ALLEN&HEATH

XONE:464

PROFESSIONAL CLUB MIXER

SERVICE MANUAL

For XONE:464 VERSION 1 and VERSION 2

Publication AP3728

Allen & Heath Technical Support

This service manual provides technical information for servicing the **XONE:464**. It refers to both the original (VERSION 1) and the revised (VERSION 2) model **XONE:464**. Whilst we believe the information presented to be reliable we do not assume responsibility for inaccuracies. We also reserve the right to make changes in the interest of further product development.

For further technical support please contact us at Allen & Heath. The contact details are printed below. To help us provide the most efficient service please quote the console serial number in any communication regarding this product. Our Internet site provides further information on our full product range as well as contact details for our distribution network.

CE This product complies with the European Electromagnetic Compatibility directives 89/336/EEC & 92/31/EEC and the European Low Voltage Directives 73/23/EEC & 93/68/EEC.

This product has been tested to EN55103 Parts 1 & 2 1996 for use in Environments E1, E2, E3, and E4 to demonstrate compliance with the protection requirements in the European EMC directive 89/336/EEC. During some tests the specified performance figures of the product were affected. This is considered permissible and the product has been passed as acceptable for its intended use. Allen & Heath has a strict policy of ensuring all products are tested to the latest safety and EMC standards. Customers requiring more information about EMC and safety issues can contact Allen & Heath.

NOTE: Any changes or modifications to the console not approved by Allen & Heath could void the compliance of the console and therefore the users authority to operate it.

XONE:464 Service Manual AP3728 Issue 2

Copyright © 2001 Allen & Heath. All rights reserved

The **XONE:464** is manufactured in the United Kingdom by:

ALLEN&HEATH

Kernick Industrial Estate, Penryn, Cornwall, TR10 9LU, UK

Web: http://www.allen-heath.com

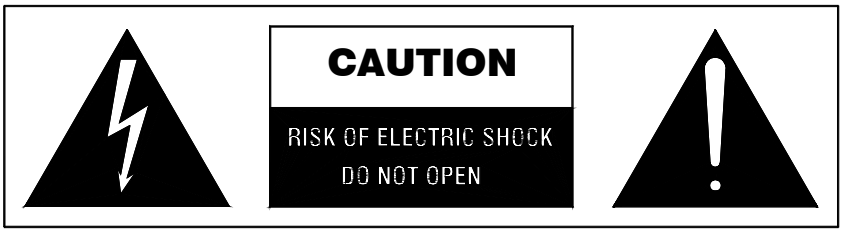
Email: sales@allen-heath.com

support@allen-heath.com

spares@allen-heath.com

Important Safety Instructions

WARNINGS - Read the following before proceeding :



ATTENTION: RISQUE DE CHOC ELECTRIQUE – NE PAS OUVRIR

Read instructions: Retain these safety and operating instructions for future reference. Adhere to all warnings printed here and on the console.

Do not remove covers: Operate the console with its covers correctly fitted. Disconnect mains power by unplugging the power cord if the covers need to be removed for setting internal options. This work should be carried out by competent technical personnel only.

Power sources: Connect the console to a mains power only of the type described in the User Guide and marked on the rear panel. Use the power cord with sealed mains plug appropriate for your local mains supply as provided with the console. If the provided plug does not fit into your outlet consult your service agent for assistance.

Power cord routing: Route the power cord so that it is not likely to be walked on, stretched or pinched by items placed upon or against it.

Grounding: Do not defeat the grounding and polarisation means of the power cord plug. Do not remove or tamper with the ground connection in the power cord.

WARNING: This equipment must be earthed.

Water and moisture: To reduce the risk of fire or electric shock do not expose the console to rain or moisture or use it in damp or wet conditions. Do not place containers of liquids on it which might spill into any openings.

Ventilation: Do not obstruct the ventilation slots or position the console where the air flow required for ventilation is impeded. If the console is to be operated in a rack unit or flightcase ensure that it is constructed to allow adequate ventilation.

Heat and vibration: Do not locate the console in a place subject to excessive heat or direct sunlight as this could be a fire hazard. Locate the console away from any equipment which produces heat or causes excessive vibration.

Servicing: Switch off the equipment and unplug the power cord immediately if it is exposed to moisture, spilled liquid, objects fallen into the openings, the power cord or plug become damaged, during lightening storms, or if smoke, odour or noise is noticed.

Installation: Install the console in accordance with the instructions printed in the User Guide. Do not connect the output of power amplifiers directly to the console. Use audio connectors and plugs only for their intended purpose.

Important Mains plug wiring instructions.

The console is supplied with a moulded mains plug fitted to the AC mains power lead. Follow the instructions below if the mains plug has to be replaced.

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

TERMINAL		WIRE COLOUR	
		European	USA/Canada
L	LIVE	BROWN	BLACK
N	NEUTRAL	BLUE	WHITE
E	EARTH GND	GREEN & YELLOW	GREEN

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 with the Earth symbol. **This appliance must be earthed.**

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.

Precautions

Damage : To prevent damage to the controls and cosmetics avoid placing heavy objects on the control surface, scratching the surface with sharp objects, or rough handling and vibration.

Environment : Protect from excessive dirt, dust, heat and vibration when operating, servicing and storing. Avoid tobacco ash, smoke, drinks spillage, and exposure to rain and moisture. If the console becomes wet, switch off and remove mains power immediately. Allow to dry out thoroughly before using again.

Cleaning : Avoid the use of chemicals, abrasives or solvents. The control panel is best cleaned with a soft brush and dry lint-free cloth. The faders, switches and potentiometers are lubricated for life. The use of electrical lubricants on these parts is not recommended.

Transporting : The console may be transported as a free-standing unit or mounted in a rack or flightcase. Ensure that the connector pod is secured in place with the locking screws fitted to prevent movement. Protect the controls from damage during transit. The faders are best positioned at the top of their travel if the console is transported without a suitable flightcase, rack or carton. Use adequate packing if you need to ship the unit.

Contents

Important Safety Instructions 3

Mains Plug Wiring Instructions 4

Precautions 4

Welcome to the XONE:464 6

VERSION 1 and VERSION 2 7

Panel Drawings VERSION 1 8

Panel Drawings VERSION 2 9

Cue Sheet VERSION 1 10

Cue Sheet VERSION 2 11

Specifications 12

Installing the Console 14

Connecting Mains Power 15

Earthing 15

Plugging up the System 16

Cable Wiring Diagrams 17

Replacing the Crossfader 18

Order Codes 19

Internal Options 19

Tips and Troubleshooting 20

Block Diagram VERSION 1 ..... D1

Block Diagram VERSION 2 ..... D2

MONO INPUT PCB D3

MONO INPUT Circuit D4

STEREO INPUT PCB D5

STEREO INPUT Circuit D6

LEFT PCB D7

LEFT Circuit Sheet 1 ..... D8

LEFT Circuit Sheet 2 ..... D9

RIGHT PCB D10

RIGHT Circuit Sheet 1 ..... D11

RIGHT Circuit Sheet 2 ..... D12

MASTER PCB D13

MASTER Circuit D14

ROTARY OUTPUT Circuit & PCB D15

CROSSFADE PCB D16

CROSSFADE Circuit Sheet 1 ..... D17

CROSSFADE Circuit Sheet 2 ..... D18

CONNECTOR PCB D19

CONNECTOR Circuit Sheet 1 ..... D20

CONNECTOR Circuit Sheet 2 ..... D21

CONNECTOR Circuit Sheet 3 ..... D22

Welcome to the XONE:464

From the User Guide:

The Allen & Heath **XONE:464** presents a unique concept in combining a professional live sound mixer with a serious DJ performance tool in a dedicated club format. And, above all, it features sound quality second to none. **XONE:464** has been designed and constructed using the same rigorous standards we apply to our large format professional consoles used and respected by top engineers throughout the world. We have had great fun designing this new range. We are sure you will get even more enjoyment using it.

MONO Inputs The 4 mic/line inputs are ideal for live performances, or for your MC, DJ and presenter microphones. An extensive Aux system lets you provide artists with individual stage monitors, helping them to give their best performance. It can also feed multiple effects processors such as reverb and delay. A 4 band EQ with swept frequency mids is the same as that found on top end professional consoles, and helps you deal with source problems, enhance clarity or sweeten the live mix. Insert jacks let you patch in channel processors such as compressors to help control the dynamic range of individual microphones. Smooth 100mm faders with 10dB available boost provide fine precision for live mixing. Direct outputs are provided for recording, spot effects or channel linking.

STEREO Inputs The 6 dual stereo channels allow selection of up to 12 stereo sources including 4 RIAA turntables. The 4 band performance EQ gives you a unique extra band for solid bass control. Boost restricted to 6dB prevents system overload while an extended cut of up to a massive 26dB provides complete sound sculpturing. Full routing lets you assign any channel direct to the main mix or through either X or Y crossfader channels. Large illuminated Cue switches and signal meters keep you in control of your sources. The Aux system is tucked out of the way of the performance controls and provides 2 mono and 2 stereo feeds for monitors, effects, recording or additional zones.

EXT Input Provides an additional stereo input to Mix1, Mix2 or both, ideal for stage reverb returns or sub inputs. Or it can be configured as an external monitor source.

VCA Crossfader Uses a DC voltage to control the audio meaning no clicks, bangs or crackles as the fader wears. The crossfade curve can be set for either 6dB dip in the middle, ideal for seamless beat mixing, or for constant level, better suited to scratch mixing. The fader is removable from the front panel for quick replacement. Crossfader output can be fed to the Aux system which means that you can provide zone and effects feeds from your mix. A Pan control provides yet more performance effect.

VCF Filters Unique to **XONE**, two stereo state variable Voltage Controlled Filters provide the DJ with a new tool for live performance creativity. These are very similar to those found on classic analogue synths but benefit from modern, quiet and stable technology. Use these to sweep the sound by accentuating or cutting frequencies from 100Hz to 20kHz. The 3 filter types HPF, BPF and LPF can be combined to create many more amazing effects. A large Resonance control changes the 'Q' or sharpness of the filter effect from subtle to extreme. Each VCF has its own in/out switch to toggle the effect on or off.

MIX Outputs Mix1 and Mix2 are two independent stereo mixes on balanced XLR and with inserts for patching in limiters and other processors. Use Mix1 for music only and Mix2 for music + mics, or use them as completely different mixes, ideal when you want to create separate stage and DJ mixes feeding independent rigs. Both include additional stereo outputs suitable for recording your mix. A twin connector Mono output sums the L and R signals from either Mix1 or Mix2 to provide additional mono zone and/or lighting controller feeds.

MONITOR Section Extensive monitoring is provided so that you can keep a check on every input and output signal to prevent overload and to cue your mix. A stereo meter always shows Mix1 output level, another the selected monitor or cue source. An 8 way switch bank selects which output to monitor, and is automatically overridden by any Cue pressed. Two pairs of headphones can be plugged in. Split-CUE allows accurate track matching. An independent stereo Booth Monitor feed includes Cue enable, Mono sum and Mute functions to satisfy all your monitoring needs.

VERSION 1 and VERSION 2 Model Differences

There are minor changes between the original **XONE:464** and the revised model which replaced it in October 2000. This service manual covers both models. Spares and support are available for both models. When servicing or ordering spare parts for a **XONE:464** first check which model it is.

The original model is referred to as **VERSION 1**. Its order code is XONE:464/. Its key identifiers are:

Serial number sequence 020000

Stainless steel panel. Linear MIX master faders.

The newer model is referred to as **VERSION 2**. Its order code is XONE2:464/. Its key identifiers are:

Serial number sequence 030000

Painted silver panel. Rotary MIX master controls.

The following is a summary of the differences introduced on VERSION 2:

Styling The original stainless steel finish is replaced with a new textured silver paint. Several knob and pushbutton types have been changed to further co-ordinate the styling. There are minor changes to the graphics.

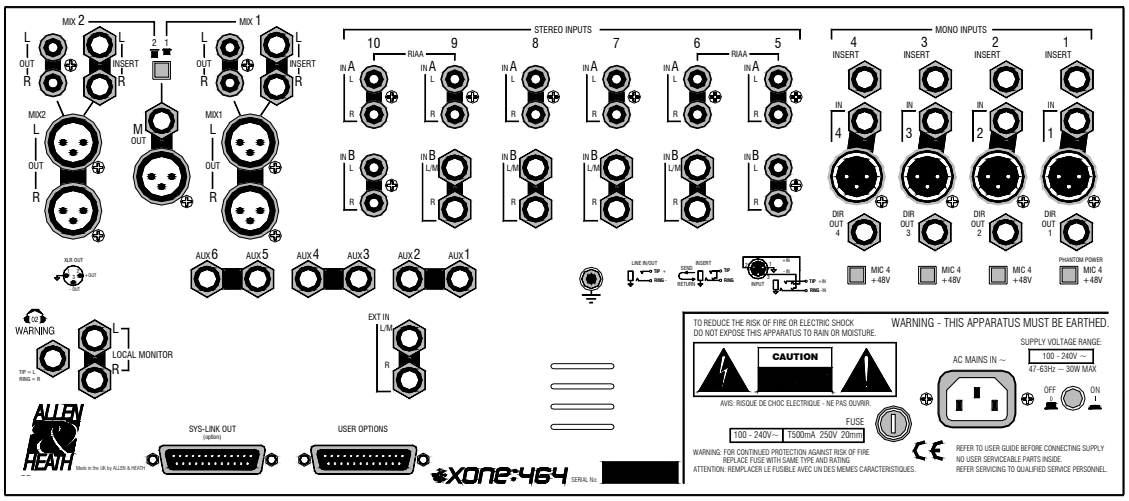
Master Level Controls The original MIX1 and MIX2 master linear faders have been replaced with rotary master controls.

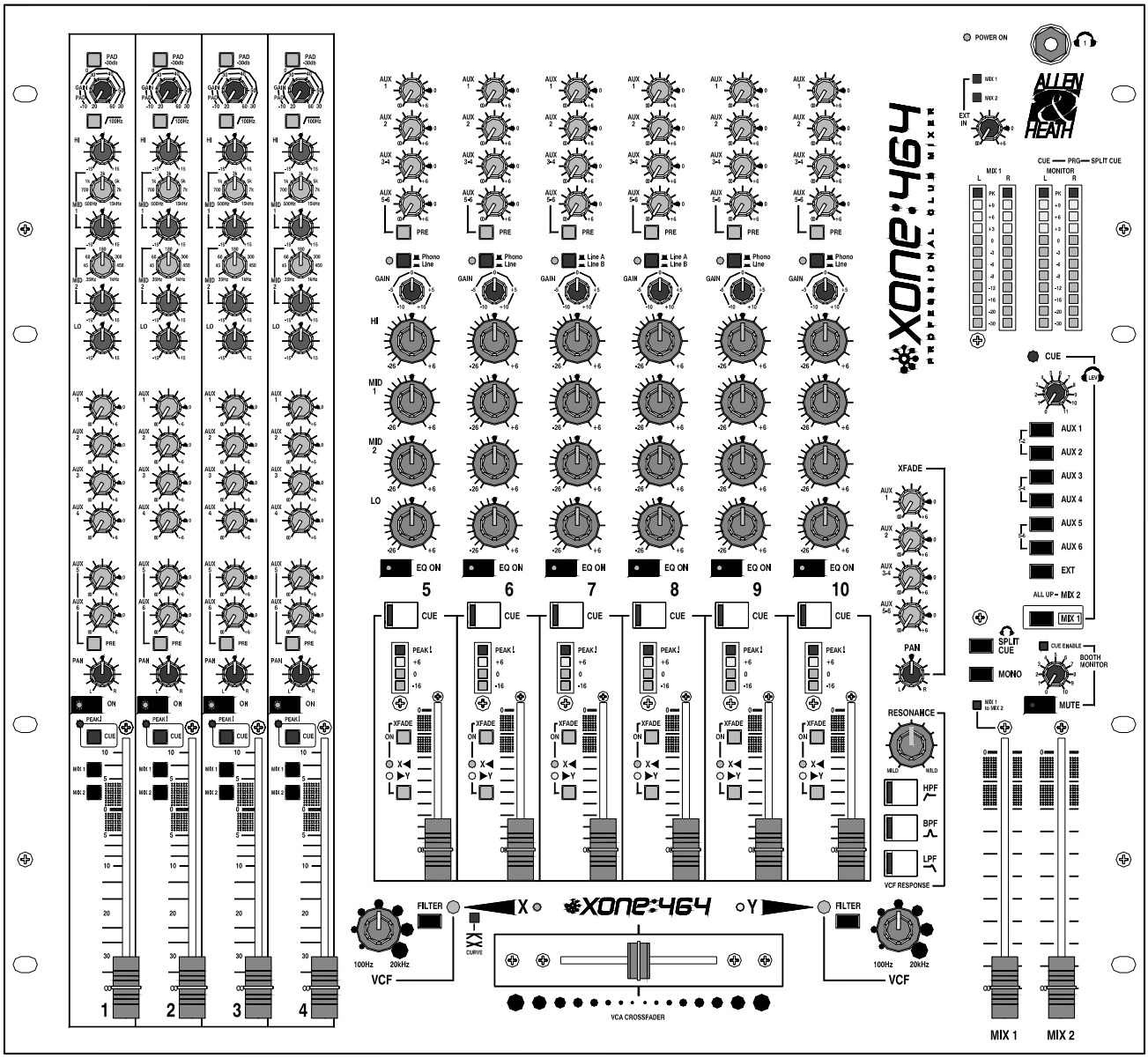
Crossfader The new high grade Penny & Giles fader is fitted instead of the original Alps version. These are not interchangeable with VERSION 1.

Headphones Socket The front panel socket has been moved from the top to lower right.

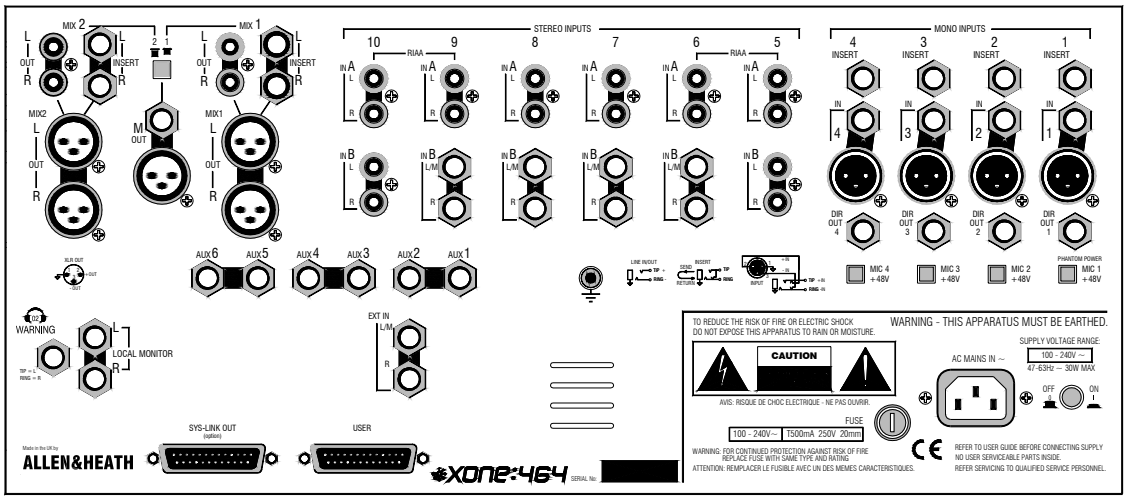
The circuit information is mostly identical between the two models. Differences are noted on the diagrams.

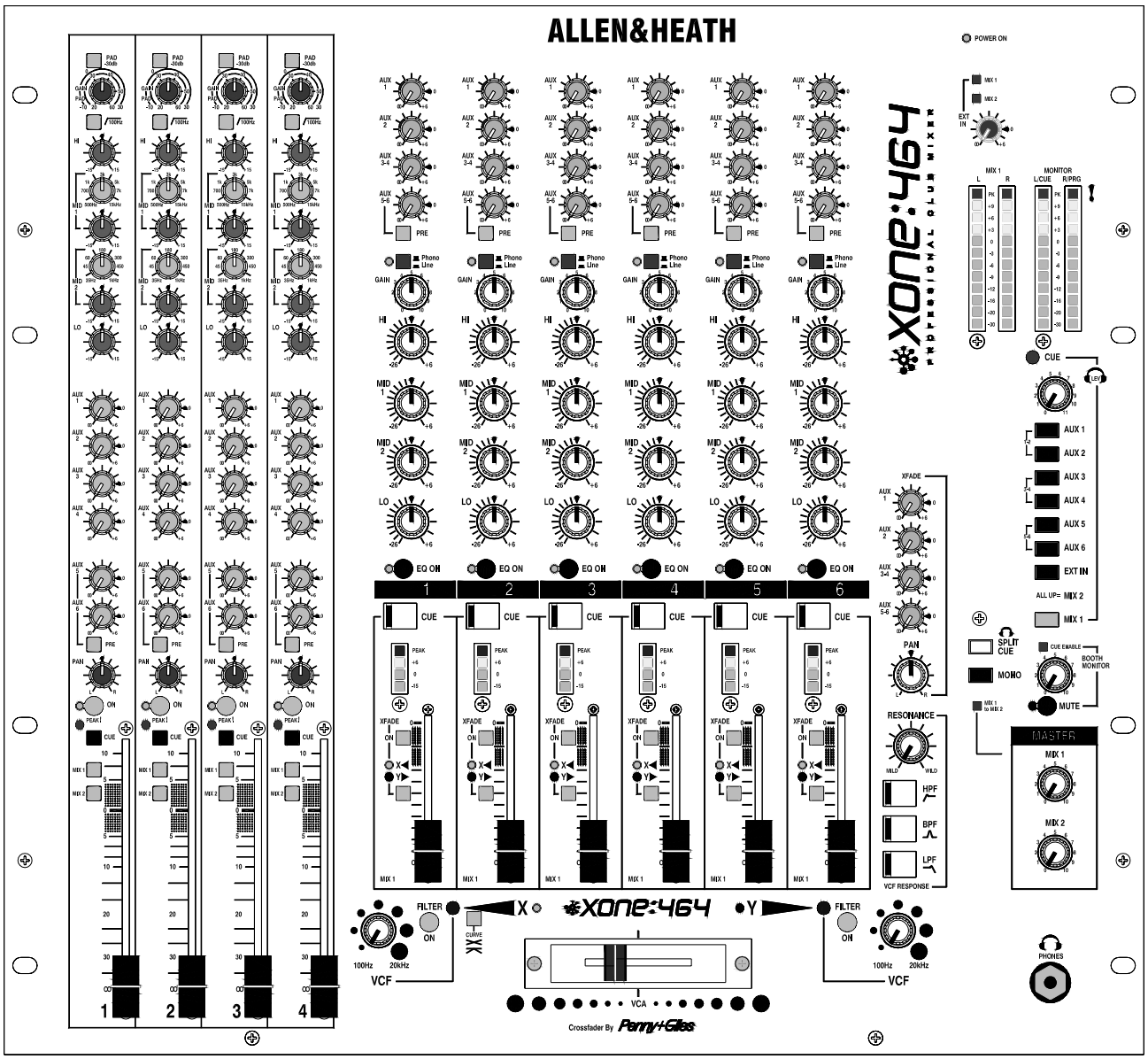
VERSION 1


MIX 2
MIX 1
STEREO INPUTS
MONO INPUTS
LOCAL MONITOR
EXT IN
SYS-LINK OUT
USER OPTIONS
WARNING - THIS APPARATUS MUST BE EARTHED.
CAUTION
AC MAINS IN ~
FUSE
XONE:464


XONE:464
PROFESSIONAL 6 CLUB MIXER
POWER ON
CUE
AUX 1
AUX 2
AUX 3
AUX 4
AUX 5
AUX 6
EXT
MIX 1
MIX 2
SPLIT CUE
MONO
MUTE
BOOTH MONITOR
XFADE
RESONANCE
HPF
BPF
LPF
VCF RESPONSE
FILTER
VCF
VCA CROSSFADER
EQ ON
PEAK
PAN
ON

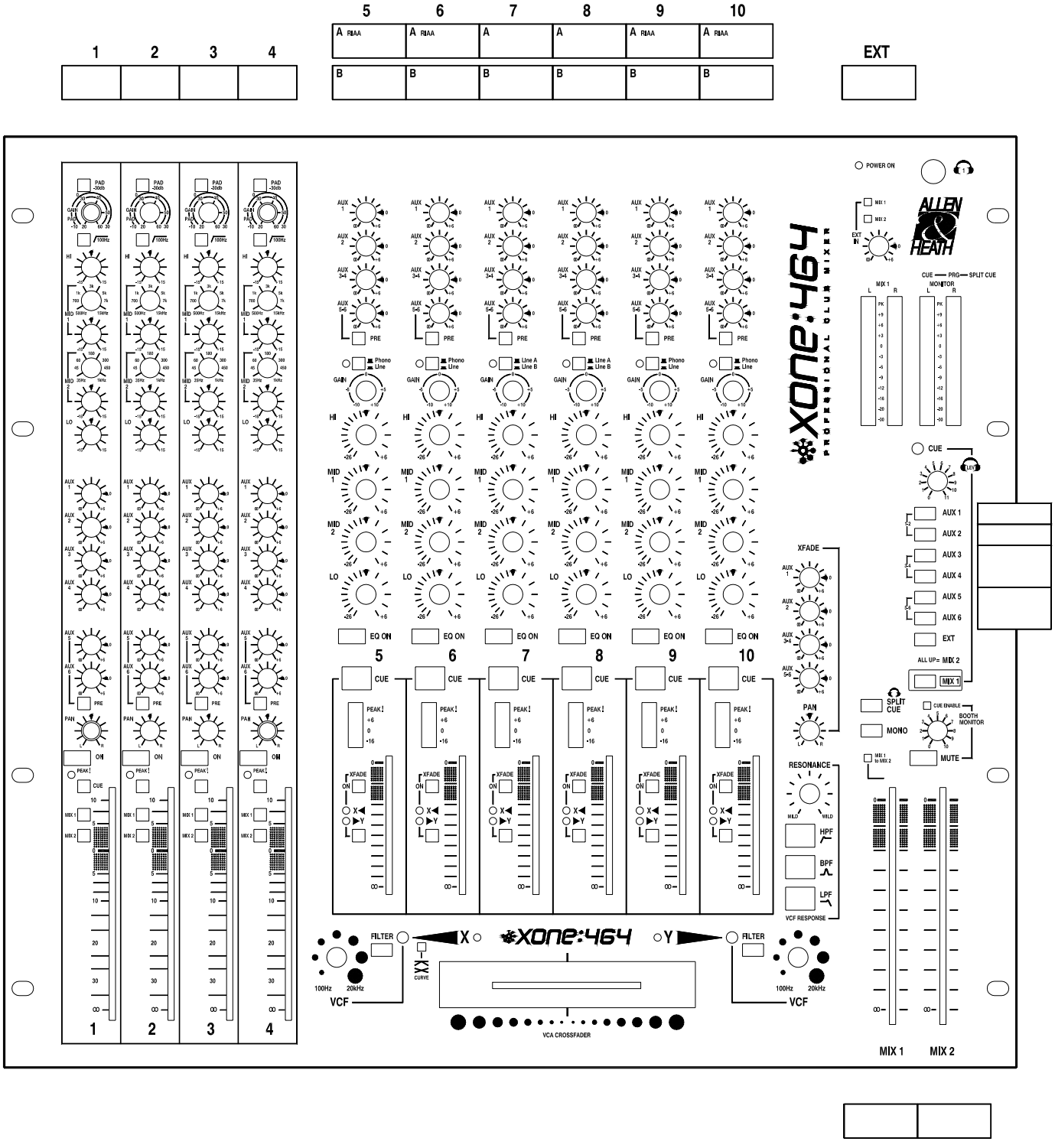
VERSION 2


MIX 2
MIX 1
STEREO INPUTS
MONO INPUTS
MIX2
MIX1
M OUT
INSERT
RIAA
AUX6
AUX5
AUX4
AUX3
AUX2
AUX1
MIC 4 +48V
MIC 3 +48V
MIC 2 +48V
MIC 1 +48V
WARNING
LOCAL MONITOR
EXT IN
SYS-LINK OUT
USER
ALLEN&HEATH
XONE:464
TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE.
WARNING - THIS APPARATUS MUST BE EARTHED.
CAUTION
AVIS: RISQUE DE CHOC ELECTRIQUE - NE PAS OUVRIR.
AC MAINS IN ~
SUPPLY VOLTAGE RANGE:
100 - 240V ~
47-63Hz ~ 30W MAX
OFF
ON
FUSE
100 - 240V~ T500mA 250V 20mm
REFER TO USER GUIDE BEFORE CONNECTING SUPPLY
NO USER SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.


ALLEN&HEATH
XONE:464
PROFESSIONAL CLUB MIXER
POWER ON
EQ ON
CUE
PRE
PAN
XFADE
RESONANCE
HPF
BPF
LPF
VCF RESPONSE
FILTER
VCF
VCA
MASTER
SPLIT CUE
MONO
MUTE
BOOTH MONITOR
PHONES
Crossfader By Penny+Giles

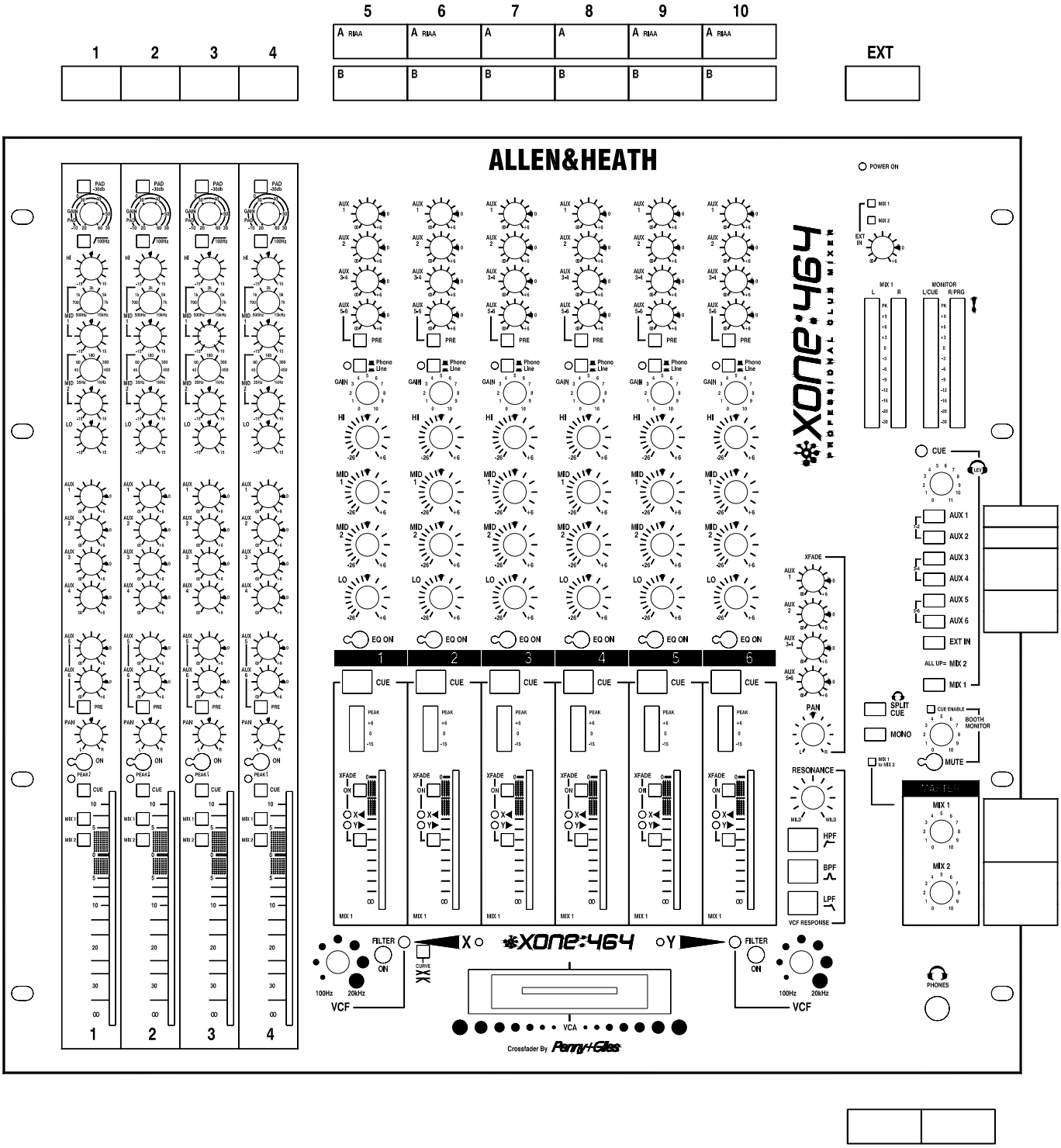
XONE:464 VERSION 1 **- CUE SHEET**

Photocopy and use to log your console settings



XONE:464 VERSION 2 **- CUE SHEET**

Photocopy and use to log your console settings



Specifications

0dBu = 0.775 Volts rms	+4dBu = 1.23V rms	
0dBV = 1 Volt rms	-10dBV = 316mV rms	
Maximum output level	XLR	+26dBu into >2k ohm load
	TRS jack	+21dBu into >2k ohm load
	RCA phono	+15dBu into >10k ohm load
Internal headroom	Channels	+21dB
	Mix to output	+23dB
Peak indicators	Turn on 9dB before clipping	
Meters	MIX1 / MONITOR Peak reading 12 led 3 colour	
Frequency response	+0/-1dB 20Hz to 40kHz	
Distortion	< 0.006% THD+noise measured at +14dBu 1kHz	
Crosstalk	< 90dB Channel shutoff measured at 1kHz	
Noise	Measured rms 22Hz to 22kHz	
MIC EIN	-128dB referred to 150 ohm source	
Residual output noise	XLR	-90dBu (-94dB S/N)
	TRS jack	-84dBu (-84dB S/N)
	RCA phono	-92dBu (-84dB S/N)
Mix noise, ch routed	XLR	-86dBu (-90dB S/N)
	TRS jack	-83dBu (-83dB S/N)
	RCA phono	-91dBu (-83dB S/N)

Power Supply

Internal switch mode power unit with auto sensing mains input.

MAINS IN socket	IEC 3 pin
Power lead	Country dependent with moulded mains plug supplied
AC mains	100 to 240V AC @ 50/60Hz
Consumption	30W max
Mains fuse rating	100-240V AC T500mA 20mm

Dimensions and Weights

The connector pod can be rotated and fixed in one of two positions to allow either desktop operation with rear facing connectors, or 19” rack mounting with underside connectors in 10U space.

	Width	Height	Depth
Desktop	483mm (19”)	192mm (7.6”)	530mm (20.9”)
Rack mounted	483mm (19”)	444mm (17.5”) 10U	135mm (5.3”)
Packed	590mm (23.2”)	260mm (10.2”)	610mm (24”)

	Unpacked	Packed
Weight	10kg (22lbs)	13kg (29lbs)

Connector Types

XLR connections are Pin 2 = hot (+) Pin 3 = cold (-) Pin 1 = GND
TRS input and output connections are Tip = hot (+) Ring = cold (-) Sleeve = GND
TRS insert connections are Tip = SEND Ring = RETURN Sleeve = GND

Input Connections

CH 1-4 in (XLR)	Balanced XLR female	2k ohm	-60 to –20dBu	PAD out
		>10k ohm	-30 to +10dBu	PAD in
CH 1-4 in (TRS)	Balanced TRS jack	>10k ohm	-30 to +10dBu	
CH 5,6,9,10 in A	RCA phono RIAA	47kohm/330pF	2 to 100mV	
CH 7,8 in A	RCA phono	>10k ohm	-10 to +10dBu	
CH 5,10 in B	RCA phono	>10k ohm	-10 to +10dBu	
CH 6,7,8,9 in B	Balanced TRS jack	>10k ohm	-10 to +10dBu	
EXT in	Balanced TRS jack	> 10k ohm	-10dBV (+4dBu option)	

Inserts

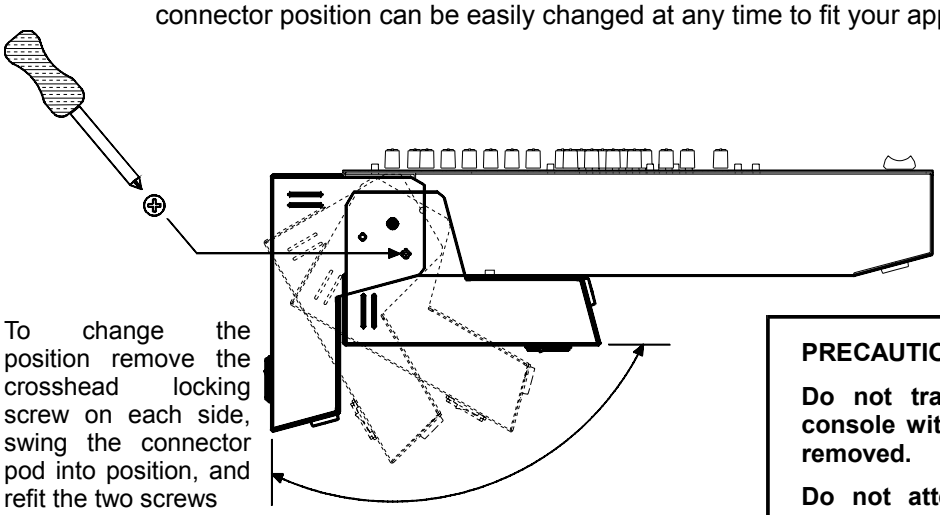
CH 1-4	Unbalanced TRS jack	SEND/RET	<75/>3k ohm	0dBu
MIX out 1,2	Unbalanced TRS jack	SEND/RET	<75/>3k ohm	-2dBu

Output Connections

DIR out 1-4	Impedance balanced TRS jack	<75 ohm	0dBu
MIX out 1,2 (XLR)	Balanced XLR male	<75 ohm	+4dBu
MIX out 2 (RCA)	RCA phono	<75 ohm	-10dBV
MONO out (XLR)	Balanced XLR male	<75 ohm	+4dBu
MONO out (TRS)	Impedance balanced TRS jack	<75 ohm	-2dBu
AUX out 1-6	Impedance balanced TRS jack	<75 ohm	-2dBu
LOCAL MON out	Impedance balanced TRS jack	<75 ohm	-2dBu
Headphones 1,2	Tip = L Ring = R	30 to 600 ohm recommended	

Installing the Console

The **XONE** Series features the Allen & Heath Quick Change Connector (QCC) system. The rear connector pod may be hinged and locked into either of two positions. Rear connectors allow desktop operation with the control panel sloped at a convenient 15 degrees. Underside connectors allow 19" rack mounting in a compact 10U space. The connector position can be easily changed at any time to fit your application.



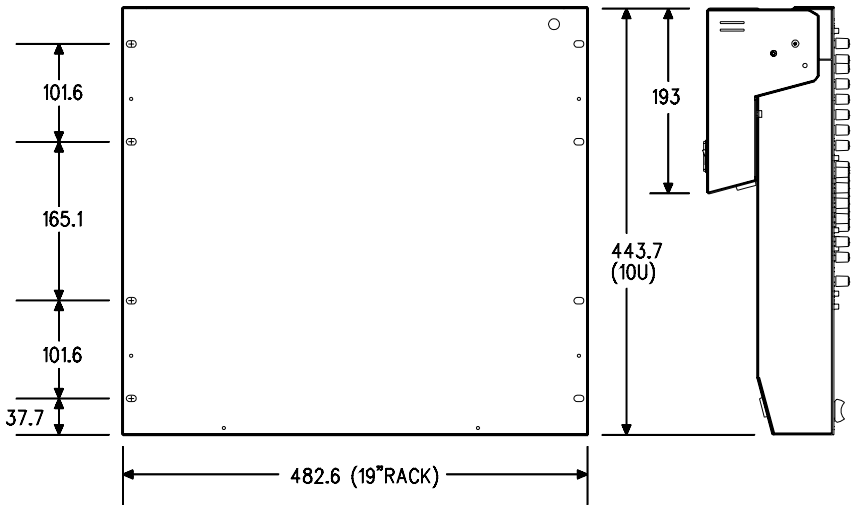
To change the position remove the crosshead locking screw on each side, swing the connector pod into position, and refit the two screws

PRECAUTION :

Do not transport or carry the console with the locking screws removed.

Do not attempt to remove the connector pod from the console.

19" Rack or Plinth Mounting

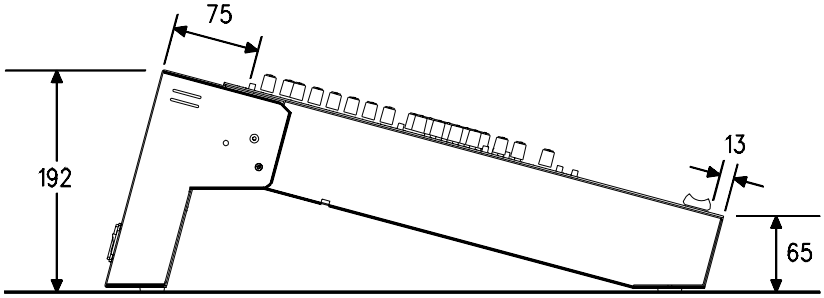


Mount the console in the rack using 4x M6 bolts each side for maximum strength. We recommend you fit the bolts with plastic cup washers to protect the panel, and they look good... These should be available from the supplier of the rack unit or good hardware store.

Flightcasing

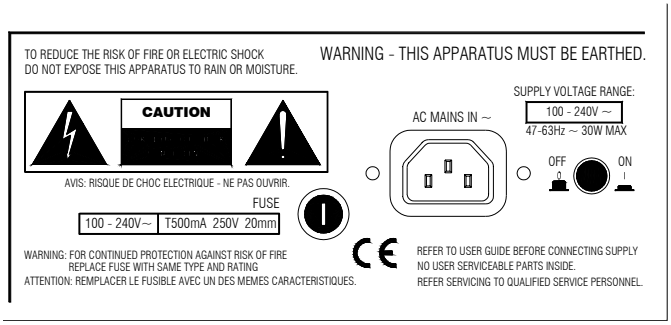
The console can be easily flightcased in either connector mode. Provide the dimensions shown here to your flightcase supplier.

Desktop Operation



The console is fitted with rubber feet to ensure it does not slip or scratch the work surface. The control panel is angled at 15 degrees for operating convenience.

Connecting Mains Power



Read the **SAFETY INSTRUCTIONS** printed at the front of this Service Manual. Check that the correct mains lead with moulded plug has been supplied with the console. The power supply accommodates mains voltages within the range 100-240V without changing any fuses or settings.

It is standard practice to turn connected power amplifiers down or off before switching the console on or off. Ensure that the IEC mains plug is pressed fully into the rear panel socket before switching on.

Earthing



The connection to earth (ground) in an audio system is important for two reasons:

1. **SAFETY** - To protect the operator from high voltage shock, and
2. **AUDIO PERFORMANCE** - To minimise the effect of earth (ground) loops which result in audible hum and buzz, and to shield the audio signals from interference.

For safety it is important that all equipment earths are connected to mains earth so that exposed metal parts are prevented from carrying high voltage which can injure or even kill the operator. It is recommended that the sound engineer check the continuity of the safety earth from all points in the system including microphone bodies, turntable chassis, guitar strings, connector cases, equipment panels and so on.

The same earth is also used to shield audio cables from external interference such as the hum fields associated with power transformers, lighting dimmer buzz, and computer radiation. Problems arise when the signal sees more than one path to mains earth. An 'earth loop' (ground loop) results causing current to flow between the different earth paths. This condition is usually detected as a mains frequency audible hum or buzz.

To ensure safe and trouble-free operation we recommend the following:

- **Have the mains system checked by a qualified electrician.** If the supply earthing is solid to start with you are less likely to experience problems.
- **Do not remove the earth connection from the console mains plug.** The console chassis is connected to mains earth through the power cable to ensure your safety. Audio 0V is connected to the console chassis internally. If problems are encountered with earth loops operate the audio 'ground lift' switches on connected equipment accordingly, or disconnect the cable screens at one end, usually at the destination.
- **Make sure that turntables are correctly earthed.** A chassis earth terminal is provided on the console rear panel to connect to turntable earth straps.
- **Use low impedance sources** such as microphones and line level equipment rated at 200 ohms or less to reduce susceptibility to interference. The console outputs are designed to operate at very low impedance to minimise interference problems.
- **Use balanced connections where possible** as these provide further immunity by cancelling out interference that may be picked up on long cable runs. To connect an unbalanced source to a balanced console input, link the cold input (XLR pin 3 or jack ring) to 0V earth (XLR pin 1 or jack sleeve) at the console. To connect a balanced XLR output to unbalanced equipment, link the cold output to 0V earth at the console.
- **Use good quality cables and connectors** and check for correct wiring and reliable solder joints. Allow sufficient cable loop to prevent damage through stretching.

Plugging Up The System

The **XONE:464** uses professional grade 3 pin XLR, 1/4" TRS jack and RCA PHONO sockets. To ensure best performance, we recommend the use of high quality audio cables and connectors, and that time is taken to check for reliable and accurate cable assembly. It is well known that most audio system failures are due to faulty interconnecting leads. The following mating plugs may be used to connect audio signals to the console:

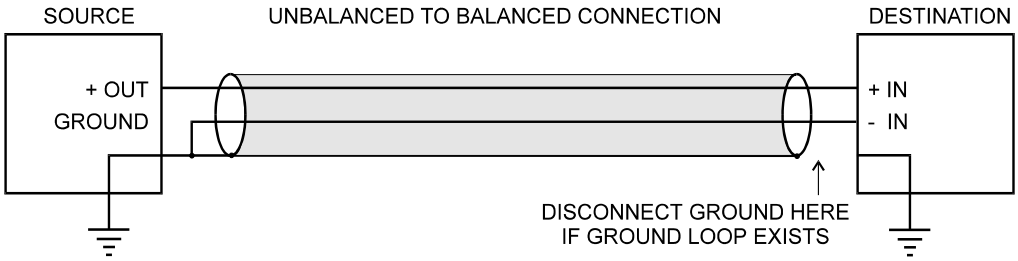
All input and output **XLR** connectors are 3 wire differentially balanced. These have 3 connector pins: Pin 1 = ground (screen), Pin 2 = signal hot (+), Pin 3 = signal cold (-).

All the jack sockets are the 3 pole **TRS** type. These are wired to work with both the balanced TRS or the unbalanced 2 pole TS type plugs. The sockets have 3 connector pins: Inputs and outputs are Tip = signal hot (+), Ring = signal cold (-), Sleeve = ground (screen). Insert connections are Tip = send, Ring = return, Sleeve = ground.

The **RCA** phono connectors are the 2 wire unbalanced type typical of those found on equipment such as CD players, turntables and domestic amplifiers.

Avoid reversing + and - on balanced connections as this will result in out of phase signals (reverse polarity) which may cause signal cancellation effects.

For live work where long cables runs are required, balanced interconnections should be used. However, interconnections between more affordable 2-wire (signal, ground) unbalanced equipment and the console are unlikely to cause problems if the cables are kept short. Refer to the following diagram for unbalanced to balanced connections.



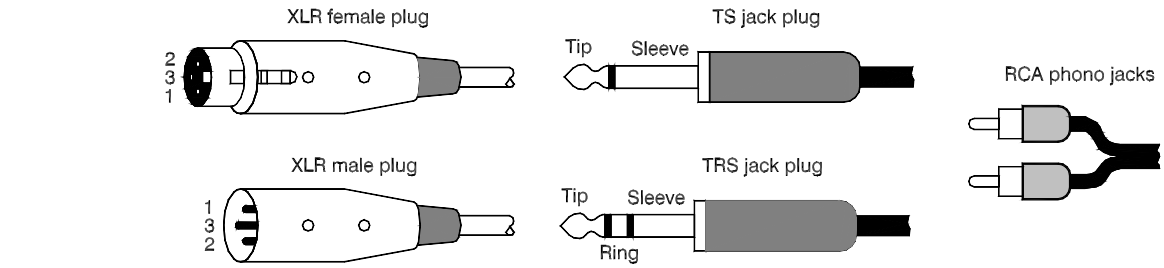
Dealing with Ground Loops, Buzz and Interference

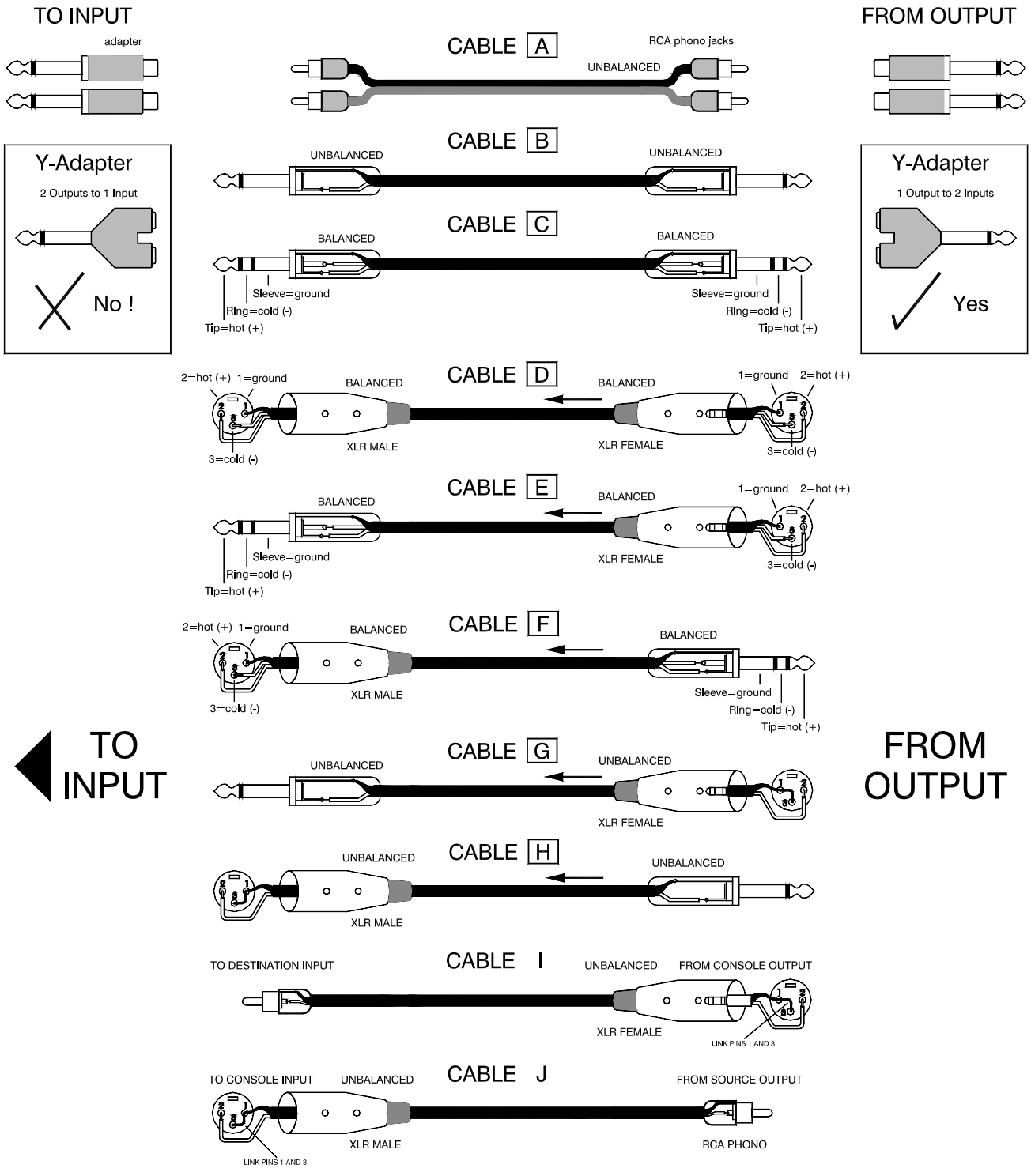
For optimum performance all audio signals should be referenced to a solid, noise-free ground (earth) point, frequently referred to as the ‘star point’ or ‘clean earth’.

A ground loop is created when the signal has more than one path to ground. Should you experience hum or buzz caused by ground loops, check first that each piece of equipment has its own separate path to ground. If so, operate ground lift switches on connected equipment in accordance with the instruction manuals. Alternatively disconnect the cable screen at the destination end only. This breaks the offending loop while still maintaining the screening down the length of the cable.

⚠ WARNING For your safety do not remove the earth (ground) connection in the power lead of the console or connected equipment.

To avoid interference pickup keep audio cables away from mains power units and cables, thyristor dimmer units or computer equipment. Where this cannot be avoided, cross the cables at right angles to minimise interference.


XLR female plug
2
3
1
TS jack plug
Tip
Sleeve
RCA phono jacks
XLR male plug
1
3
2
TRS jack plug
Tip
Sleeve
Ring


TO INPUT
FROM OUTPUT
adapter
Y-Adapter
2 Outputs to 1 Input
No !
Y-Adapter
1 Output to 2 Inputs
Yes
CABLE A
RCA phono jacks
UNBALANCED
CABLE B
UNBALANCED
UNBALANCED
CABLE C
BALANCED
BALANCED
Sleeve=ground
Ring=cold (-)
Tip=hot (+)
Sleeve=ground
Ring=cold (-)
Tip=hot (+)
CABLE D
2=hot (+) 1=ground
BALANCED
BALANCED
1=ground 2=hot (+)
XLR MALE
XLR FEMALE
3=cold (-)
3=cold (-)
CABLE E
BALANCED
BALANCED
1=ground 2=hot (+)
Sleeve=ground
Ring=cold (-)
Tip=hot (+)
XLR FEMALE
3=cold (-)
CABLE F
2=hot (+) 1=ground
BALANCED
BALANCED
XLR MALE
3=cold (-)
Sleeve=ground
Ring=cold (-)
Tip=hot (+)
TO INPUT
FROM OUTPUT
CABLE G
UNBALANCED
UNBALANCED
XLR FEMALE
CABLE H
UNBALANCED
UNBALANCED
XLR MALE
CABLE I
TO DESTINATION INPUT
UNBALANCED
FROM CONSOLE OUTPUT
XLR FEMALE
LINK PINS 1 AND 3
CABLE J
TO CONSOLE INPUT
UNBALANCED
FROM SOURCE OUTPUT
XLR MALE
RCA PHONO
LINK PINS 1 AND 3

Replacing the Crossfader

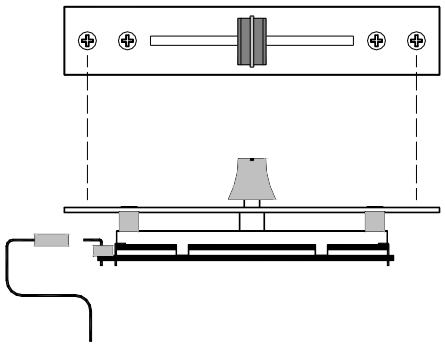
The crossfader on a DJ mixer is heavily used and can suffer considerable wear and tear. The audio design using VCAs prevents clicks and scratchiness as the fader wears. However, the movement can become mechanically stiff or sloppy in time, or become ingrained with dirt and the fader may need replacement.

The **XONE:464** crossfader is removable and can easily be replaced in a few minutes. The spare fader is supplied as a plug-in assembly which can be ordered through your Allen & Heath dealer.

Note: There are two versions of crossfader assembly. These are not interchangable. Make sure you order the correct version.

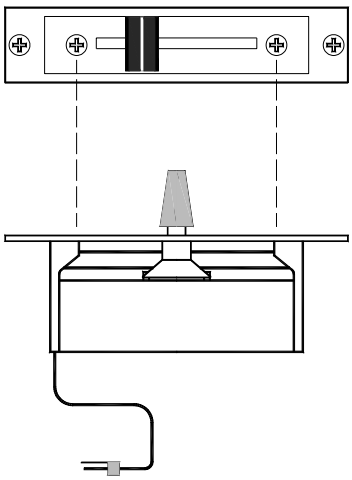
The VERSION 1 model uses the Alps crossfader assembly:

XONE:464 Crossfader Assembly Part number 002-718



The VERSION 2 model uses the Penny & Giles crossfader assembly :

XONE:464 Crossfader Assembly Part number 002-719



To replace either version of crossfader use a medium size cross-point (Pozidriv) screwdriver to undo and remove the two outer screws on the crossfader plate. Do not remove the inner screws.

Lift the crossfader assembly up and away from the console panel.

Unplug the cable from the old crossfader or circuit assembly (depending on version) and plug on the new assembly. Check that the connector is correctly aligned and seated.

Replace the assembly making sure the cable faces the left side of the console. Refit the screws and test for correct operation.

Order Codes

XONE:464 VERSION 1	not available	
XONE:464 VERSION 2	XONE2:464/*	(* = voltage)
SYS-LINK Option kit	WZ20S/464-SL1	
Crossfader Assembly VERSION 1	002-718	(Alps)
Crossfader Assembly VERSION 2	002-719	(P&G)
Stereo Fader Assembly	002-684	
User Manual VERSION 1	AP3727	
User Manual VERSION2	AP4147	
Service Manual for both versions	AP3728	(from issue 2)

Internal Options

The **XONE:464** is designed to offer the utmost flexibility to satisfy the application without modification. However, the following internal link options are provided to allow customisation to satisfy the more specialist applications. Refer to the relevant circuits printed in this manual.

This work requires access to the internal assemblies and resoldering of circuit card links and should be carried out by competent technical personnel only.

Mono channel AUX options The pre-fade sends are set post-EQ, post-ON as standard. Links on the mono circuit cards can be resoldered to reconfigure pre-EQ and/or pre-ON.

Stereo channel AUX options The pre-fade sends are set post-EQ as standard. Links on the stereo circuit cards can be resoldered to reconfigure pre-EQ. Similarly the post-EQ cue feeds can be reconfigured pre-EQ.

Mono channel DIRECT outputs These are derived post channel fader as standard. A link on each card can be resoldered to reconfigure pre-fader. The direct out pre-fade source is the same as that configured to feed the aux sends.

EXT input level option The external inputs are set for –10dBV line level as standard. These can be reconfigured for +4dBu operation by cutting track links on the connector card.

MUTE switch function This mutes the local monitor as standard. It can be reconfigured to attenuate the signal by 20dB by cutting a pair of track links on the right master circuit card.

Remote control of the MUTE function The right master circuit card provides solder pads to wire to the 25 pin REMOTE connector so local monitor MUTE can be activated by an external switch.

REMOTE user connector The blanking plate may be replaced with a standard 25 pin chassis mount female D-connector for custom wiring.

SYS-LINK output The blanking plate can be replaced with a 25 pin D-connector with circuit card. This provides access to all the console outputs and is compatible with any Allen & Heath console already fitted with the SYS-LINK expander system. A kit of parts is available from Allen & Heath.

Tips and Troubleshooting

From the User Guide:

⚠ For your safety do not remove the **EARTH** (ground) connection in the power lead of the console or connected equipment.

☺ Have your **MAINS SYSTEM** checked by a qualified electrician. If the earthing is solid to start with you are less likely to experience problems.

☺ Use high grade **AUDIO CABLES** and check them for reliable connection. It is well known that many audio system problems are due to faulty cables and connectors.

⚠ In a club or similar installation strict **SOUND LEVEL** and noise regulations may apply. Check that your system levels are correctly set up to comply.

⚠ To avoid damage to your hearing start with the **HEADPHONES** level control at minimum and turn up only as much as is needed to maintain comfortable listening level. Do not drive headphones at high listening levels for long periods of time.

⚠ Always switch connected **AMPLIFIERS** on last and off first to avoid thumps when the console and connected equipment is turned on or off.

⚠ Reduce gain if the red meter **PEAK** led flashes. These warn you that you are near clipping which may result in system overload and distortion. The **XONE:464** provides plenty of drive and headroom when operated around the 0 to +6 meter points.

⚠ Increasing **VCF RESONANCE** boosts a narrow band of selected frequencies. Make sure you reduce the channel gain if the red peak meters start to flash. It is best to start experimenting with this control set to minimum.

☺ Use split-CUE to match the beat between two tracks when beat mixing. Alternatively, you can monitor Aux 3-4 and raise the sends on the two channels to give you a pre-fade **PREVIEW** of the mix which does not affect the main output. Select Aux 3 and 4 monitor switches together to listen in stereo. Pressing any CUE switch will override the preview.

☺ To control vocal microphone dynamics patch a **COMPRESSOR** into the mono channel insert. Start with its threshold set to 0dB and ratio around 2 or 3:1.

? There are loud clicks when I plug microphones in. Check that the rear panel +48V switches are selected only for microphones that require phantom powering. Do not connect unbalanced sources or cables to the XLR inputs when phantom power is selected. To avoid loud clicks always turn the channel off by releasing the ON switch when switching +48V on or off and when plugging or unplugging microphones with power applied.

? The stereo channel sounds very distorted with excessive bass. Check that you plug only turntables needing RIAA equalisation into CH 5,6,9 and 10 Phono A inputs. Other equipment should be plugged into these channel B inputs.

? There is a hum on the turntable channels. Check that the turntable earth strap has been correctly connected to the console chassis earth post.

? Only one side of the stereo mix is working. Check that the XFADE PAN control is not set fully to either L or R.

? When the VCF is switched on there is very little sound. Operate the VCF frequency control to restore the frequency content of the sound.

? There is no microphone output when I raise the channel fader. Check that the mic channel ON switch is pressed and that the Mix1,2 routing switches are correctly set. Also check that any compressors or other processors plugged into the inserts are turned on and correctly adjusted.

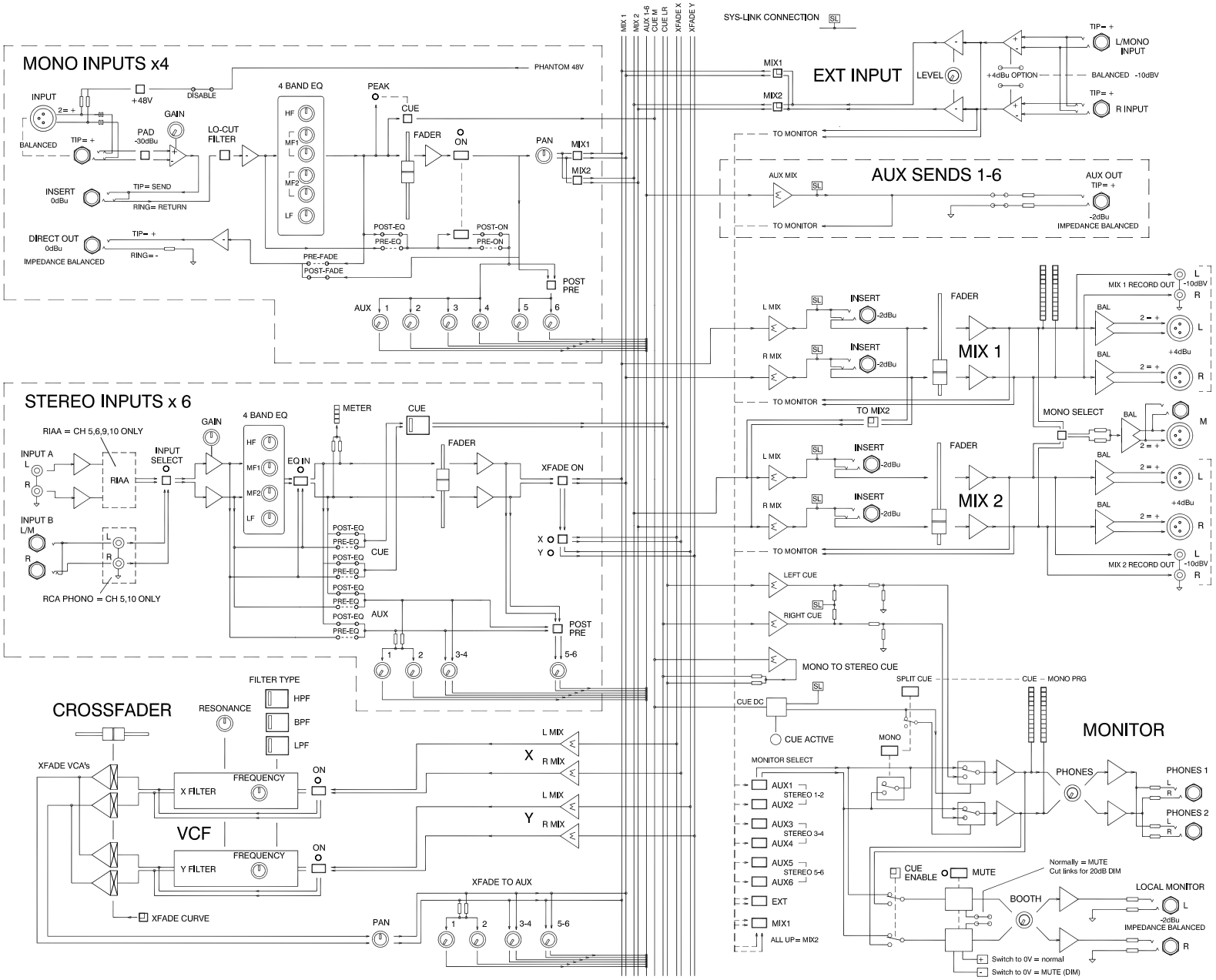
? There is no monitor output. Check that a channel CUE switch is not already selected. This is indicated by the red CUE led under the monitor meters.

? There is no stereo channel signal. Check that the input selector switch is in the correct position.

? CUE is not working on the booth speakers. Set the underpanel CUE DISABLE switch as required.

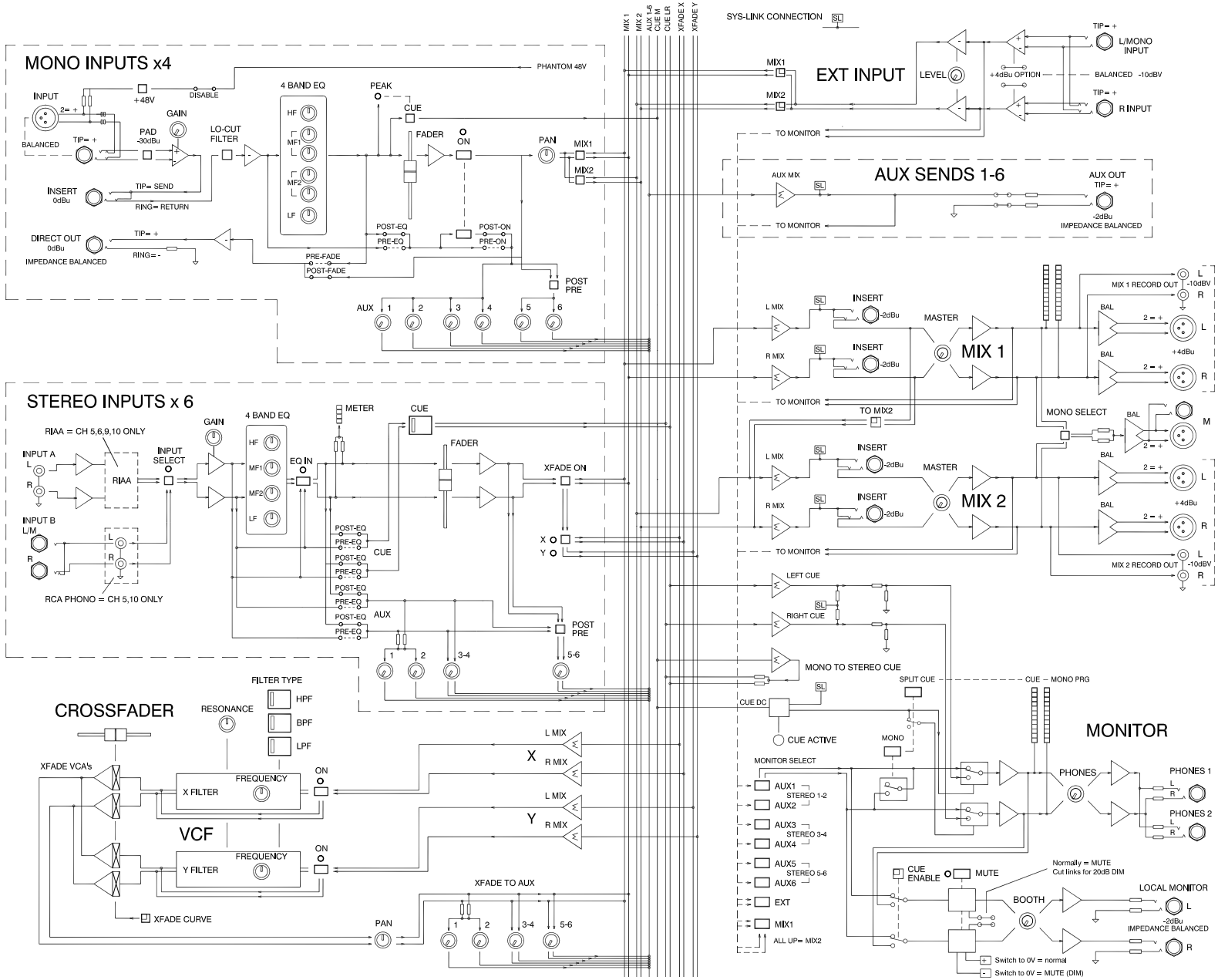
? The EXT input is not working. Check that the underpanel routing switches are correctly set.

? The crossfader works backwards. Check that it has been re-fitted the right way round if previously removed.



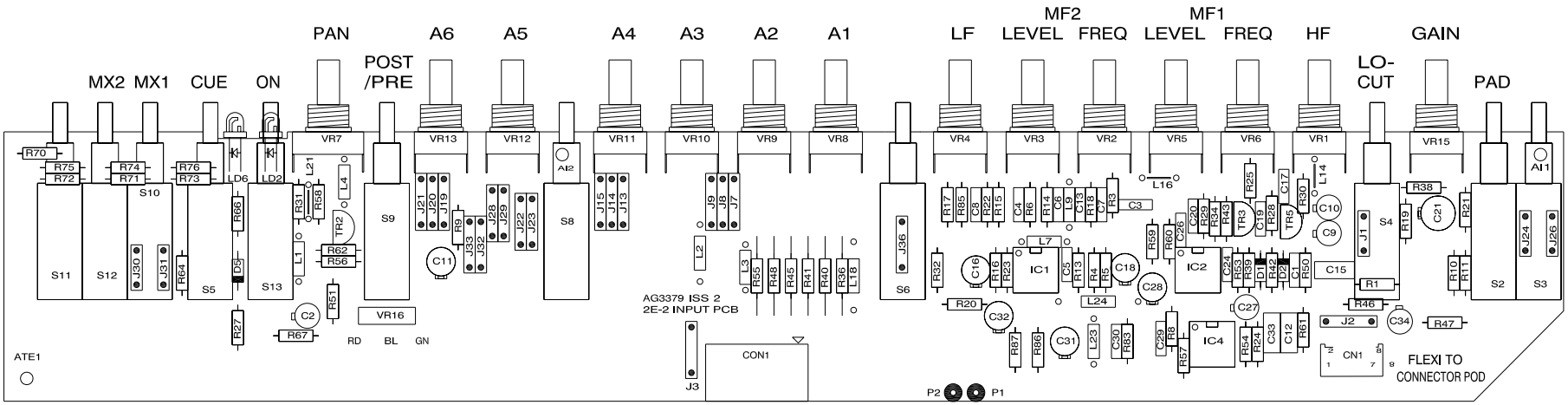
ALLEN&HEATH
Kernick Industrial Estate,
Penryn, Cornwall,
England. TR10 9LU
Tel: (44) (0)870 7556250 **Fax:** (44) (0)870 7556251

XONE:464
BLOCK DIAGRAM
VERSION 1 model



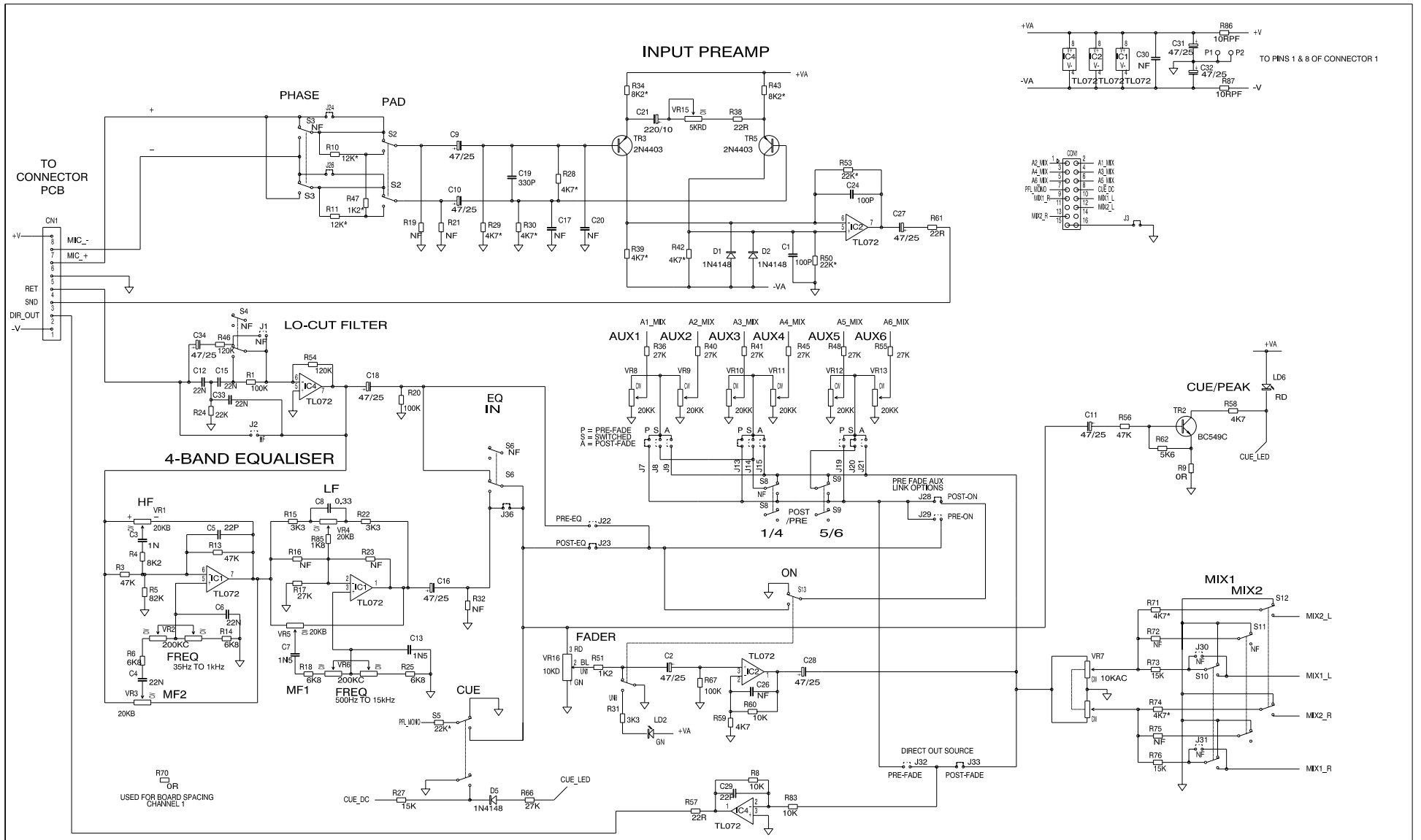
ALLEN&HEATH
Kernick Industrial Estate,
Penryn, Cornwall,
England. TR10 9LU
Tel: (44) (0)870 7556250 **Fax:** (44) (0)870 7556251

XONE:464
BLOCK DIAGRAM
VERSION 2 model



ALLEN&HEATH
Kernick Industrial Estate,
Penryn, Cornwall,
England. TR10 9LU
Tel: (44) (0)870 7556250 **Fax:** (44) (0)870 7556251

XONE:464
MONO INPUT PCB
AG3379 issue 2

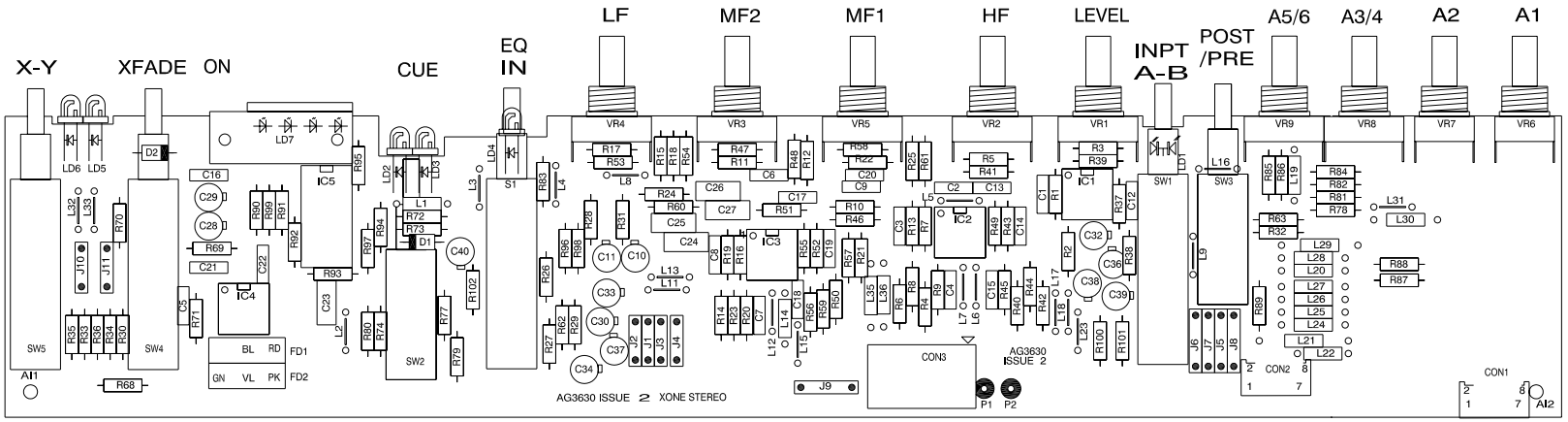


ISS.	REVISION	BY	DATE
A	ORIGIN	ARJ	19-5-98
B	4BUSS REV	ARJ	3-7-98
1	R1 ADDED	DRP	24-9-98
2	R31,C1 & C24 VALUE CHANGES	DWD	5-11-98
3	LOW-CUT FILTER VALUE CHANGES	DWD	14-1-00

ALLEN&HEATH
Kernick Industrial Estate,
Penryn, Cornwall,
England. TR10 9LU
Tel: (44) (0)870 7556250 Fax: (44) (0)870 7556251

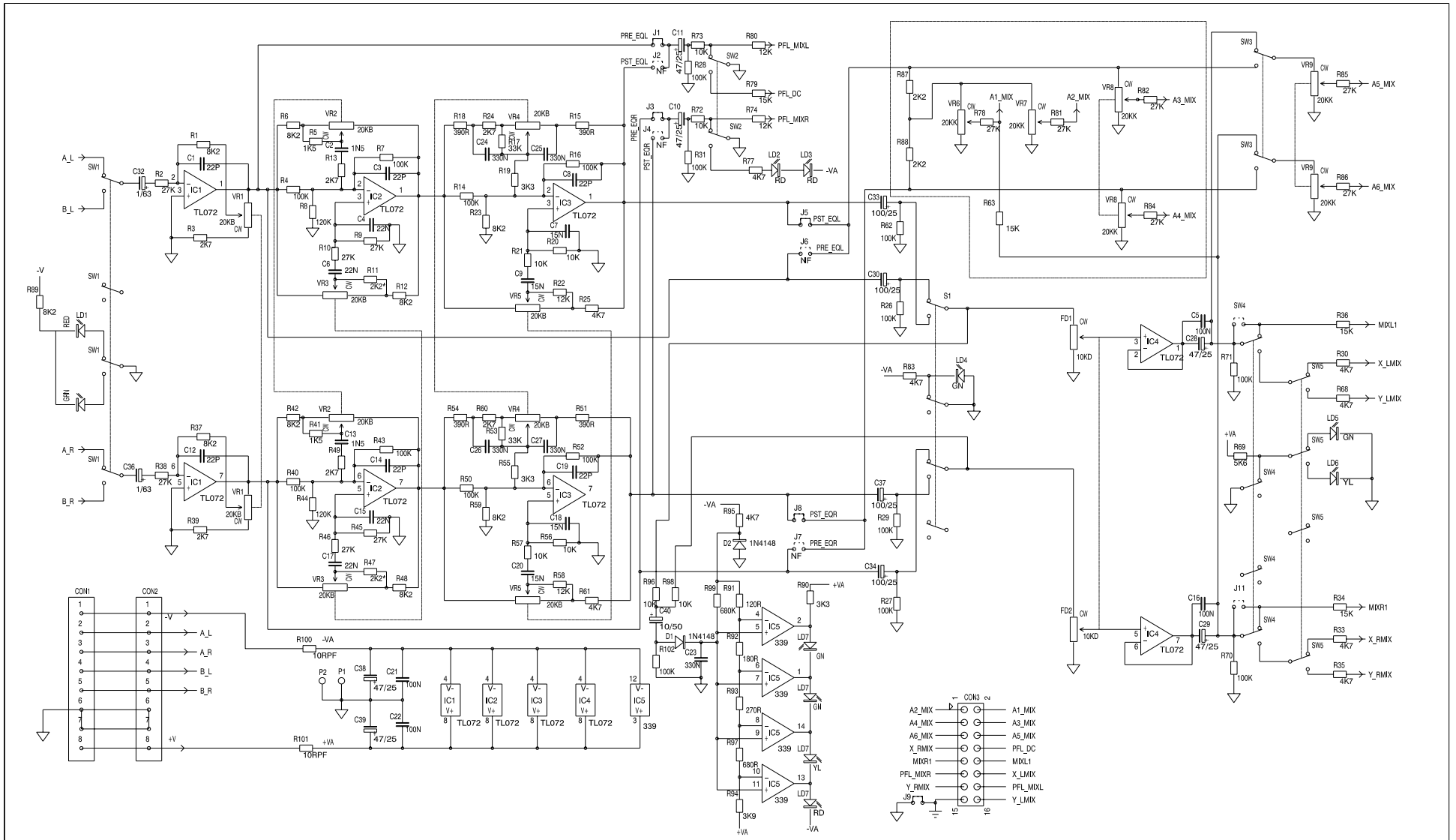
XONE:464

MONO INPUT CIRCUIT
C3379 issue 3



ALLEN&HEATH
Kernick Industrial Estate,
Penryn, Cornwall,
England. TR10 9LU
Tel: (44) (0)870 7556250 **Fax:** (44) (0)870 7556251

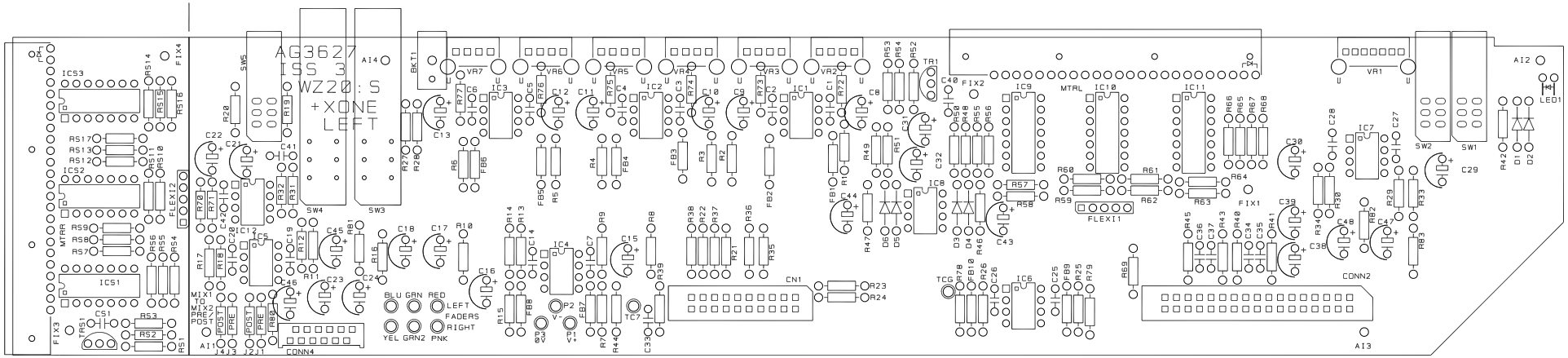
XONE:464
STEREO INPUT PCB
AG3630 issue 2



ISS.	REVISION	BY DATE
B	REVISED LAYOUT/EQ UPDATES	ARJ 25-6-99
C	4POLE EQ SW	ARJ 2-08-99
1	PRODUCTION	ARJ 18-8-99
2	CLEANFEED	ARJ 14-9-99

ALLEN&HEATH
Kernick Industrial Estate,
Penryn, Cornwall,
England. TR10 9LU
Tel: (44) (0)870 7556250 Fax: (44) (0)870 7556251

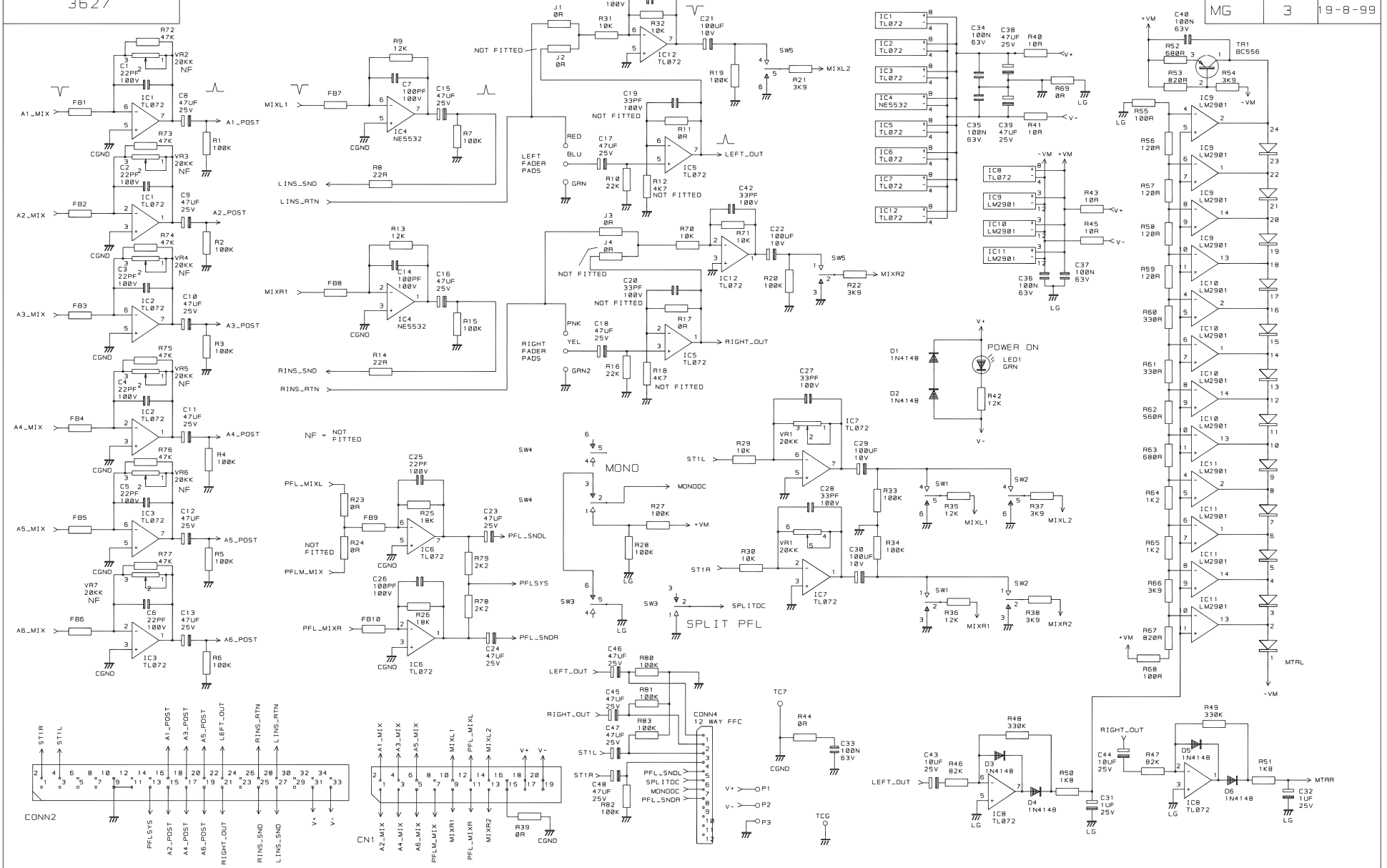
XONE:464
STEREO INPUT CIRCUIT
C3630 issue 2



ALLEN&HEATH
Kernick Industrial Estate,
Penryn, Cornwall,
England. TR10 9LU
Tel: (44) (0)870 7556250 **Fax:** (44) (0)870 7556251

XONE:464
LEFT PCB
AG3627 issue 3

DRG NO.	INITIAL	ISSUE	DATE
3627	MG	3	19-8-99

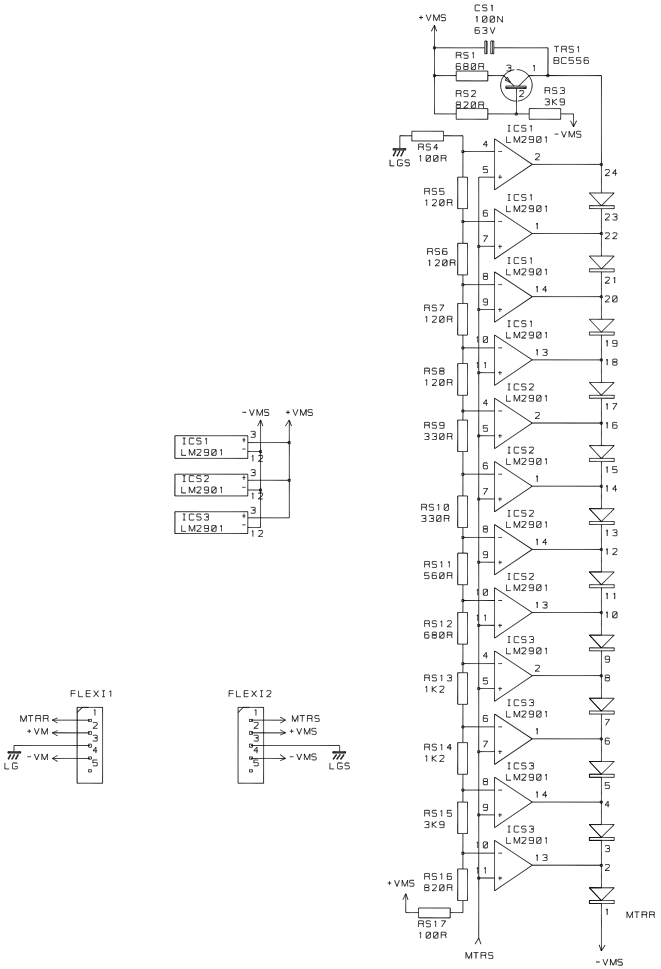


ALLEN&HEATH
Kernick Industrial Estate,
Penryn, Cornwall,
England. TR10 9LU
Tel: (44) (0)870 7556250 Fax: (44) (0)870 7556251

XONE:464
LEFT CIRCUIT
C3627 issue 3 SHEET 1 of 2

DRG NO. 3627

INITIAL	ISSUE	DATE
MG	3	19-8-99



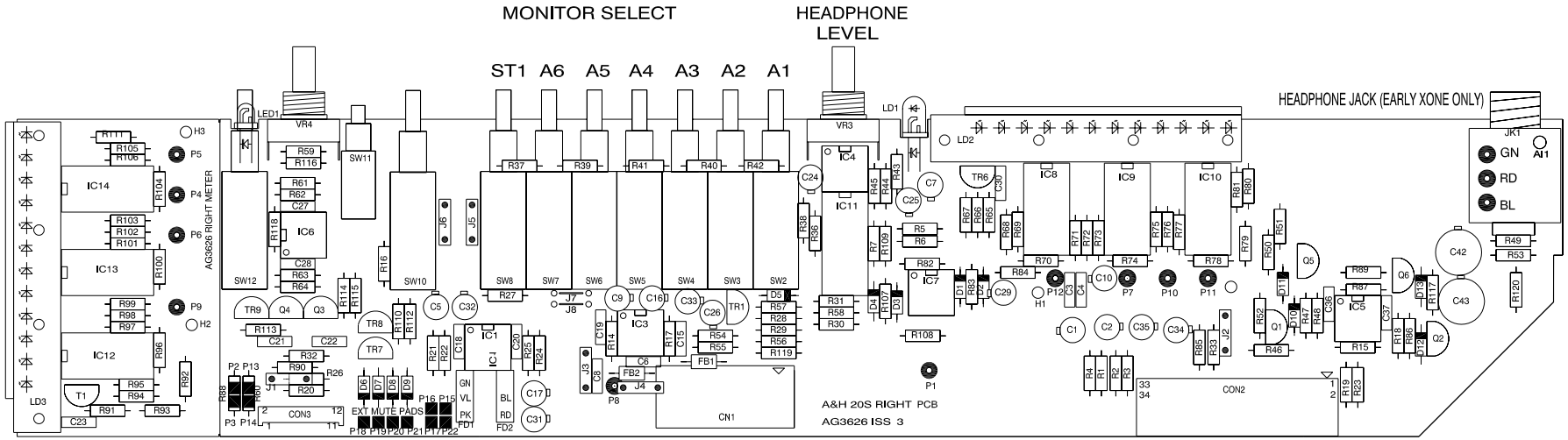
ALLEN&HEAD

Kernick Industrial Estate,
Penryn, Cornwall,
England. TR10 9LU
Tel: (44) (0)870 7556250 Fax: (44) (0)870 7556251

XONE:464

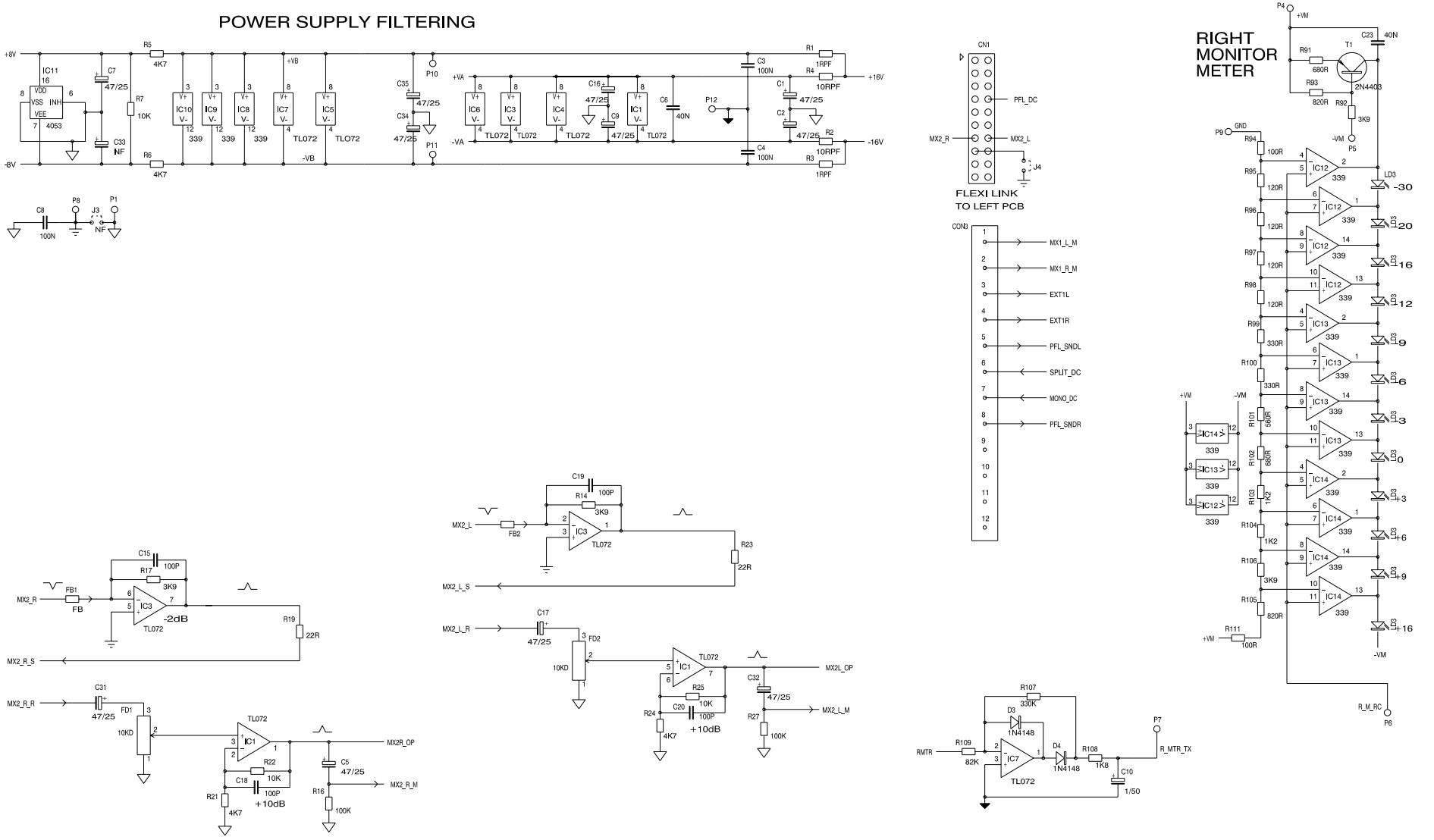
LEFT CIRCUIT

C3627 issue 3 SHEET 2 of 2



ALLEN&HEATH
Kernick Industrial Estate,
Penryn, Cornwall,
England. TR10 9LU
Tel: (44) (0)870 7556250 Fax: (44) (0)870 7556251

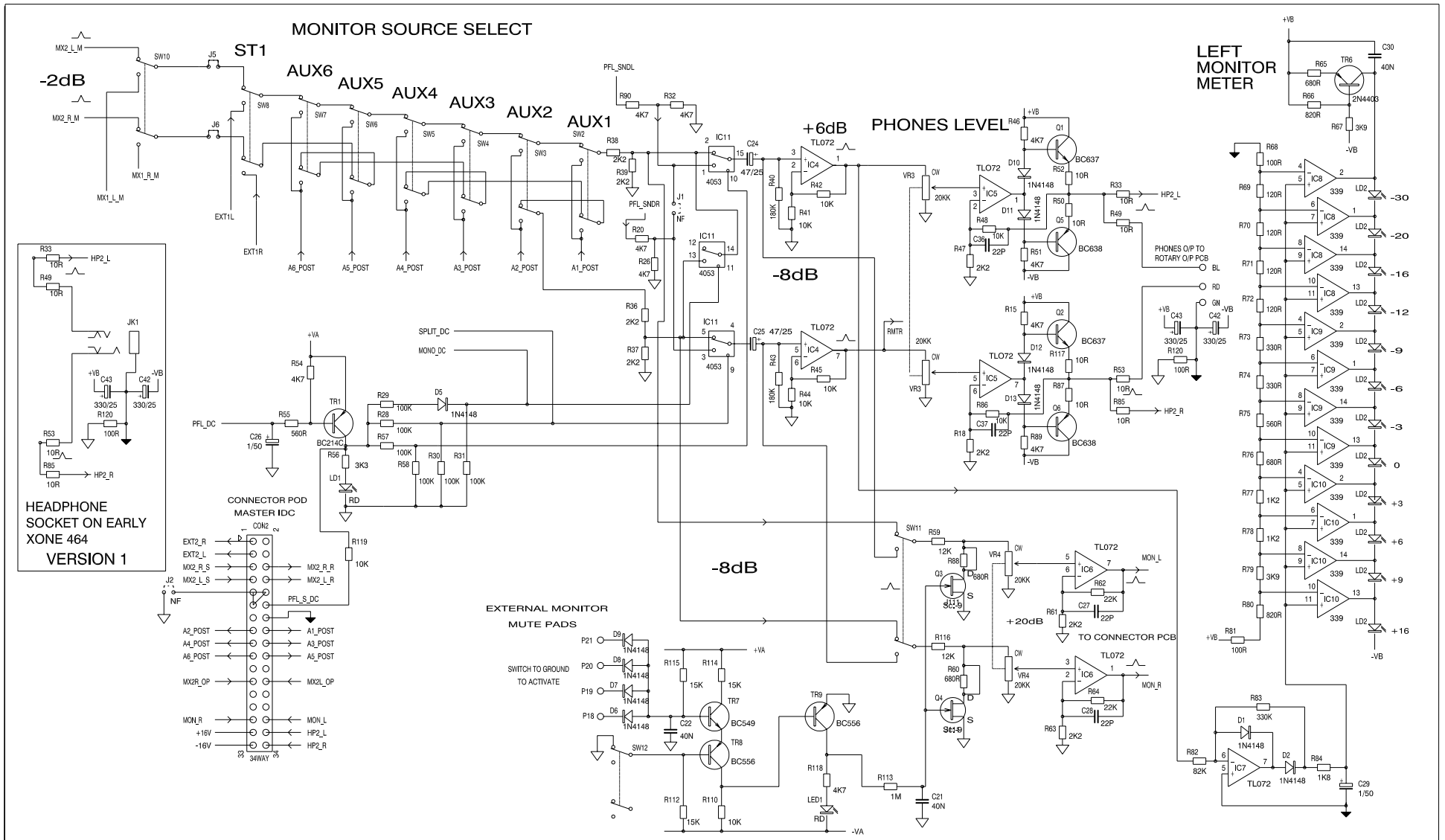
XONE:464
RIGHT PCB
AG3626 issue 3



ISS.	REVISION	BY DATE
3	SERVICE MANUAL UPDATES	ARJ 3-5-01

ALLEN&HEATH
Kernick Industrial Estate,
Penryn, Cornwall,
England. TR10 9LU
Tel: (44) (0)870 7556250 Fax: (44) (0)870 7556251

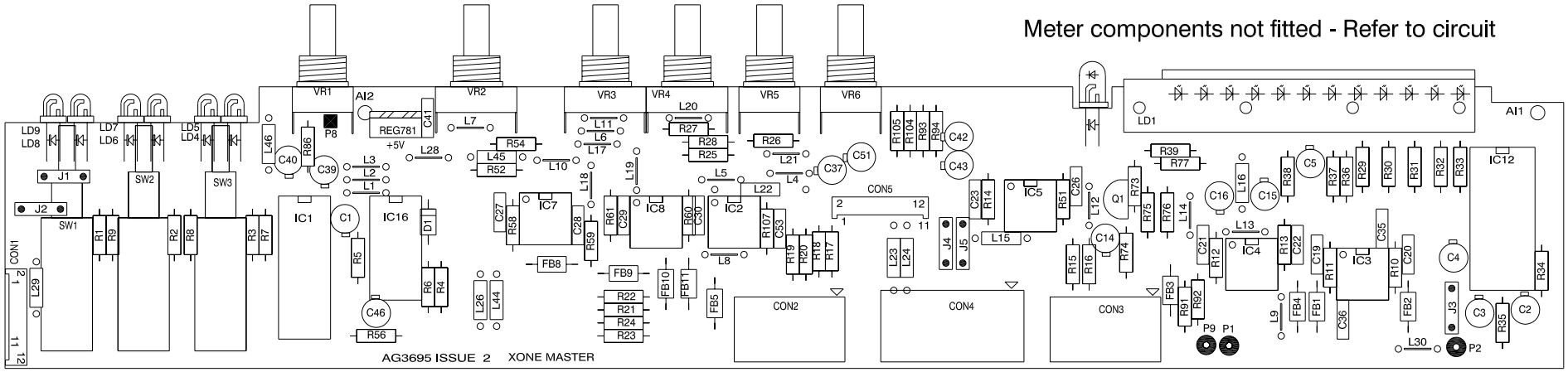
XONE:464
RIGHT CIRCUIT
C3626 issue 3 SHEET 1 of 2



ISS.	REVISION	BY DATE
3	SERVICE MANUAL UPDATES	ARJ 3-5-01

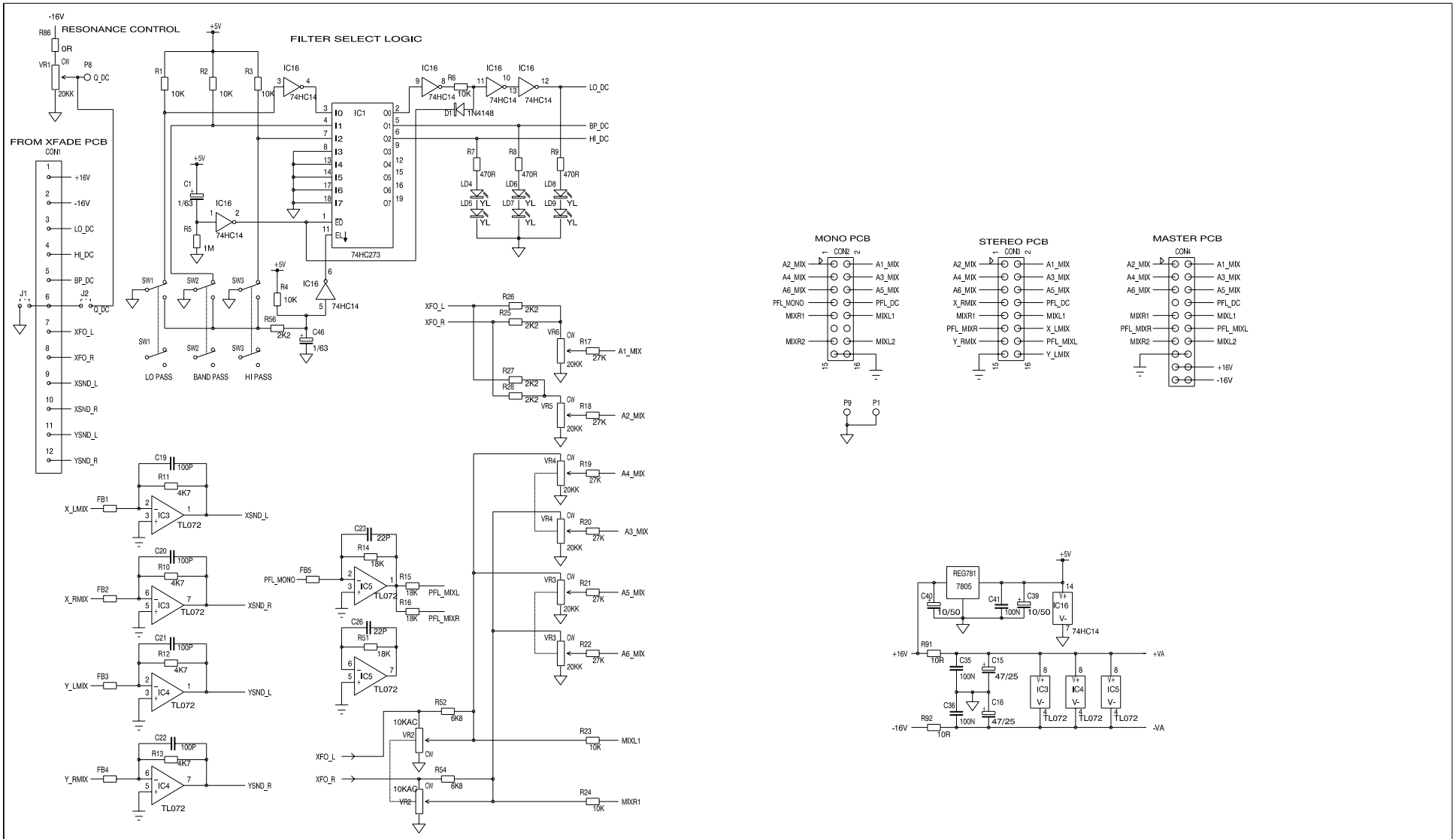
ALLEN&HEATH
Kernick Industrial Estate,
Penryn, Cornwall,
England. TR10 9LU
Tel: (44) (0)870 7556250 Fax: (44) (0)870 7556251

XONE:464
RIGHT CIRCUIT
C3626 issue 3 SHEET 2 of 2



ALLEN&HEATH
Kernick Industrial Estate,
Penryn, Cornwall,
England. TR10 9LU
Tel: (44) (0)870 7556250 Fax: (44) (0)870 7556251

XONE:464
MASTER PCB
AG3695 issue 2

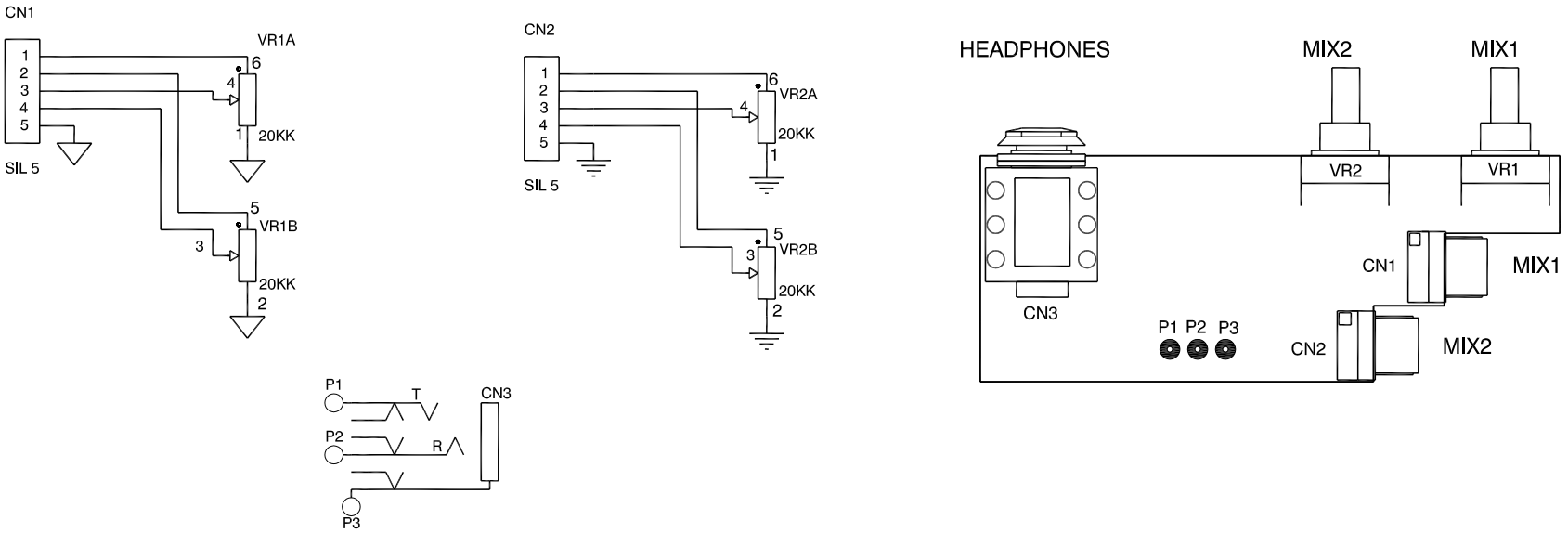


ISS.	REVISION	BY DATE
1	PRODUCTION	ARJ 6-8-99
2	AUX UPDATE	DWD 14-1-00

ALLEN&HEATH
Kernick Industrial Estate,
Penryn, Cornwall,
England. TR10 9LU
Tel: (44) (0)870 7556250 Fax: (44) (0)870 7556251

XONE:464
MASTER CIRCUIT
C3695 issue 2

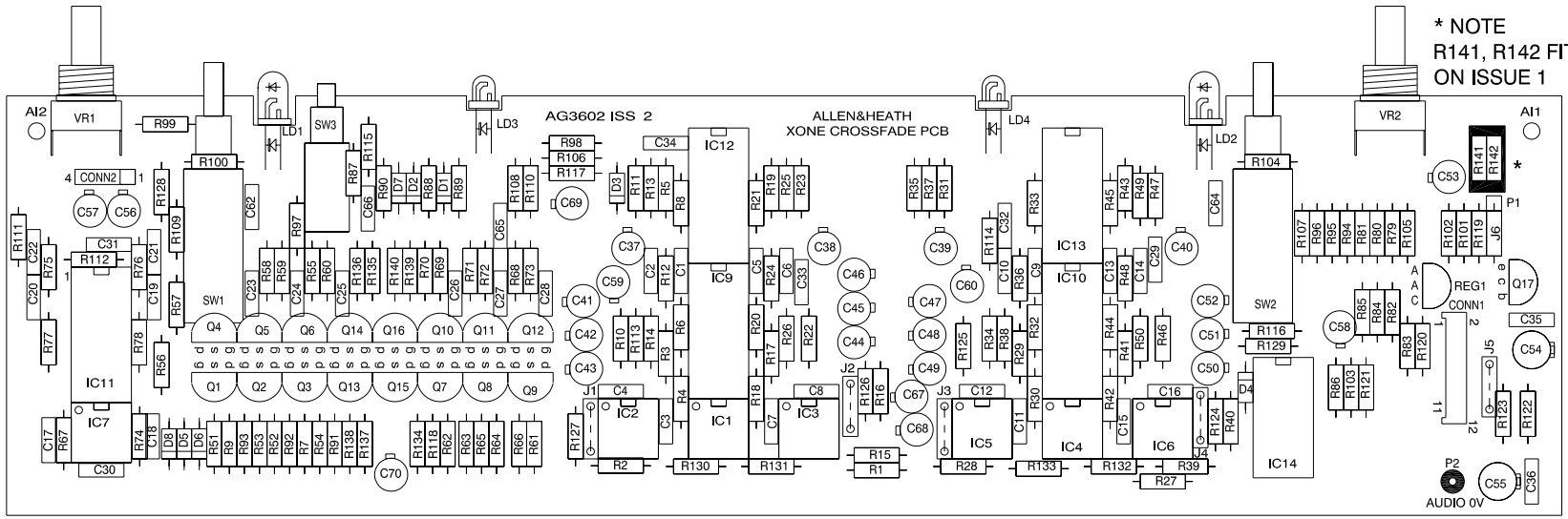
Used on VERSION 2 only



ISSUE	BY	DATE
1	ARJ	3-5-01

ALLEN&HEATH
Kernick Industrial Estate,
Penryn, Cornwall,
England. TR10 9LU
Tel: (44) (0)870 7556250 Fax: (44) (0)870 7556251

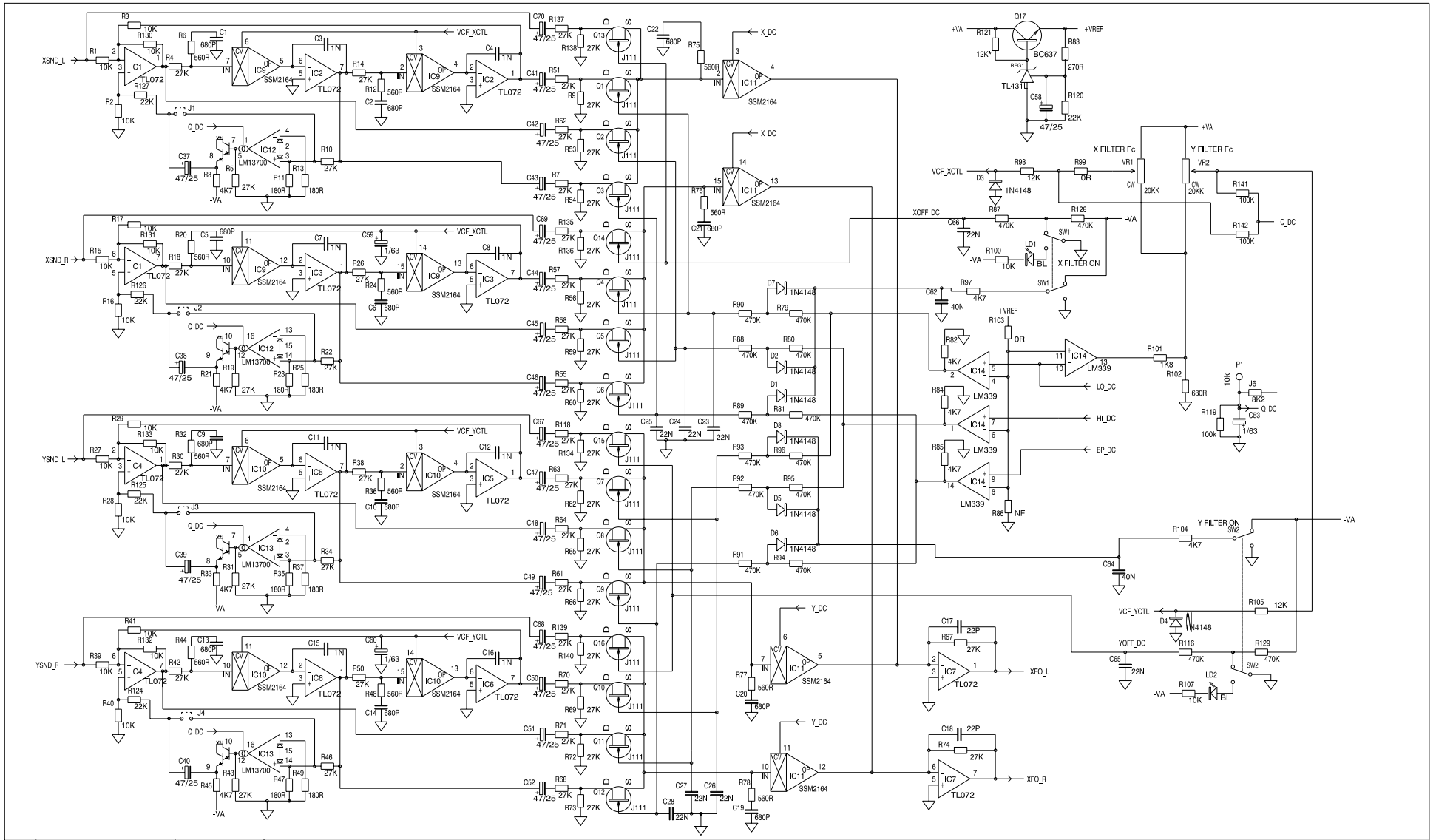
XONE:464
ROTARY OUTPUT
AG4233 issue 1



* NOTE
R141, R142 FITTED ON SOLDER SIDE
ON ISSUE 1

ALLEN&HEATH
Kernick Industrial Estate,
Penryn, Cornwall,
England. TR10 9LU
Tel: (44) (0)870 7556250 Fax: (44) (0)870 7556251

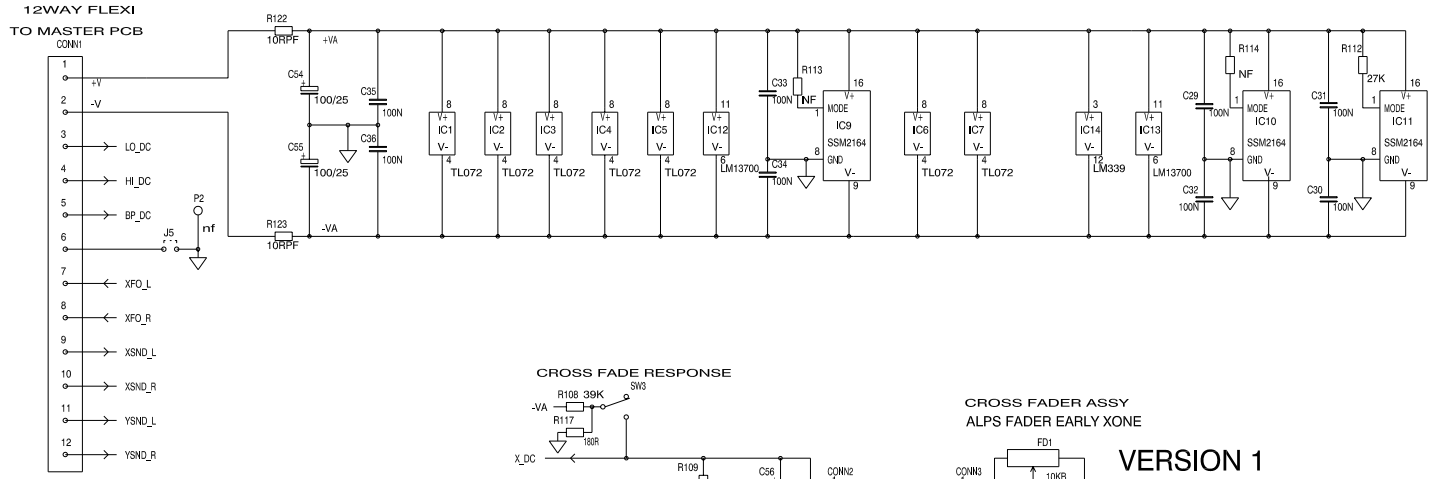
XONE:464
CROSSFADE PCB
AG3602 issue 2



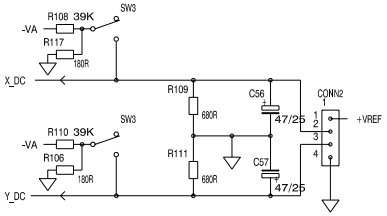
ISS.	REVISION	BY DATE
1	PRODUCTION	ARJ 17-8-99
2	Q_DC LINK	ARJ 18-10-99
2.1	VALUE CHANGES	DWD 27-09-00

ALLEN&HEATH
Kernick Industrial Estate,
Penryn, Cornwall,
England. TR10 9LU
Tel: (44) (0)870 7556250 Fax: (44) (0)870 7556251

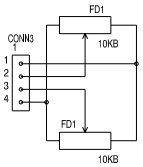
XONE:464
CROSSFADE CIRCUIT
C3602 issue 2.1 SHEET 1 of 2



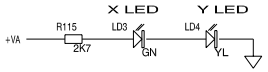
CROSS FADE RESPONSE



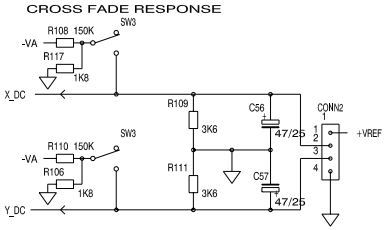
CROSS FADER ASSY
ALPS FADER EARLY XONE



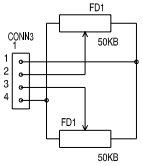
VERSION 1



CROSS FADE RESPONSE



CROSS FADER ASSY
PENNY&GILES FADER LATER XONE



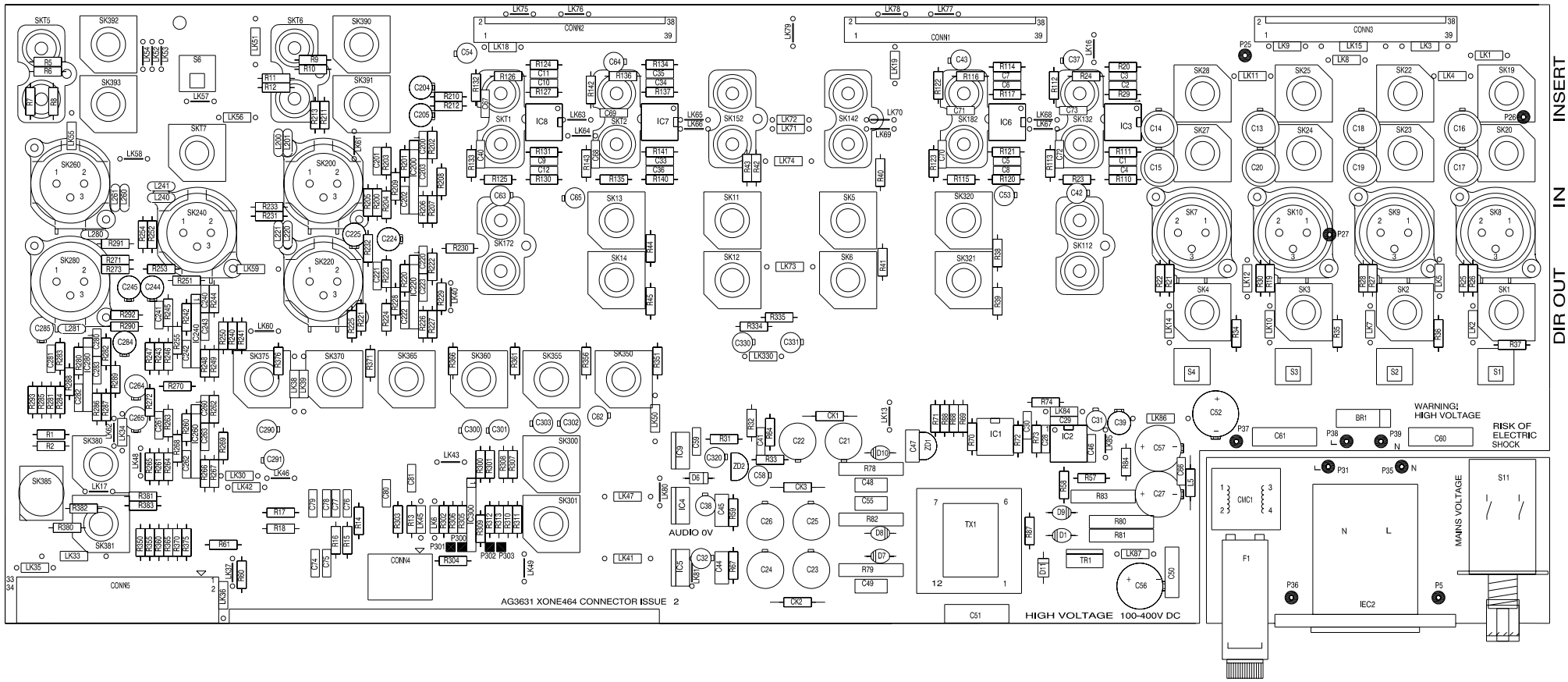
VERSION 2

To sharpen the crossfader response with the P&G fader, change R106, R117 from 1K8 to 180R

ISS.	REVISION	BY DATE
1	PRODUCTION	ARJ 17-8-99
2	Q_DC LINK	ARJ 18-10-99
2.1	VALUE CHANGES	DWD 27-09-00

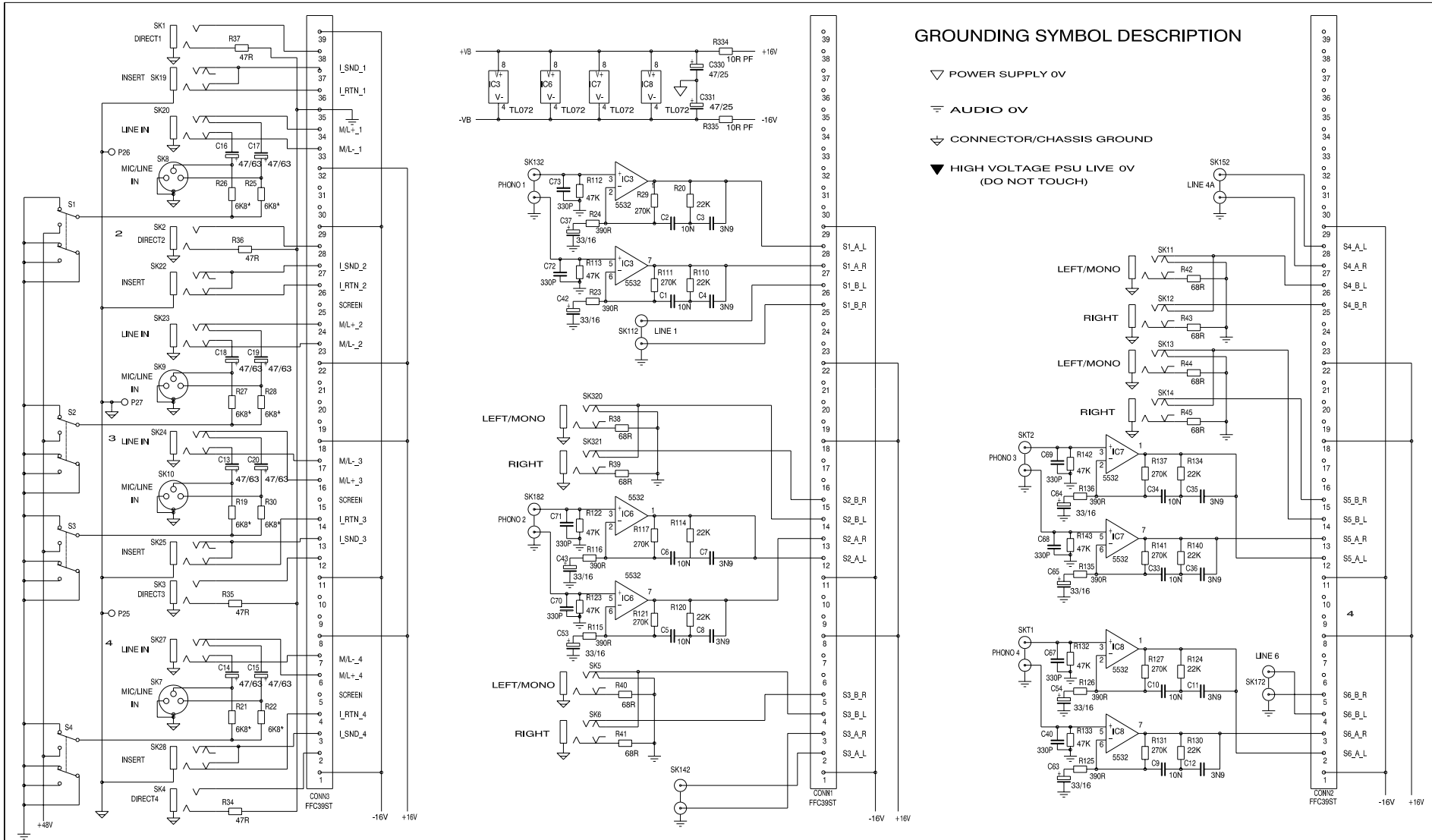
ALLEN&HEATH
Kernick Industrial Estate,
Penryn, Cornwall,
England. TR10 9LU
Tel: (44) (0)870 7556250 Fax: (44) (0)870 7556251

XONE:464
CROSSFADE CIRCUIT
C3602 issue 2.1 SHEET 2 of 2



ALLEN&HEATH
Kernick Industrial Estate,
Penryn, Cornwall,
England. TR10 9LU
Tel: (44) (0)870 7556250 Fax: (44) (0)870 7556251

XONE:464
CONNECTOR PCB
AG3631 issue 2

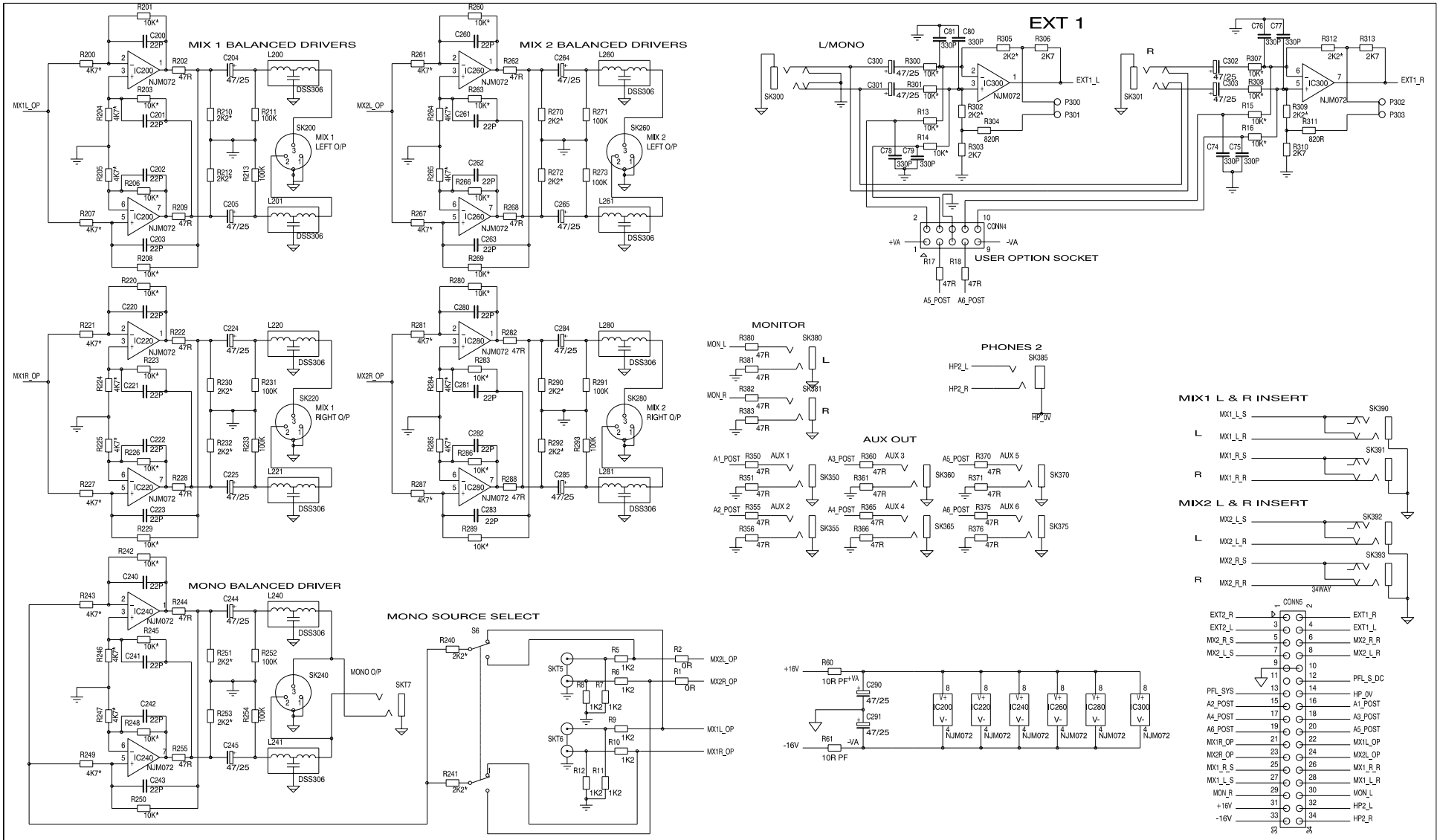


ISS.	REVISION	BY DATE
2	CCT UPDATES	20-7-99
2.1	PSU NOISE MOD.	DWD 15-11-99
2.2	RIAA GAIN INCREASE	DWD 2-2-00
2.3	R88 FROM NF TO 39K	DWD 3-3-00

ALLEN&HEATH
Kernick Industrial Estate,
Penryn, Cornwall,
England. TR10 9LU
Tel: (44) (0)870 7556250 Fax: (44) (0)870 7556251

XONE:464

CONNECTOR CIRCUIT
C3631 issue 2.3 SHEET 1 of 3



ISS.	REVISION	BY	DATE
2	CCT UPDATES		20-7-99
2.1	PSU NOISE MOD.	DWD	15-11-99
2.2	RIAA GAIN INCREASE	DWD	2-2-00
2.3	R88 FROM NF TO 39K	DWD	3-3-00

ALLEN&HEATH
Kernick Industrial Estate,
Penryn, Cornwall,
England. TR10 9LU
Tel: (44) (0)870 7556250 Fax: (44) (0)870 7556251

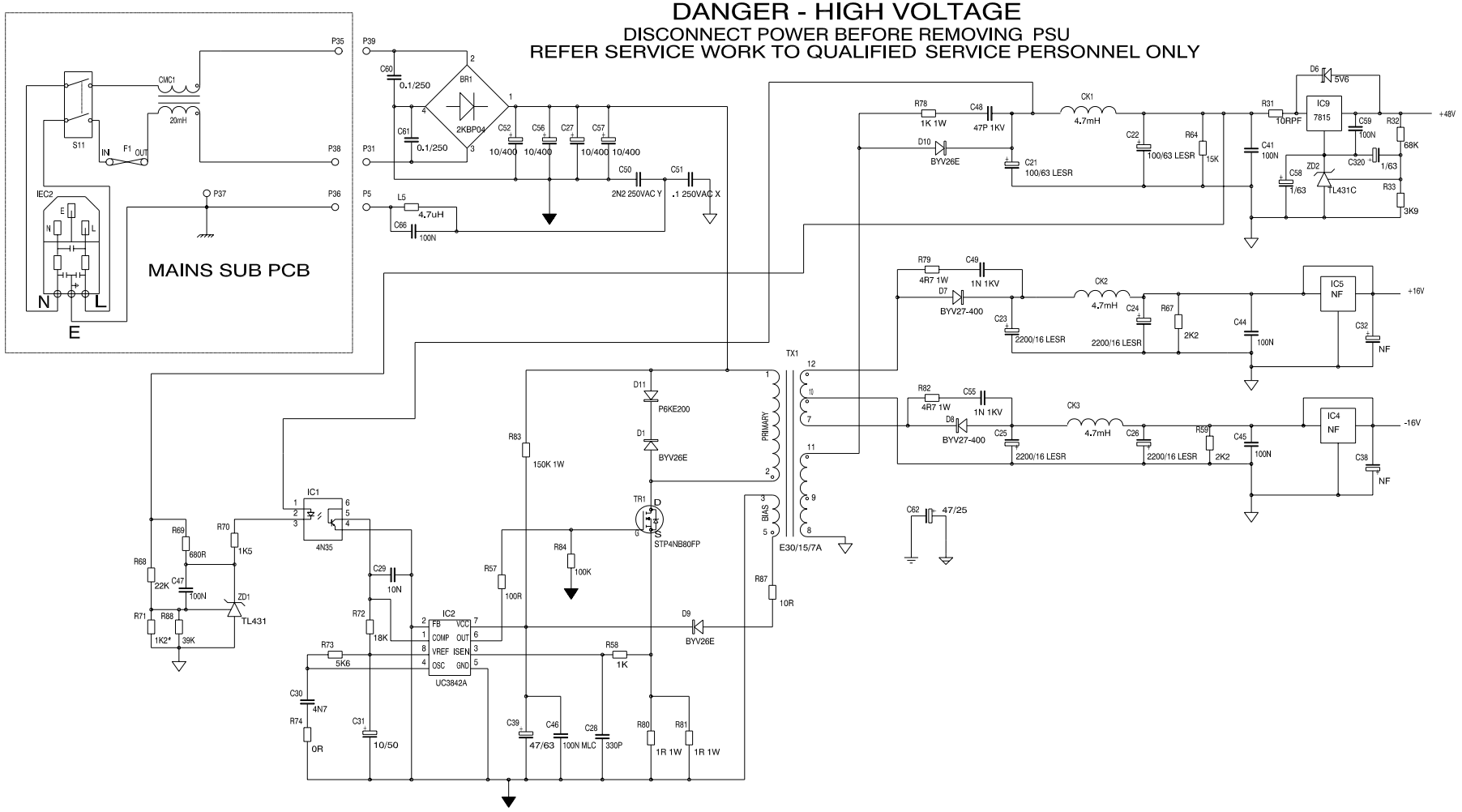
XONE:464

CONNECTOR CIRCUIT
C3631 issue 2.3 SHEET 2 of 3

DANGER - HIGH VOLTAGE

DISCONNECT POWER BEFORE REMOVING PSU

REFER SERVICE WORK TO QUALIFIED SERVICE PERSONNEL ONLY



ISS.	REVISION	BY DATE
2	CCT UPDATES	20-7-99
2.1	PSU NOISE MOD.	DWD 15-11-99
2.2	RIAA GAIN INCREASE	DWD 2-2-00
2.3	R88 FROM NF TO 39K	DWD 3-3-00

ALLEN&HEATH
Kernick Industrial Estate,
Penryn, Cornwall,
England. TR10 9LU
Tel: (44) (0)870 7556250 Fax: (44) (0)870 7556251

XONE:464

CONNECTOR CIRCUIT

C3631 issue 2.3 SHEET 3 of 3