '0' mark, providing 10dB of gain above that point if required.



11 MUTING

All outputs from the channel except Inserts may be muted by pressing the MUTE switch, and the associated LED illuminates to show that the channel is OFF.

Alternatively the channel may be selected to any one or more MUTE BUSES to provide grouped muting under the control of the MUTE masters on the far right-hand side of the console. In either case the mute status is shown by the LED.

12 PFL/PEAK

PFL

When the PFL switch is pressed, the Pre-Fade signal is fed to the headphones and L & R meters, where it replaces the normal Mix L/R signal (the main Mix L/R output is unaffected). The PFL/AFL ON LED on the master section illuminates to warn that the headphones and the meters are now responding to the PFL/AFL selection and the PFL LED on the input channel lights to identify the active channel. This is a useful way of listening to any required input signal without interrupting the main mix, for making adjustments or tracing problems.

PEAK

When the PFL switch is released the LED on the channel serves as a PEAK indicator, to warn when an excessively high signal level is present in the channel. The signal is sampled at three points in the channel, immediately after the Hi-Pass Filter (Pre Insert), PRE EQ and POST EQ. The Peak LED will illuminate approximately 4dB before clipping and therefore give warning of a possible overload even if the peaks are removed by external equipment plugged into the Insert.

STEREO INPUTS

Each Stereo Input section comprises two independent pairs of inputs. The Stereo Input feeds a full-facility input channel, very similar to the mono input. The second input is intended for a cassette or CD source, typically to provide background music before a performance and are fed to the stereo mix only and Aux 1 & 2.

CASS/CD INPUT SECTION

13 GAIN

The GAIN switch provides two input sensitivities. The LO setting (switch released) should be selected for -10dBV semi-professional equipment such as CD players or cassette, and the HI setting (switch pressed) should be selected for -20dBV Hi-Fi equipment. Start with the LO setting if the source level is unknown.

14 AUXILIARY SENDS

These controls route a mono sum of the input channel signal to Auxiliary busses 1 & 2. These are separate from the main outputs and can therefore provide additional outputs for foldback, echo units or extra loudspeaker 'fills'.

The sends are derived before the LEVEL TO MIX control and are therefore not affected by the position of that control. This makes them particularly suitable for foldback or monitor feeds, which need to be controlled separately from the main P.A. mix.

15 PFL

When the PFL switch is pressed, a mono sum of the pre-fade signal is fed to the headphones and L & R meters, where it replaces the normal Mix L/R signal. The PFL/AFL ON LED on the master section illuminates to warn that the headphones and the meters are now responding to the PFL/AFL selection and the PFL LED on the input section lights to identify the active channel. This is a useful way of listening to any required input signal without interrupting the main mix, for making adjustments or tracing problems.

16 LEVEL TO MIX

This control sets the level of the stereo signal to the stereo MIX.

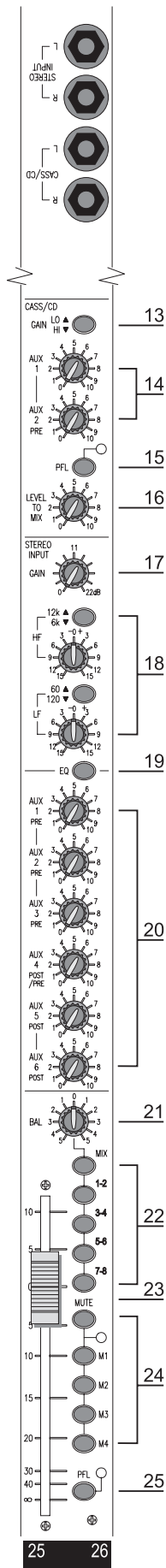


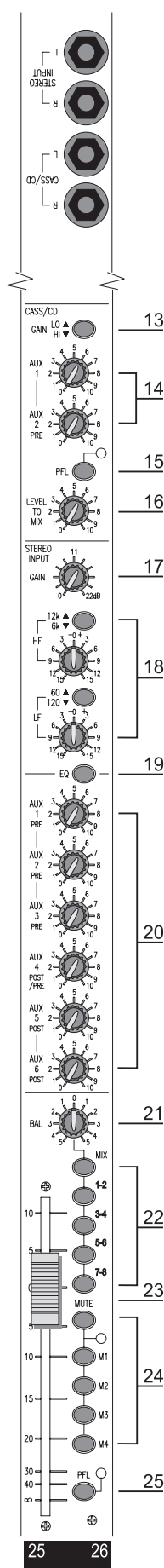
Important: The Stereo Input muting does not affect this section. It is therefore important that the knob should be left fully anticlockwise when not required.

STEREO INPUT SECTION

17 GAIN

This knob allows you to match the input level to suit a wide variety of professional, semi-professional and hi-fi sources. Start with a low setting, especially for professional equipment, checking the level on the meters using PFL, and increase it if you cannot reach an adequate signal level with the fader at maximum.





18 EQUALISER

The Equaliser section has HF and LF shelving controls, each with a range switch to provide two centre frequencies for each control.

Turn the HF knob to the right to boost high (treble) frequencies by up to 15dB at a choice of 6kHz or 12kHz centre frequencies, adding crispness to percussion from drum machines, synths and electronic instruments. Turn to the left to cut these frequencies, reducing hiss or excessive brilliance.

Turn the LF knob to the right to boost low (bass) frequencies by up to 15dB at a choice of 60Hz or 120Hz centre frequencies, adding extra punch to synths, guitars and drums. Turn to the left to reduce hum, boominess or improve a mushy sound.

Set both knobs in the centre-detented position when not required.

19 EQ SWITCH

The EQ switch bypasses the Equalisation section when released. Alternately pressing and releasing the switch provides an easy way of comparing the equalised and unequalised signals.

20 AUXILIARY SENDS

These controls route a mono sum of the input channel signal to any one or more Auxiliary buses. These are separate from the main outputs and can therefore provide additional outputs for foldback, echo units or extra loudspeaker 'fills'.

AUX 1 & 2 are normally derived after the EQ section and before the channel fader (PRE FADE, POST EQ), and are therefore unaffected by the fader position and mute status. This makes them particularly suitable for foldback or monitor feeds, which need to be controlled separately from the main P.A. mix.

AUX 3 & 4 are normally POST EQ, POST FADE but may be altered globally to be PRE FADE by pressing the appropriate AUX PRE switch on the Master section.

AUX 5 and 6 are derived after the EQ and channel fader (POST FADE, POST EQ), and therefore follow any changes in fader level. They are normally used to drive effects processing units which are fed back into the mixer and which must fade out with the input channel.

All of the Aux Sends are muted when the MUTE switch is pressed.

21 BALANCE

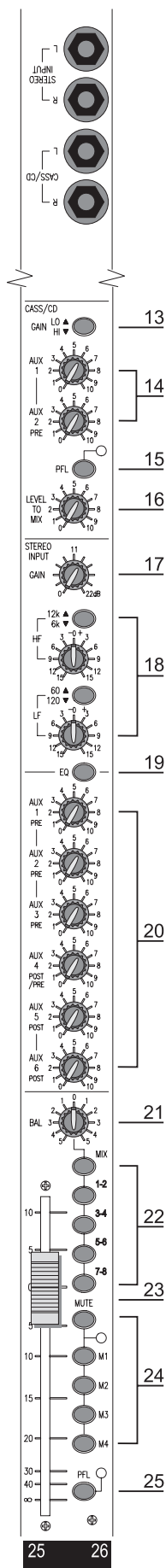
The BALANCE control sets the amount of the channel signal feeding the Left and Right Mix outputs, allowing you to balance the source in the stereo image. When the control is turned fully left or right you feed only that side of the signal to the mix.

22 ROUTING SWITCHES

The input channel signal may be routed in stereo to the main Stereo MIX (L-R) or pairs of GROUP busses (1-2, 3-4 etc.), by pressing the respective switches. The Left side of the channel feeds Groups 1, 3, 5 & 7, and the Right side feeds Groups 2, 4, 6 & 8, subject to the position of the BALANCE control (21).

23 FADER

This long-throw fader determines the proportion of the channel in the mix and provides a clear visual indication of channel level. Normal operating position is at the '0' mark, providing 10dB of gain above that point if required.



24 MUTING

All post-fade outputs from the channel may be muted by pressing the MUTE switch, and the associated LED illuminates to show that the channel is OFF.

Alternatively the channel may be selected to any one or more MUTE BUSES to provide grouped muting under the control of the MUTE masters on the far right-hand side of the console. In either case the mute status is shown by the LED.

25 PFL

When the PFL switch is pressed, a mono sum of the pre-fade signal is fed to the headphones and L & R meters, where it replaces the normal Mix L/R signal. The PFL/AFL ON LED on the master section illuminates to warn that the headphones and the meters are now responding to the PFL/AFL selection and the PFL LED on the input channel lights to identify the active channel. This is a useful way of listening to any required input signal without interrupting the main mix, for making adjustments or tracing problems.

GROUP SECTION

The Group outputs are available on XLR connectors, and a pre-fade insert point is also provided on 3-pole 1/4" jacks. The Groups may also feed the stereo Mix (see 27, below) or the Matrix outputs (see 28, below).

26 GROUP FADERS

These 100mm long-throw fader determine the level of the Group signal. Normal operating position is at the '0' mark, providing 10dB of gain above that point if required.

27 GROUPS TO MIX, STEREO/MONO

Pressing the GROUPS TO MIX switch feeds the post-fade Group signals in stereo to both sides of the stereo Mix. Groups 1, 3, 5 and 7 feed Mix Left, and Groups 2, 4, 6 & 8 feed Mix Right.

Alternatively pairs of Groups may be used as mono subgroups feeding both sides of the Mix, by pressing the STEREO/MONO switch.

28 MATRIX SENDS (GROUPS)

The console is provided with two independent Matrix outputs A & B. These may receive feeds from each Group or Mix Left and Right to create additional mixes for extra speaker outputs (e.g. side fills, monitors or delays) without affecting the main mix. The MATRIX SENDS control the level of the Group signal sent to Matrix A & B buses. They should be turned fully anticlockwise when not required.

If required the Matrix outputs may be used to create an additional stereo output from the console, and in this case the Groups may be fed as stereo pairs, for instance with Groups 1, 3, 5 & 7 feeding Matrix A and Groups 2, 4, 6 & 8 feeding Matrix B.

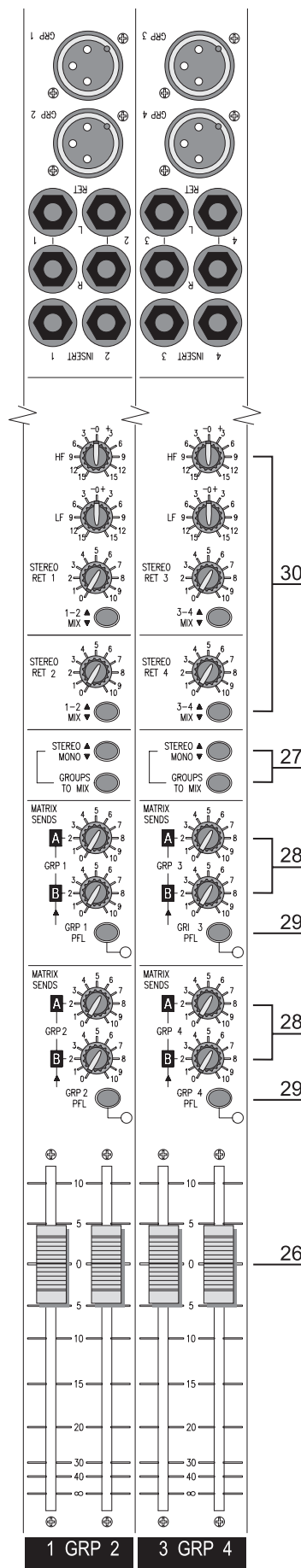
29 PFL

When the PFL switch is pressed, the pre-fade signal of the relevant Group is fed to the headphones and L & R meters, where it replaces the normal Mix L/R signal. The PFL/AFL ON LED on the master section illuminates to warn that the headphones and the meters are now responding to the PFL/AFL selection and the associated PFL LED lights to identify the active Group. This is a useful way of listening to any required Group signal without interrupting the main mix, for making adjustments or tracing problems.

30 STEREO RETURNS

Eight STEREO RETURNS are provided which feed either to the stereo Mix or the local pair of Groups, as selected by the 1-2 (3-4, 5-6, 7-8)/Mix switches. These are an ideal way of mixing in the output of a reverb or effects unit, additional keyboards or the output of other consoles used as sub-mixers. The knobs should be turned fully anticlockwise when not required.

Returns 1, 3, 5 & 7 are also provided with HF and LF Equalisation, allowing some control of tonal quality on sources such as keyboards or effects units.



MASTER SECTION

31 MIX FADERS

The MIX FADERS set the final level of the Mix outputs. The faders should normally be set close to the '0' mark if the input channel levels have been set correctly.

Pre-fade INSERTS are provided for connection of external processing equipment (e.g. Graphic EQ or compressor/limiters) if required.

32 MATRIX SENDS

The console is provided with two independent Matrix outputs A & B, which may receive feeds from each Group or Mix Left and Right to create additional mixes for extra speaker outputs (e.g. side fills, monitors or delays) without affecting the main mix. These knobs control the level of the Mix signal sent to Matrix A & B buses. They should be turned fully anticlockwise when not required.

Normally the Matrix Sends are derived from a mono sum of Mix L & R. Pressing the STEREO switch routes Mix L to Matrix A and Mix R to Matrix B to allow the Matrix outputs to be used as a separate stereo output from the console.

33 MATRIX MASTERS

Each Matrix section has a MASTER control which sets the final output level.

When the AFL switch is pressed, the post-fade signal is fed to the headphones and L & R meters, where it replaces the normal Mix L/R signal. The PFL/AFL ON LED on the master section illuminates to warn that the headphones and the meters are now responding to the PFL/AFL selection and the PFL LED on the input channel lights to identify the active Matrix output. This is a useful way of listening to any required output signal without interrupting the main mix, for making adjustments or tracing problems.

34 TALKBACK

An XLR connector is provided to accept the input from a local talkback mic or gooseneck mic. Gain is set by the TB LEVEL control and the signal may be routed to a choice of AUX 1-2, AUX 3-4, MIX or GROUP buses using the four adjacent switches.

35 POWER ON LEDS

Two LEDs monitor the health status of the console power supply unit and will be illuminated when power is connected. Check that both LEDs are lit after turning on the console psu.

36 AUXILIARY MASTERS

Each of the Auxiliary Send busses is provided with a rotary MASTER LEVEL fader and an AFL switch with indicating LED which monitors the final output after the fader.

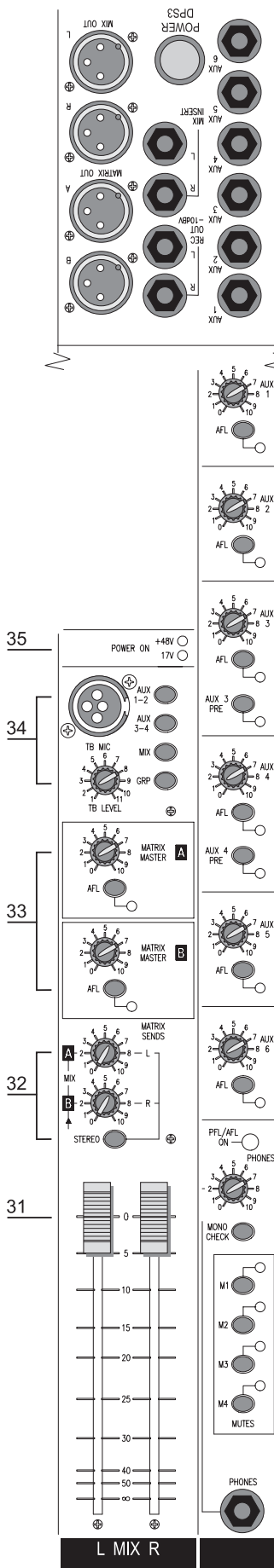
AUX 3 & 4 normally receive post-fade sends from the input channels, but may be switched to pre-fade by pressing the appropriate AUX PRE switch.

37 PFL/AFL ON

This LED illuminates to show that a PFL or AFL is active on the headphones, and to show that the Left & Right meters will be displaying the PFL/AFL signal.

38 PHONES

This control sets the level of the PHONES output jack.



39 MONO CHECK

Normally the Phones output monitors the Stereo Mix. Pressing the MONO CHECK switch sums the L & R outputs to check for phasing problems. The main outputs are not affected by the position of the switch.

40 MUTE MASTERS

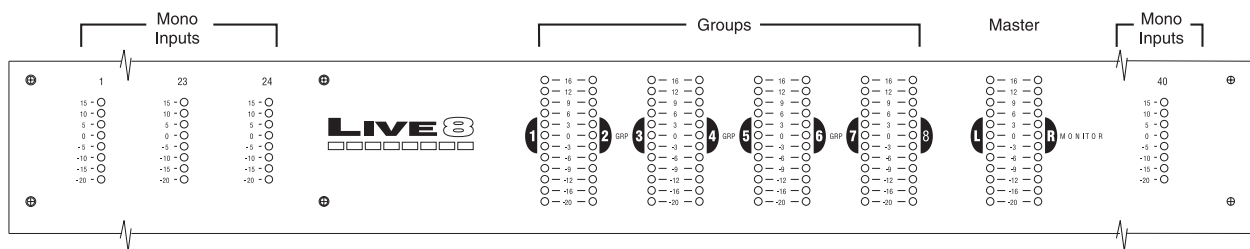
Four MUTE MASTER switches provide muting control of any channels which have been assigned to a mute group using the M1-M4 switches on the input channels. The associated LED illuminates when the MUTE is active.

41 PHONES JACK

The PHONES output appears on a 3-pole 1/4" jack, suitable for headphones with an impedance of 200 ohms or higher.

METERBRIDGE

A full width Meterbridge provides continuous monitoring of all Inputs, Groups and Mix L/R signals on three-colour bargraph meters. All the meters are peak reading.



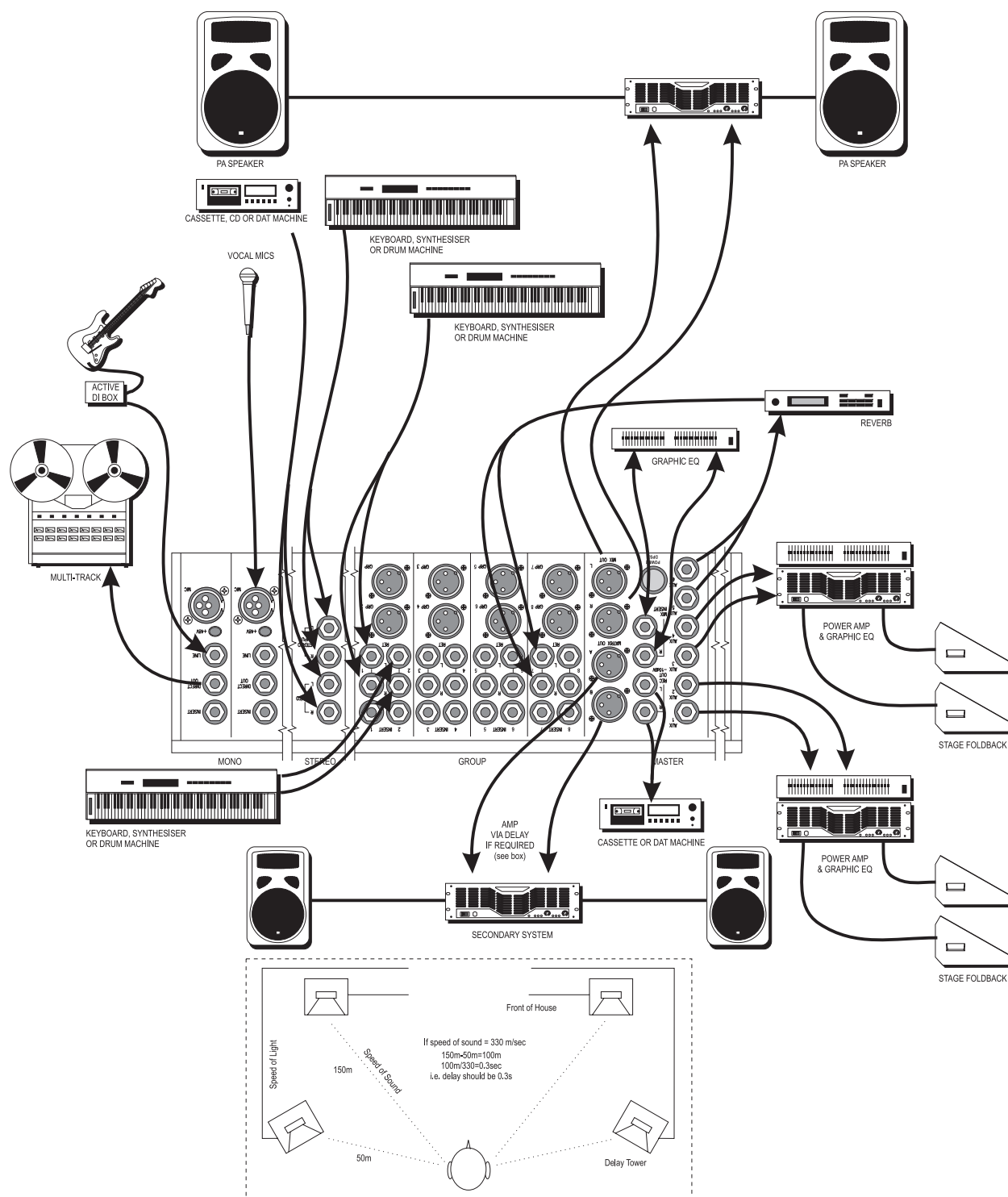
Normally the Left and Right meters show the level of the Mix Left and Right outputs. If any PFL or AFL switch is activated the meters are switched to display the level of the selected PFL or AFL signal.

Note that '0' on the bargraph scale corresponds to a nominal +4dBu.

Applications

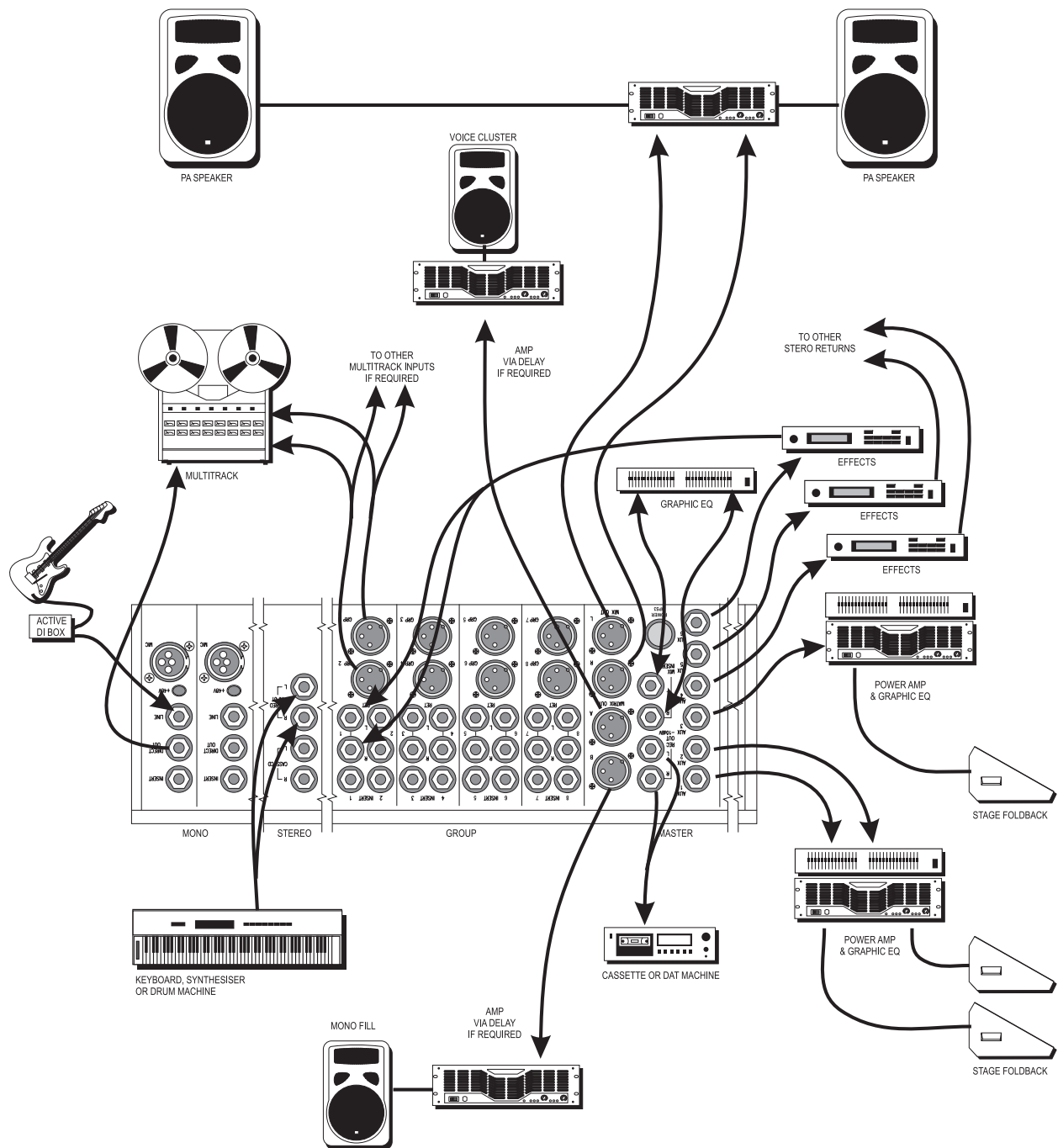
APPLICATION 1 - LIVE SOUND REINFORCEMENT

This drawing shows a typical configuration for sound reinforcement, with the main PA fed from Mix L/R and a secondary system fed from the Matrix outputs. The illustration shows the flexibility of the inputs to the mixer and how the direct outputs are available as sources for a multitrack tape machine. The Aux Sends are used for reverb (Aux 5 & 6 which are pre-fade) and for artists foldback (Aux 1-4), with Aux 3 & 4 switched globally to pre-fade.



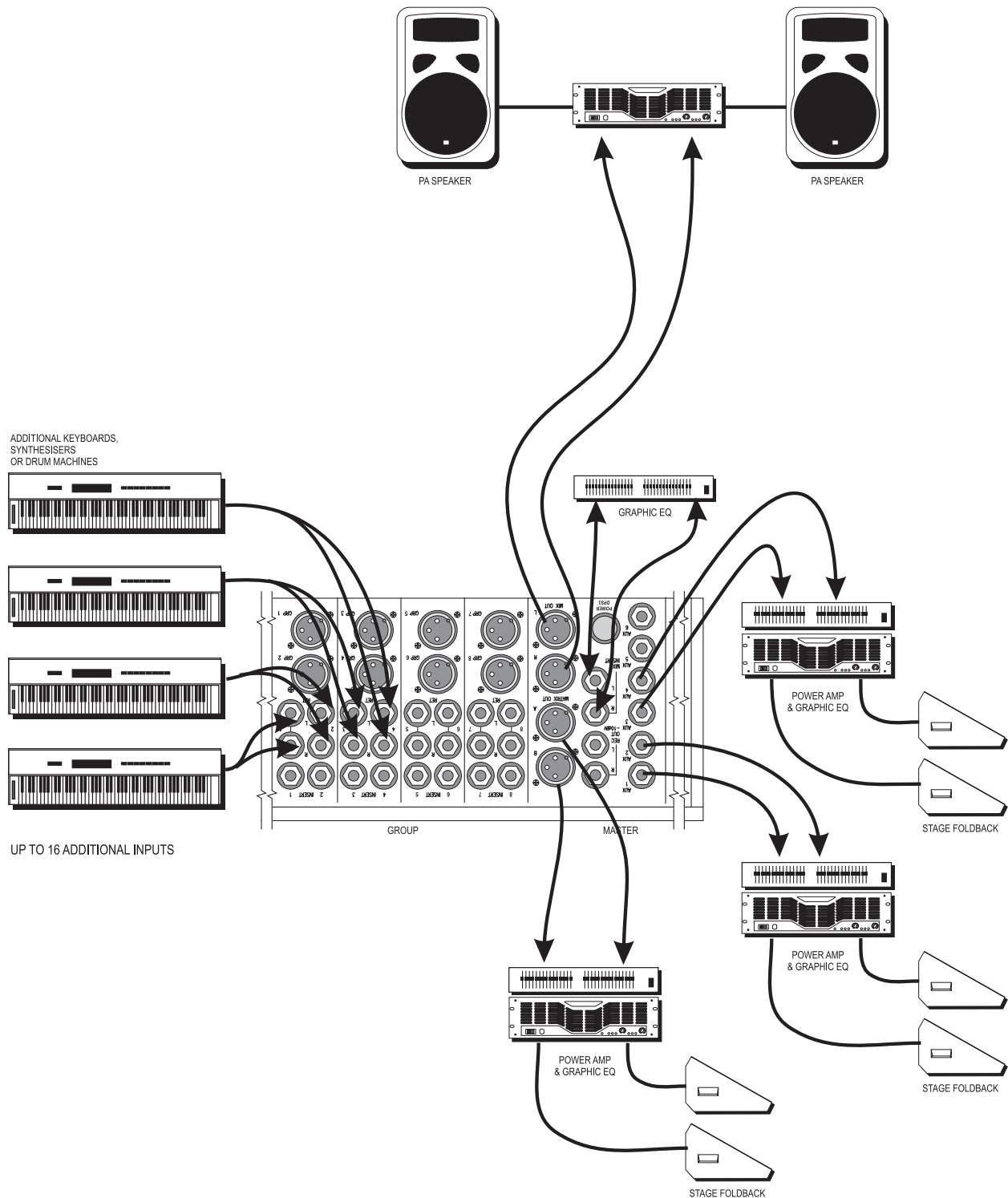
APPLICATION 2 - LIVE SOUND WITH CENTRE CLUSTER

This configuration is similar to application 1, but with the addition of a voice cluster and mono fill, both fed from the Matrix outputs. The source for the Matrix could be the main Mix, or a combination of Mix and Groups. The first three Aux sends are used as mono feeds to Effects Units, brought back to the Mix on the Stereo Returns. Group outputs or Direct outputs may be used to feed a multitrack recorder if required, with 'Y' leads used to split the Group outputs across more than one multitrack input to access selected tracks.



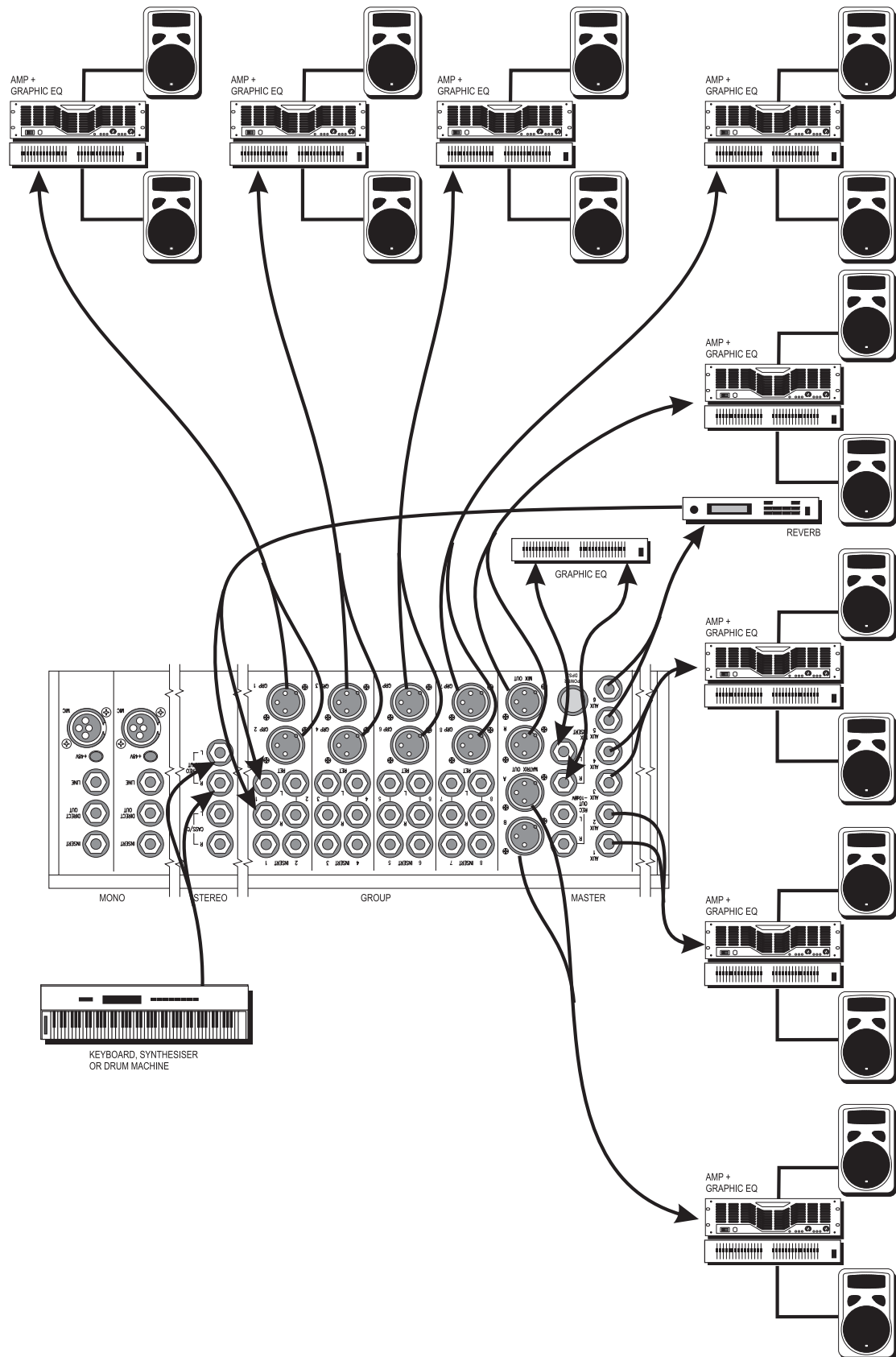
APPLICATION 3 - ADDITIONAL STEREO INPUTS

This illustration shows how the number of Stereo Inputs to the Mix may be expanded by using the Stereo Returns for sources such as keyboards and drum machines, when the normal Stereo input channels are already used. Additional stage foldback is provided by the Matrix outputs in this example.



APPLICATION 4 - THEATRE SOUND

In this application the main requirement is to drive a large number of separate loudspeaker outputs for spot sound effects. The Groups, Mix, Aux Sends and Matrix outputs are all used for this purpose. Each could be provided with Graphic EQ or Delay units as required.



Typical Specifications

NOISE

Measured RMS, 20Hz to 20kHz Bandwidth

Line inputs selected at unity gain and terminated 150R

MIX	36 Inputs routed to Mix, faders at unity	-81 dBu
	Mix Faders down	-95 dBu
AUX	36 Inputs routed, output at max., input faders down	-86 dBu
DIRECT OUTPUT	Input to Post-Fade Output @ unity gain	-90 dBu
	Input to Post-Fade Output @ 40dB gain	-81 dBu
MATRIX OUTPUT	Matrix Output at max., sends down	-93 dBu
E.I.N.	Microphone Input, Maximum Gain, terminated 150R	-129 dBu

CROSSTALK

@ 1kHz	1kHz	10kHz
Fader Attenuation to Direct Output	92 dB	80 dB
Fader Attenuation to Mix (36ch. routed)	94 dB	89 dB
Fader Attenuation to Mix (1 ch. routed)	101 dB	89 dB
Typical Aux Attenuation	88 dB	83 dB
Pan Isolation (36ch. to Mix) L to R	76 dB	68 dB
R to L	81 dB	83 dB
Adjacent Channel Crosstalk	99 dB	95 dB
Routing Isolation	86 dB	86 dB
Mute Offness	104 dB	88 dB

FREQUENCY RESPONSE

Line In to Mix Out via Group (longest path)	
25Hz to 20kHz	-1dB

T.H.D.	-10dBu Input routed to Mix, +20dBu out @ 1kHz	< 0.005%
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C.M.R.R.	Typical at medium gain, 50Hz to 10kHz	> 80 dB
	Typical at high gain, 50Hz to 10kHz	> 85 dB

INPUT & OUTPUT IMPEDANCES

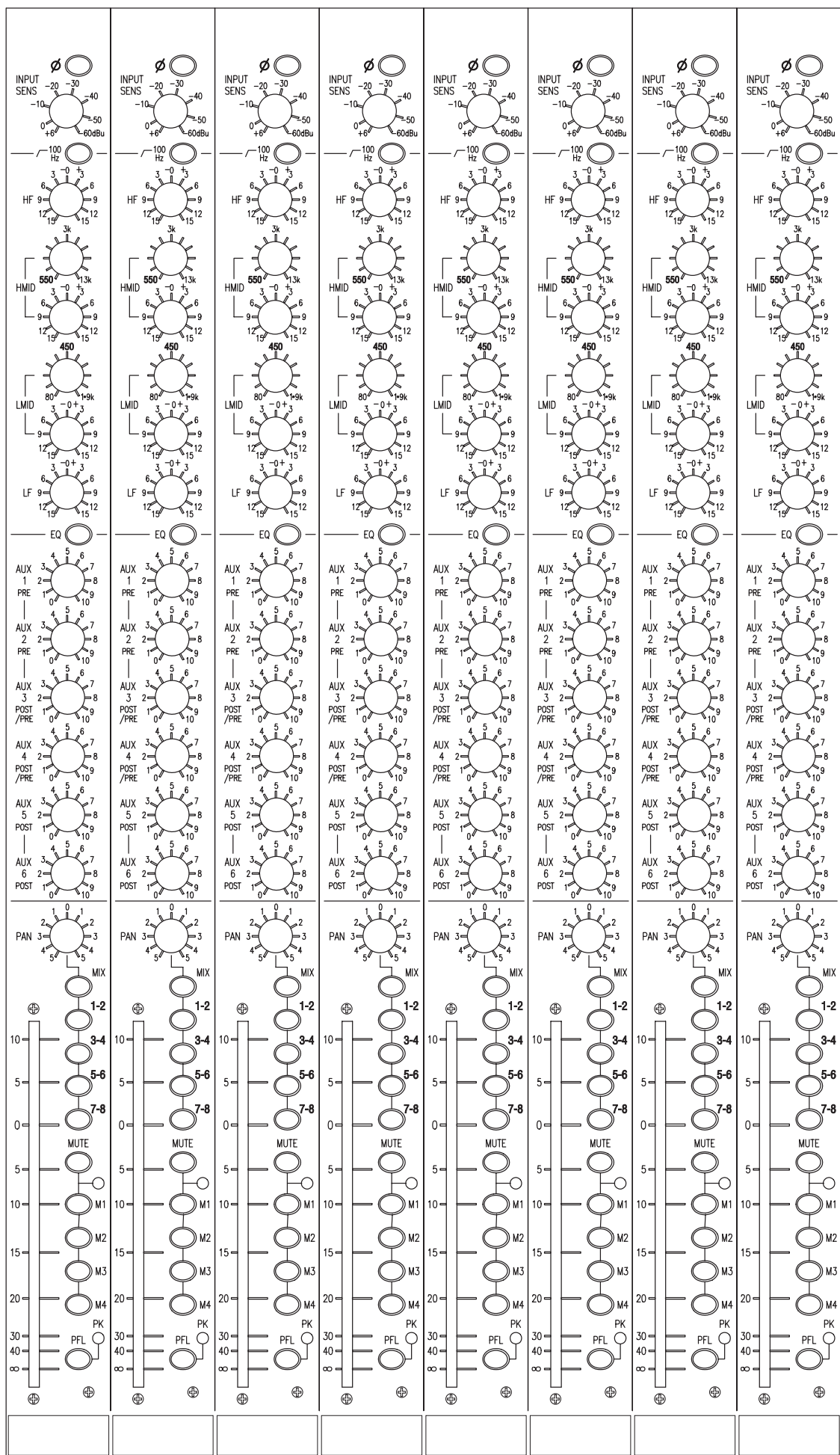
Microphone Input	1.8 kohms
Line Input	10 kohms
Stereo Input	8.6 kohms
Cass/CD Input	12.8 kohms
Stereo Return	19 kohms

INPUT & OUTPUT LEVELS

Mic/.Line Input Maximum Level	+28 dBu
Stereo Input	+25 dBu
Cass/CD Input	+18 dBu
Stereo Return	+22 dBu
Nominal Input for +4dBu at Mix Output, level at '7'	-10 dBV (LO)
	-20 dBV (HI)
Max. Mic Gain through longest path to Mix	84 dB

Mark-up Sheets

The following mark-up sheets may be copied and used to record control settings.





GAIN

AUX 1

AUX 2

CASS/CD

LEVEL TO MIX

STEREO INPUT

GAIN

12k

HF

60

120

LF

EQ

AUX 1 PRE

AUX 2 PRE

AUX 3 POST/PRE

AUX 4 POST/PRE

AUX 5 POST

AUX 6 POST

BAL

MIX

1-2

3-4

5-6

7-8

MUTE

M1

M2

M3

M4

PFL

HF

LF

STEREO RET 1

STEREO RET 2

STEREO SENDS

GRP 1

GRP 2

HF

LF

STEREO RET 3

STEREO RET 4

STEREO SENDS

GRP 3

GRP 4

HF

LF

STEREO RET 5

STEREO RET 6

STEREO SENDS

GRP 5

GRP 6

HF

LF

STEREO RET 7

STEREO RET 8

STEREO SENDS

GRP 7

GRP 8

1-2

3-4

5-6

7-8

1-2

3-4

5-6

7-8

AUX 1

AFL

AUX 2

AFL

AUX 3

AFL

AUX 4

AFL

AUX 5

AFL

AUX 6

AFL

PFL/AFL ON

PHONES

MONO CHECK

M1

M2

M3

M4

MUTES

PHONES

Warranty

- 1 Soundcraft is a trading division of Harman International Industries Ltd.
End User means the person who first puts the equipment into regular operation.
Dealer means the person other than Soundcraft (if any) from whom the End User purchased the Equipment, provided such a person is authorised for this purpose by Soundcraft or its accredited Distributor.
Equipment means the equipment supplied with this manual.
- 2 If within the period of twelve months from the date of delivery of the Equipment to the End User it shall prove defective by reason only of faulty materials and/or workmanship to such an extent that the effectiveness and/or usability thereof is materially affected the Equipment or the defective component should be returned to the Dealer or to Soundcraft and subject to the following conditions the Dealer or Soundcraft will repair or replace the defective components. Any components replaced will become the property of Soundcraft.
- 3 Any Equipment or component returned will be at the risk of the End User whilst in transit (both to and from the Dealer or Soundcraft) and postage must be prepaid.
- 4 This warranty shall only be available if:
 - a) the Equipment has been properly installed in accordance with instructions contained in Soundcraft's manual; and
 - b) the End User has notified Soundcraft or the Dealer within 14 days of the defect appearing; and
 - c) no persons other than authorised representatives of Soundcraft or the Dealer have effected any replacement of parts maintenance adjustments or repairs to the Equipment; and
 - d) the End User has used the Equipment only for such purposes as Soundcraft recommends, with only such operating supplies as meet Soundcraft's specifications and otherwise in all respects in accordance Soundcraft's recommendations.
- 5 Defects arising as a result of the following are not covered by this Warranty: faulty or negligent handling, chemical or electro-chemical or electrical influences, accidental damage, Acts of God, neglect, deficiency in electrical power, air-conditioning or humidity control.
6. The benefit of this Warranty may not be assigned by the End User.
7. End Users who are consumers should note their rights under this Warranty are in addition to and do not affect any other rights to which they may be entitled against the seller of the Equipment.

