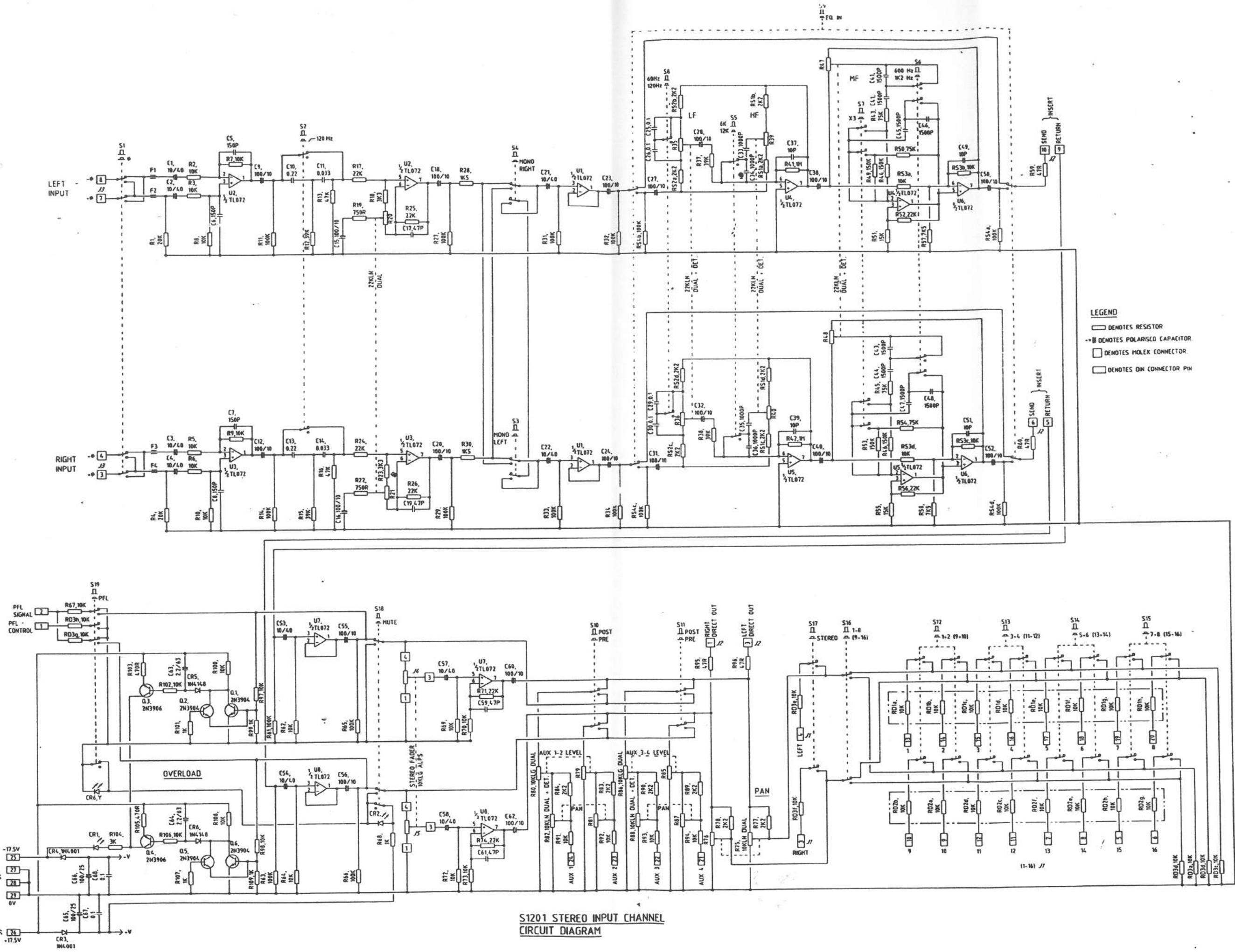
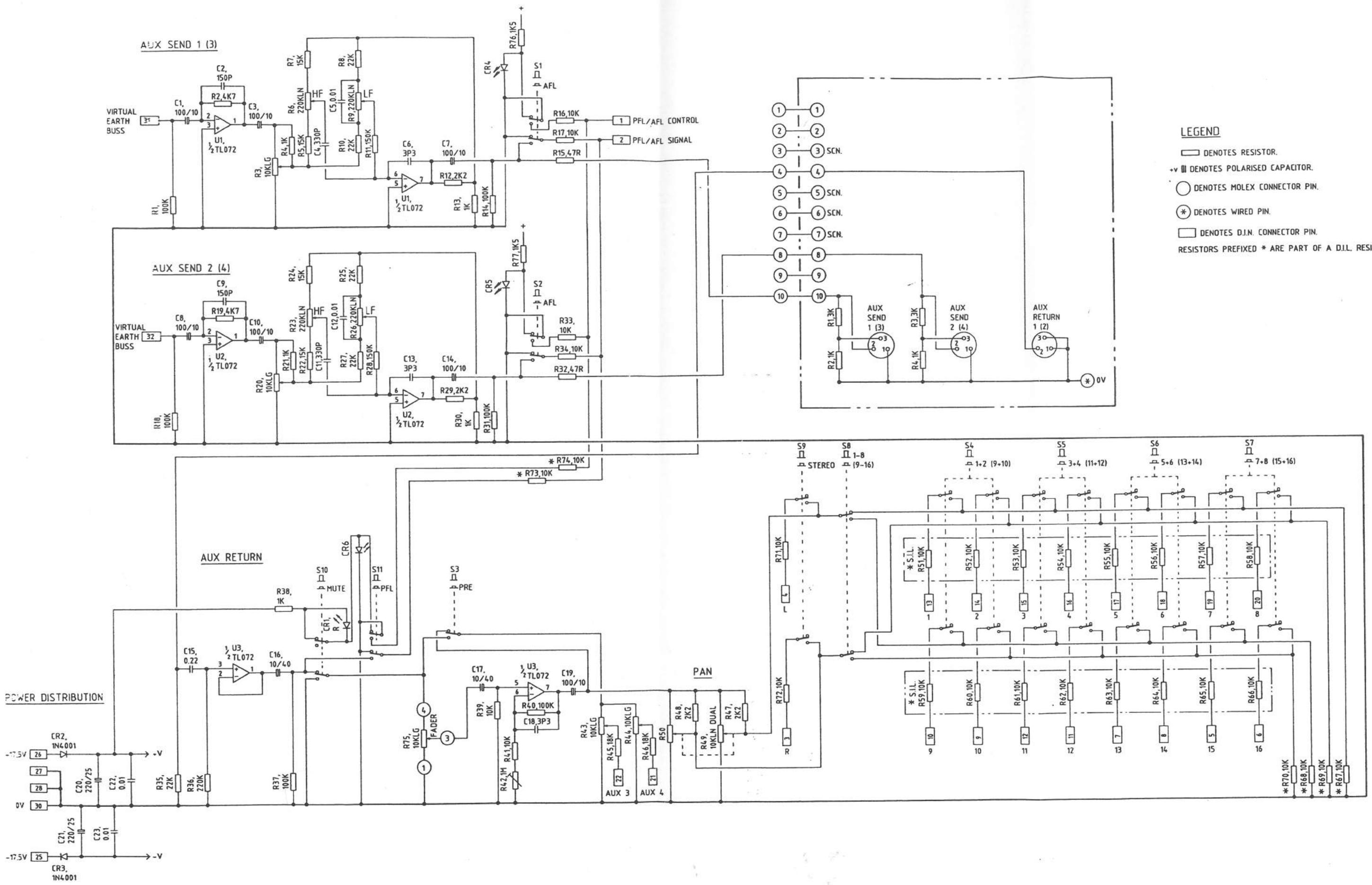
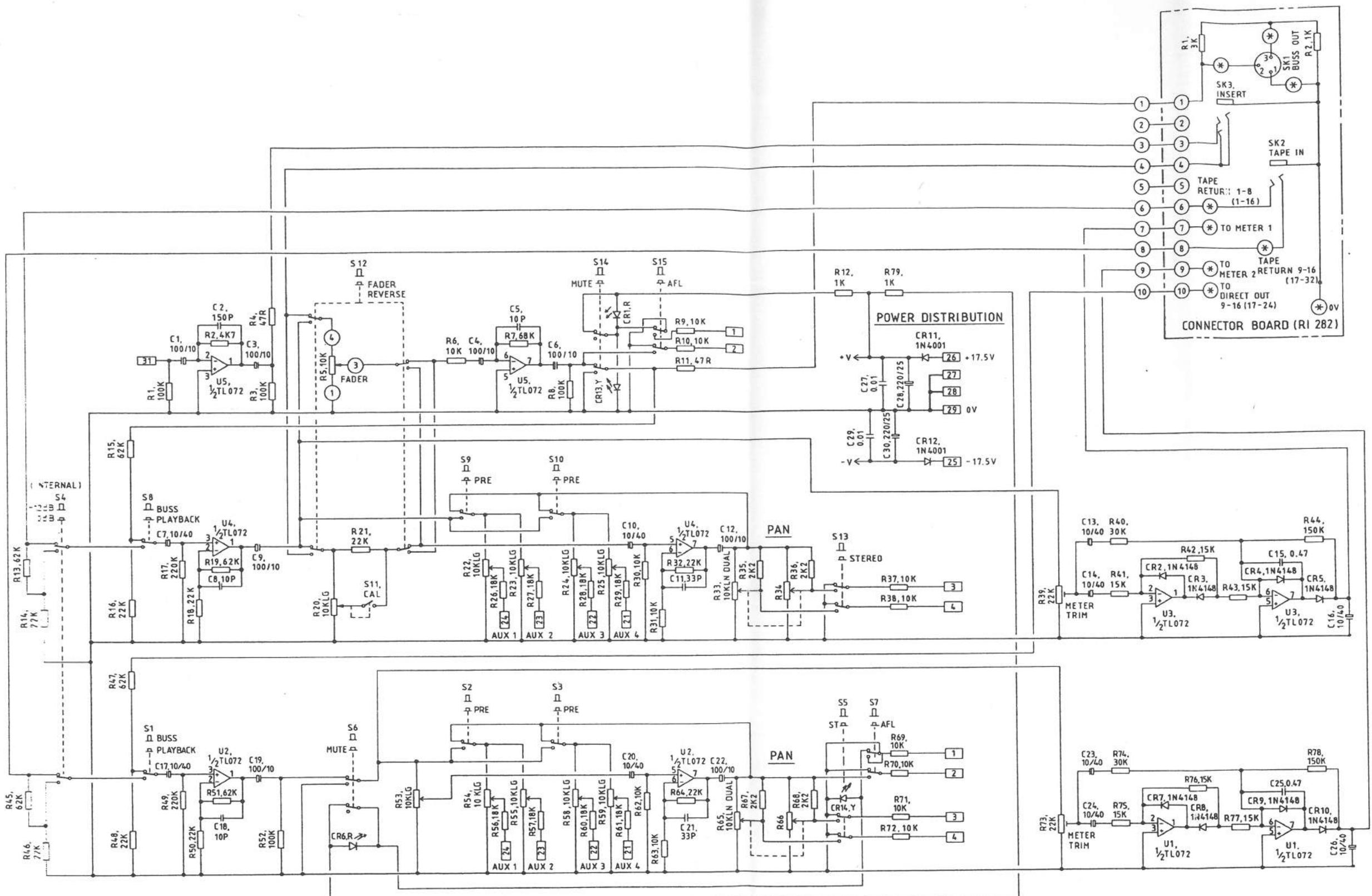


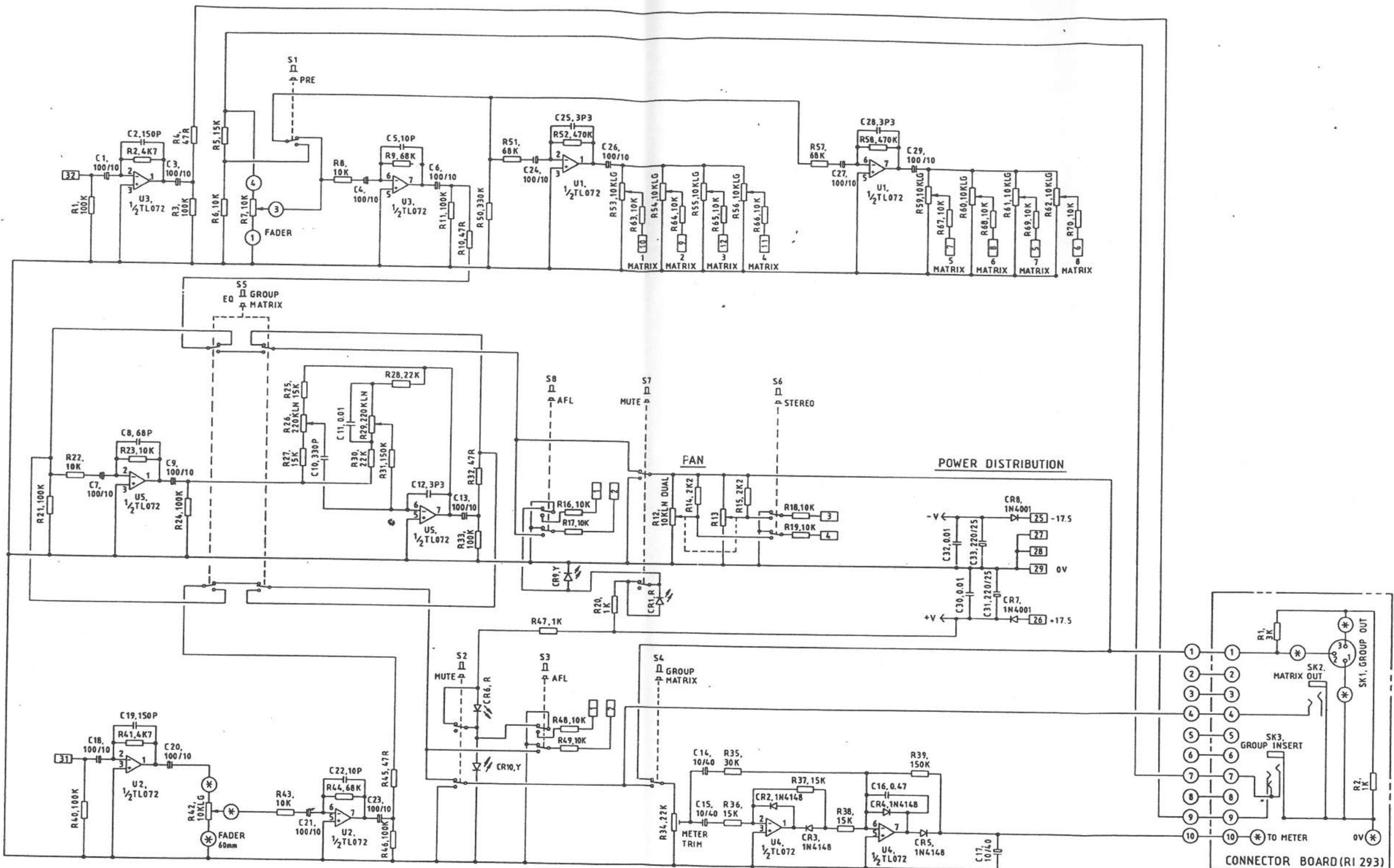
S1001/S1101 INPUT CHANNEL CIRCUIT DIAGRAM





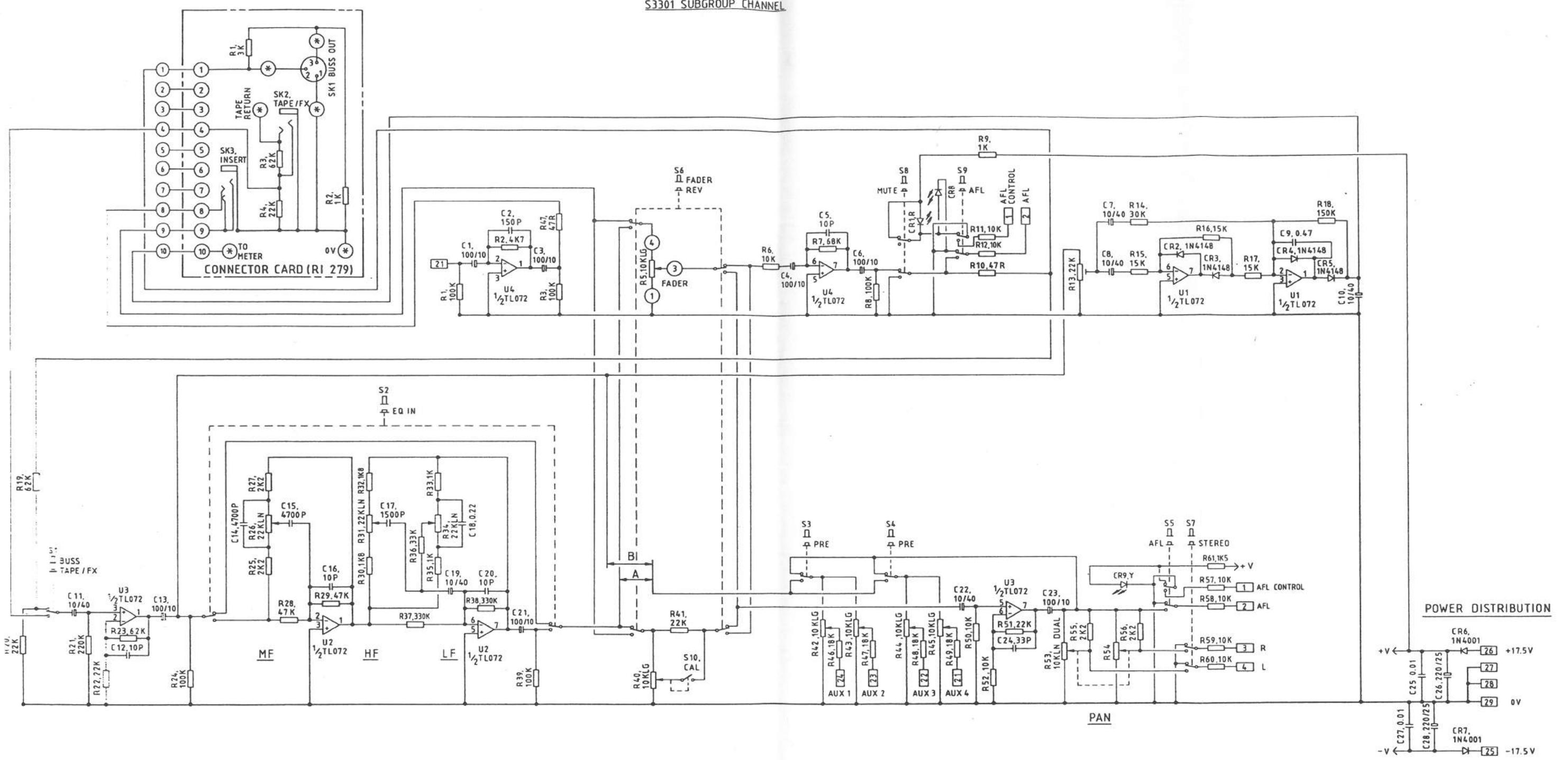
SCORPION S2001 AUX SEND/RETURN CHANNEL





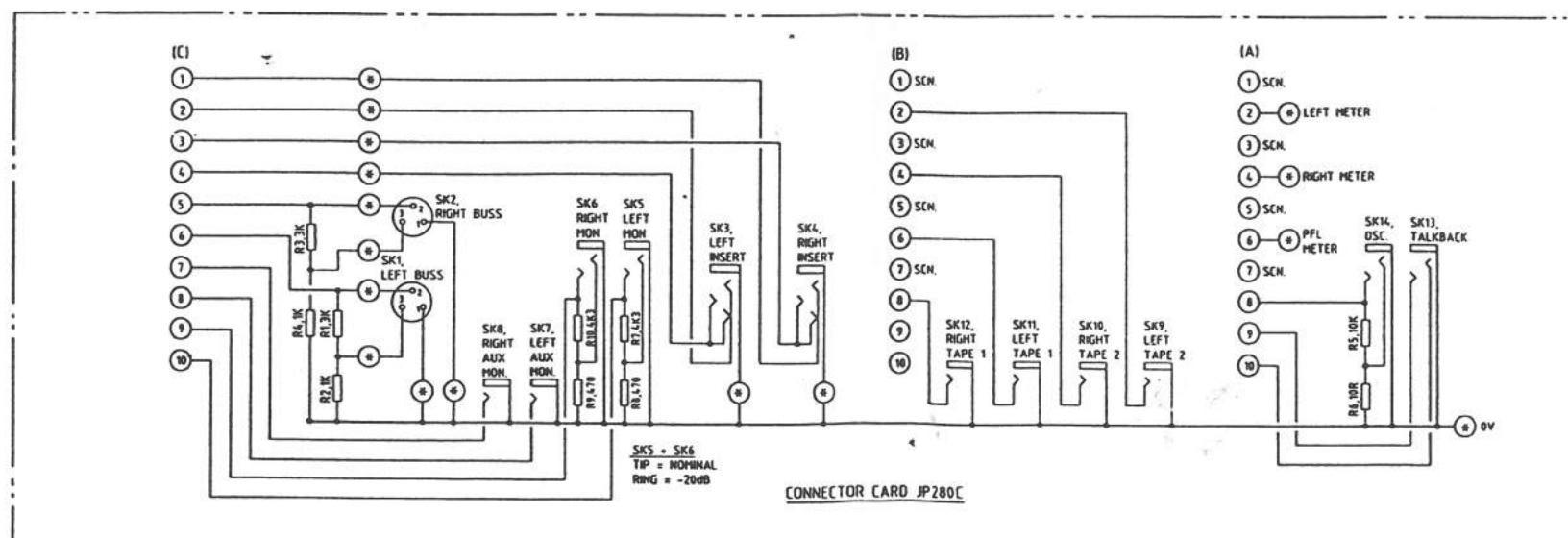
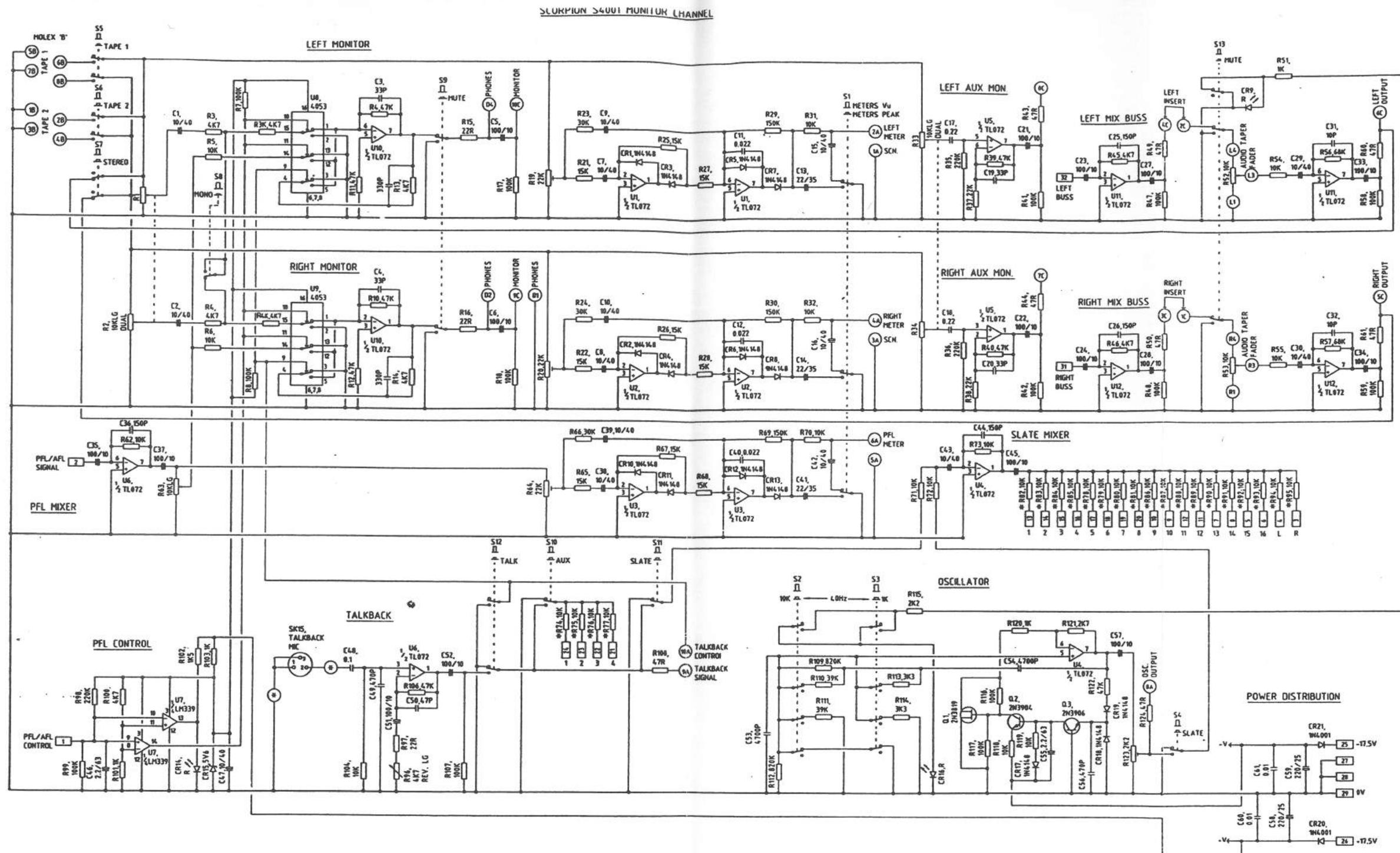
LEGEND

- DENOTES RESISTOR.
- +V || DENOTES POLARISED CAPACITOR.
- DENOTES MOLEX CONNECTOR PIN.
- * DENOTES WIRED PIN.
- DENOTES INDIRECT BOARD CONNECTOR PIN.



LEGEND

- DENOTES RESISTOR.
- +V || DENOTES POLARISED CAPACITOR.
- DENOTES MOLEX CONNECTOR PIN.
- * DENOTES WIRED PIN.
- DENOTES INDIRECT BOARD CONNECTOR PIN.

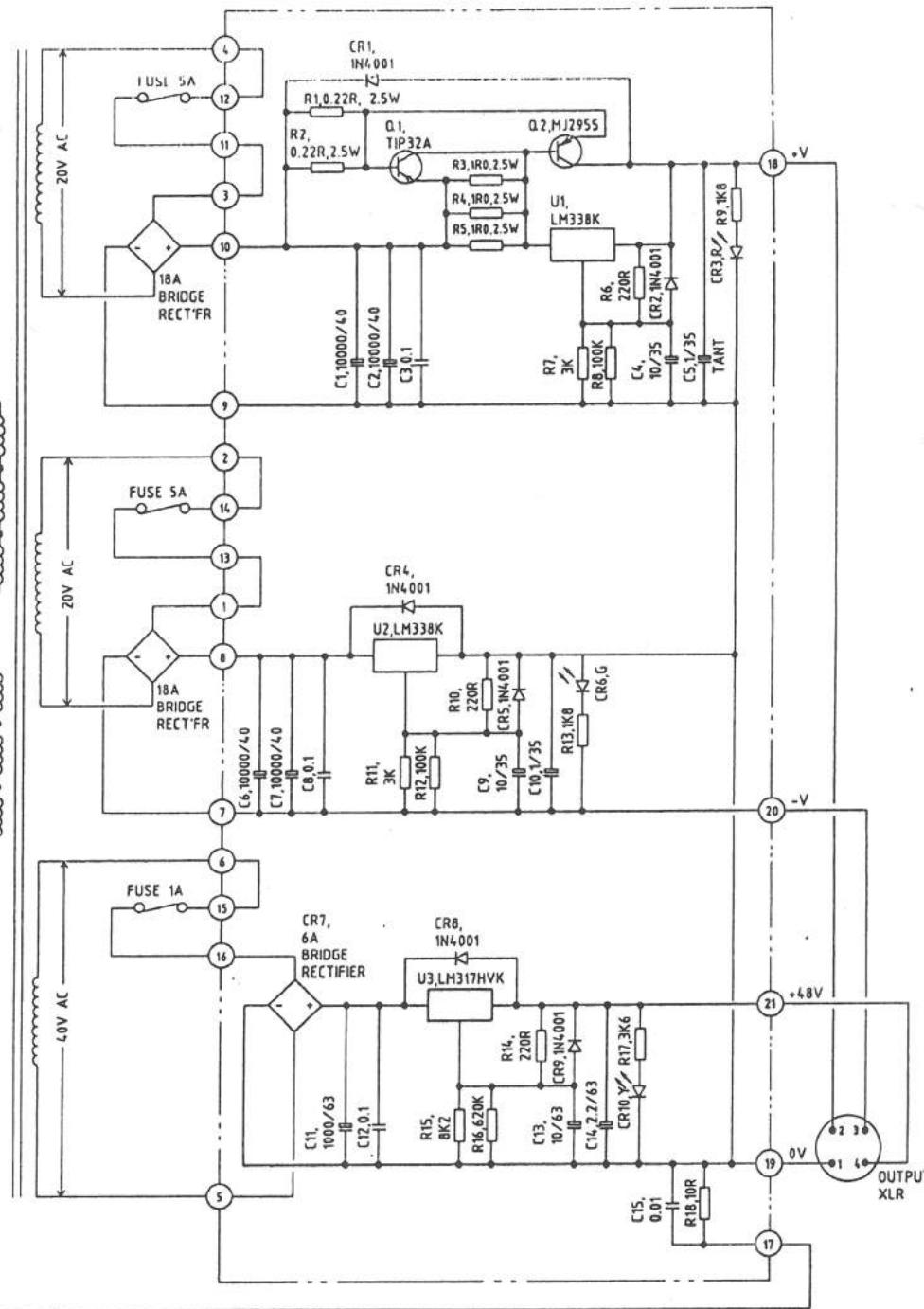
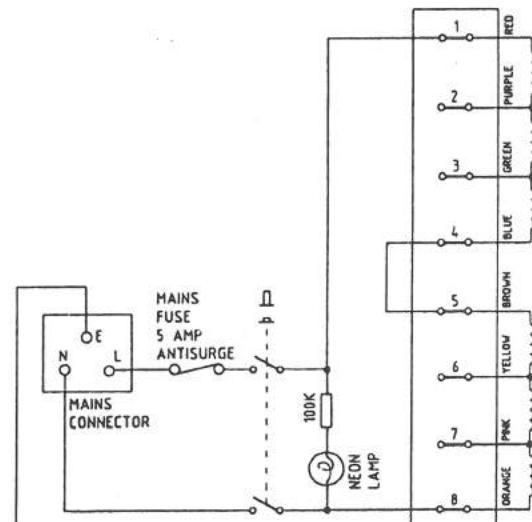


LEGEND

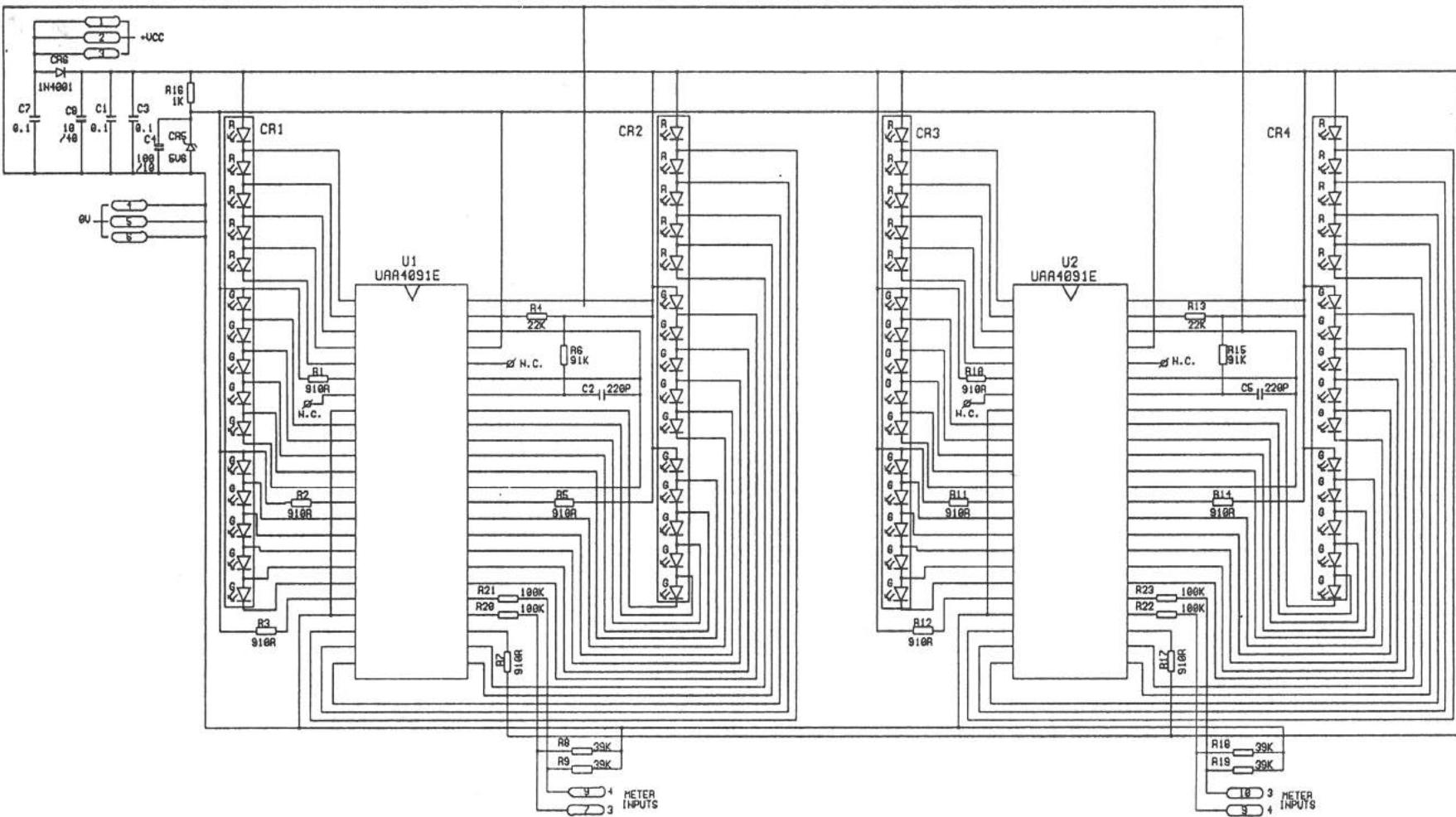
□ DENOTES RESISTOR.

+v || DENOTES POLARISED CAPACITOR.

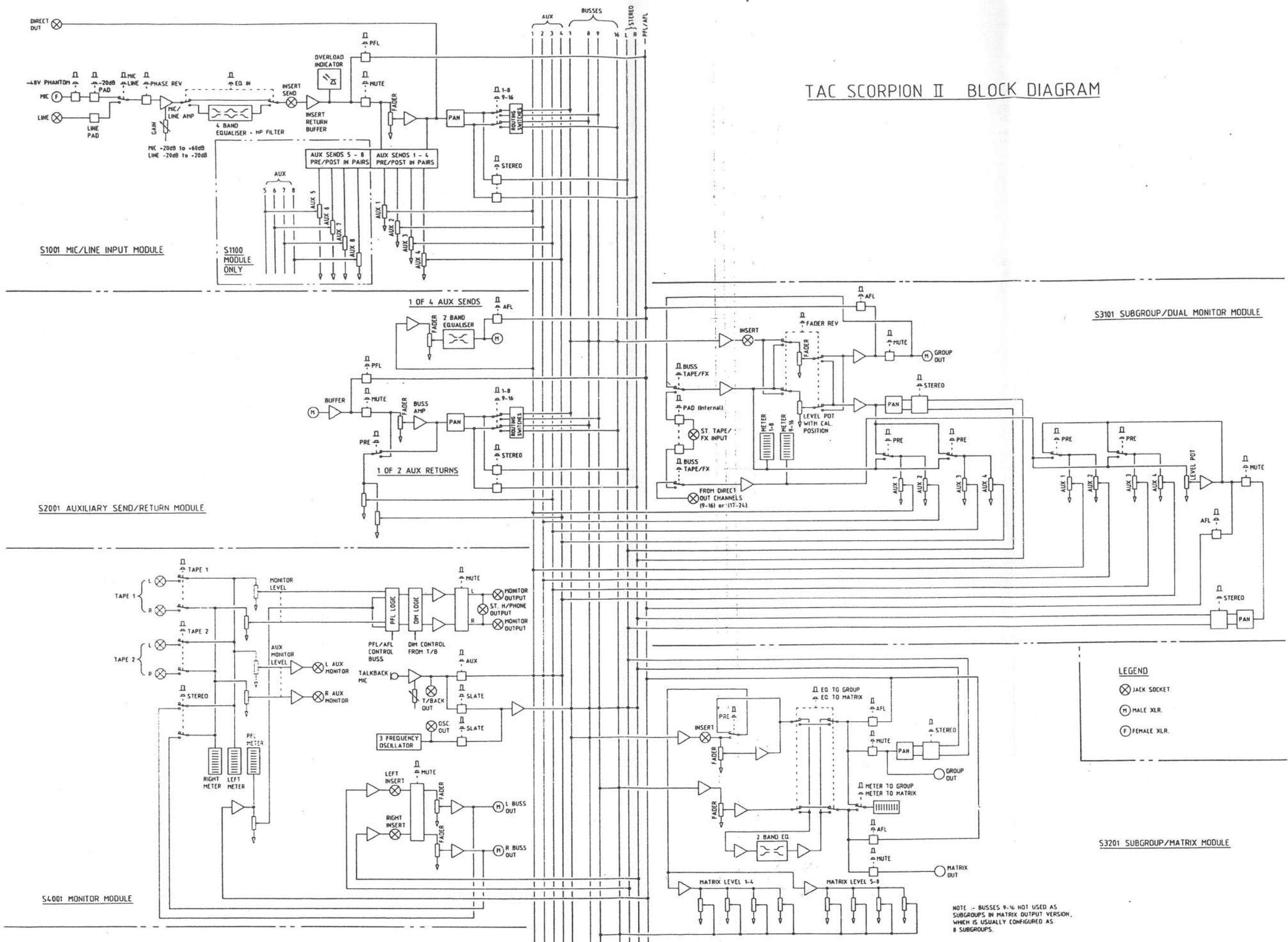
○ DENOTES SPADE CONNECTOR.

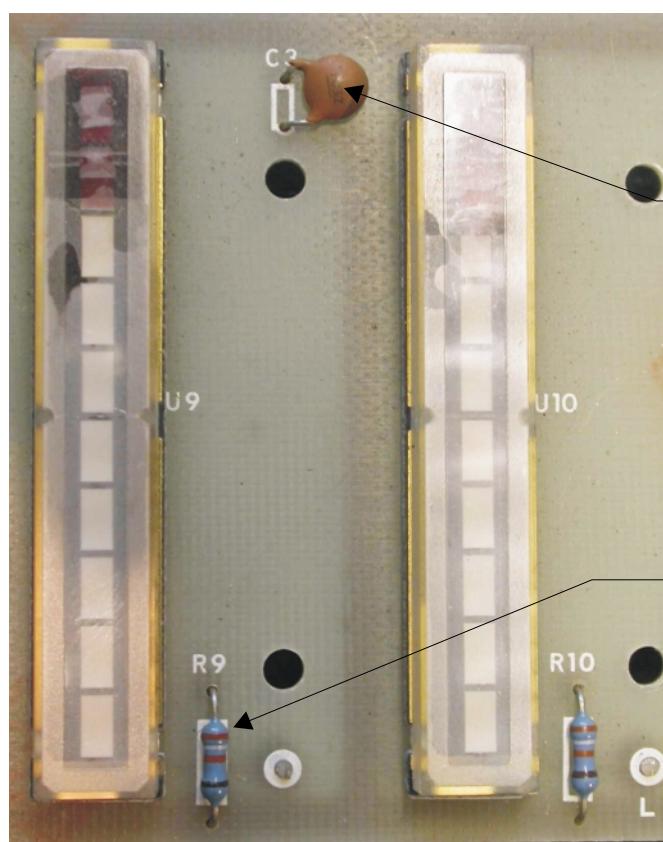


4 X 15 SEGMENT BARGRAPH METERS



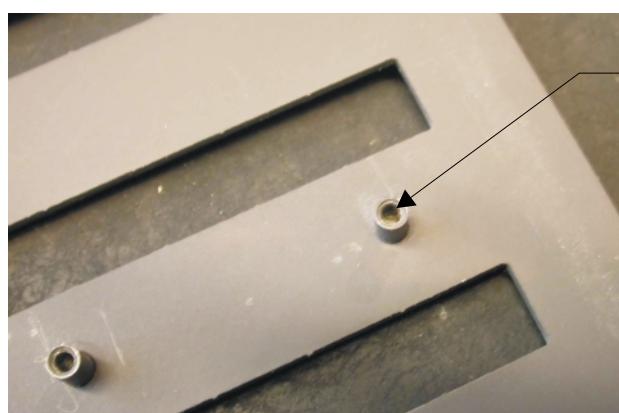
TAC SCORPION II BLOCK DIAGRAM



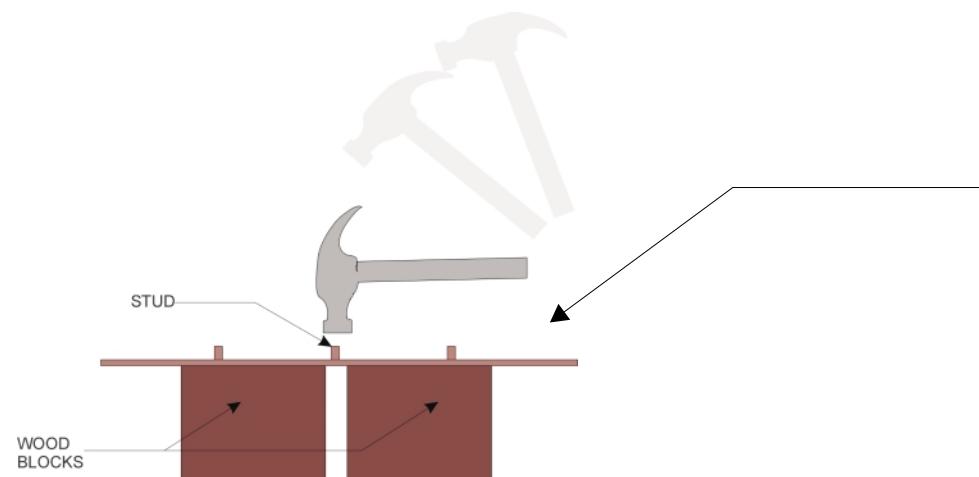


Capacitors fitted in these positions need to be removed and refitted onto the other side of the circuit board.

Resistors fitted in these positions need to be removed. They do NOT need to be refitted as they are incorporated in the design of the replacement circuit board



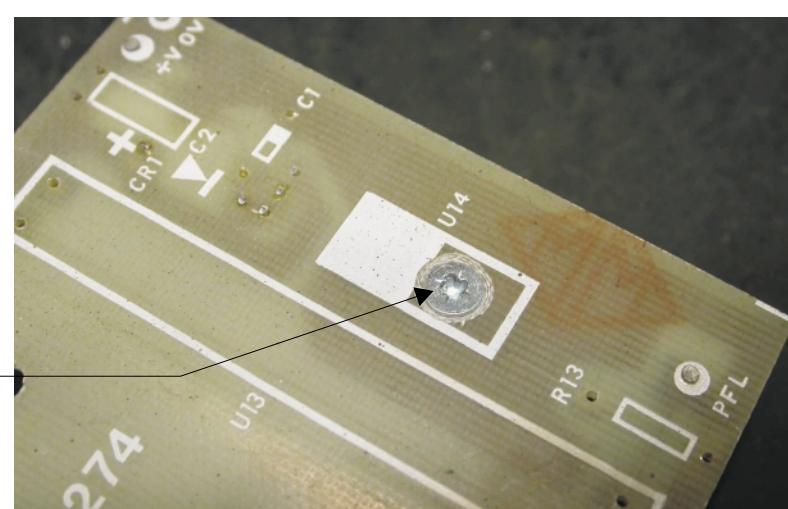
It may be necessary to remove a stud from the metalwork (when fitting in certain positions eg PFL meter).



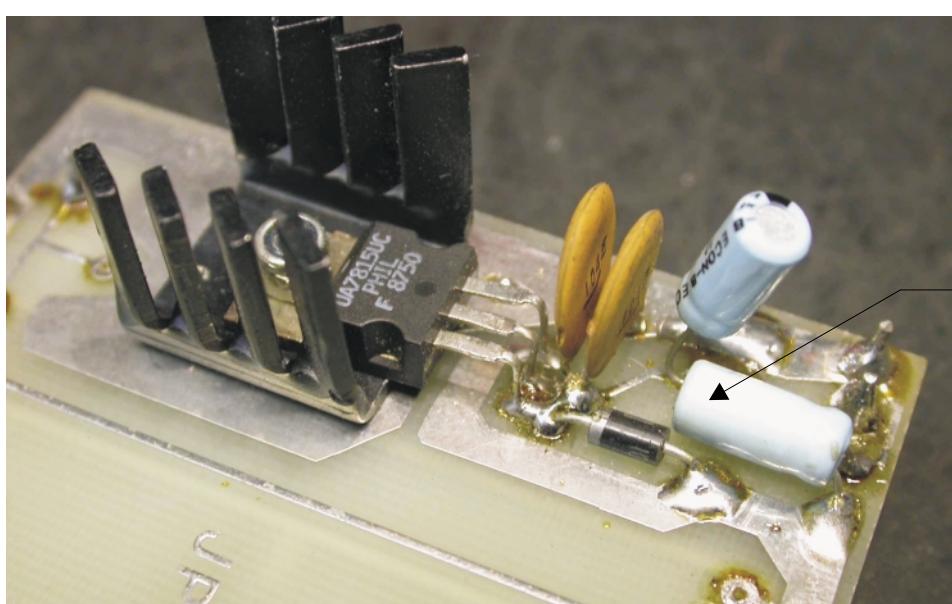
The best method is to place the panel onto 2 blocks of wood (as close to the stud as possible) and hit the stud very hard with a hammer. If the wood is close to the stud then the panel will not bend.



Components fitted in these positions will need to be transferred to the other side of the PCB (not R13 as this can be discarded)

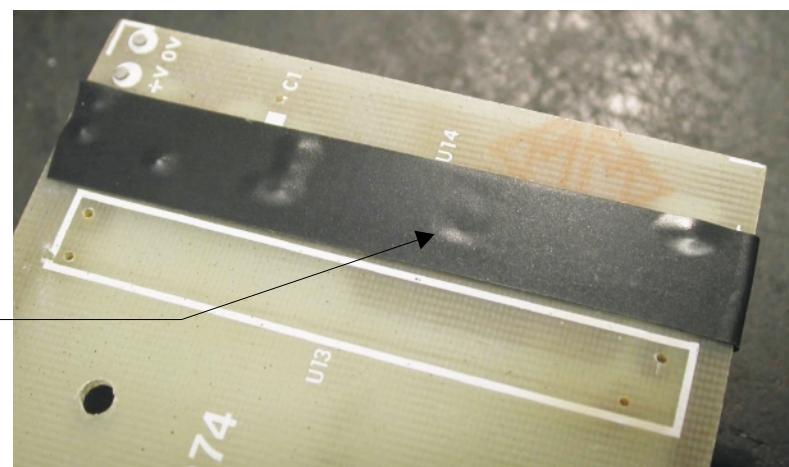


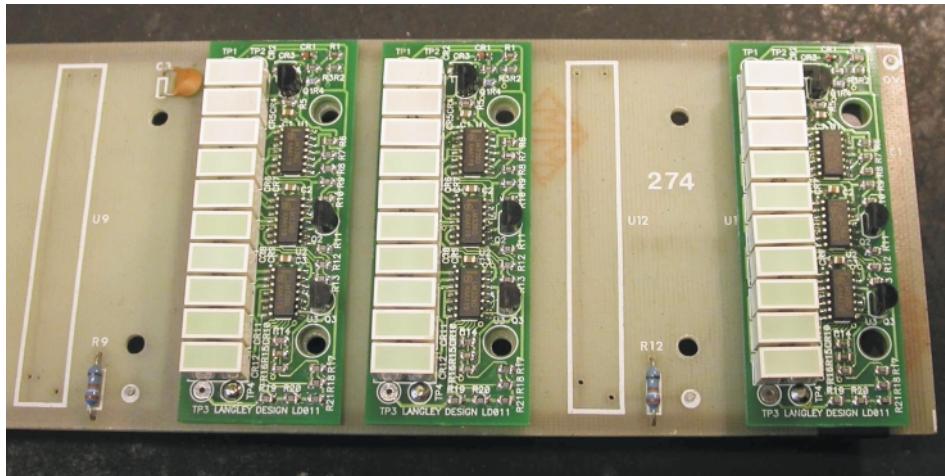
Once the components have been removed, the screw for the regulator heatsink needs to be changed for a countersunk type (and the hole also needs to be countersunk).



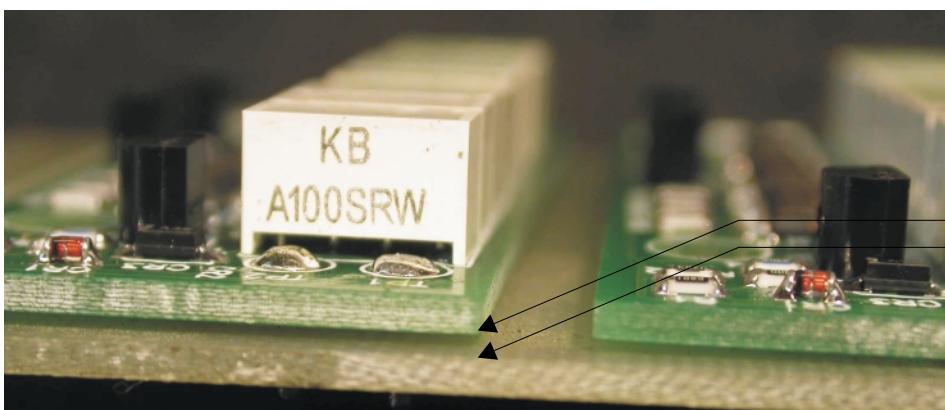
Components need to be moved to this side of the PCB as shown

Once the components have been replaced the legs need to be cut flush to the PCB and a layer of insulation tape applied over the components to stop them contacting the new PCB.

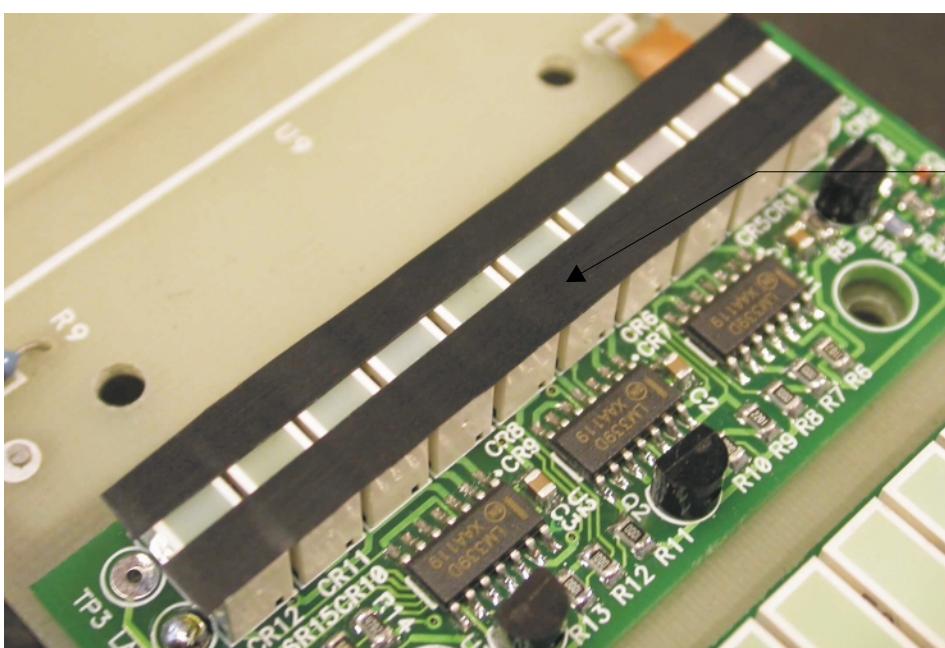




The finished result should look like this!!

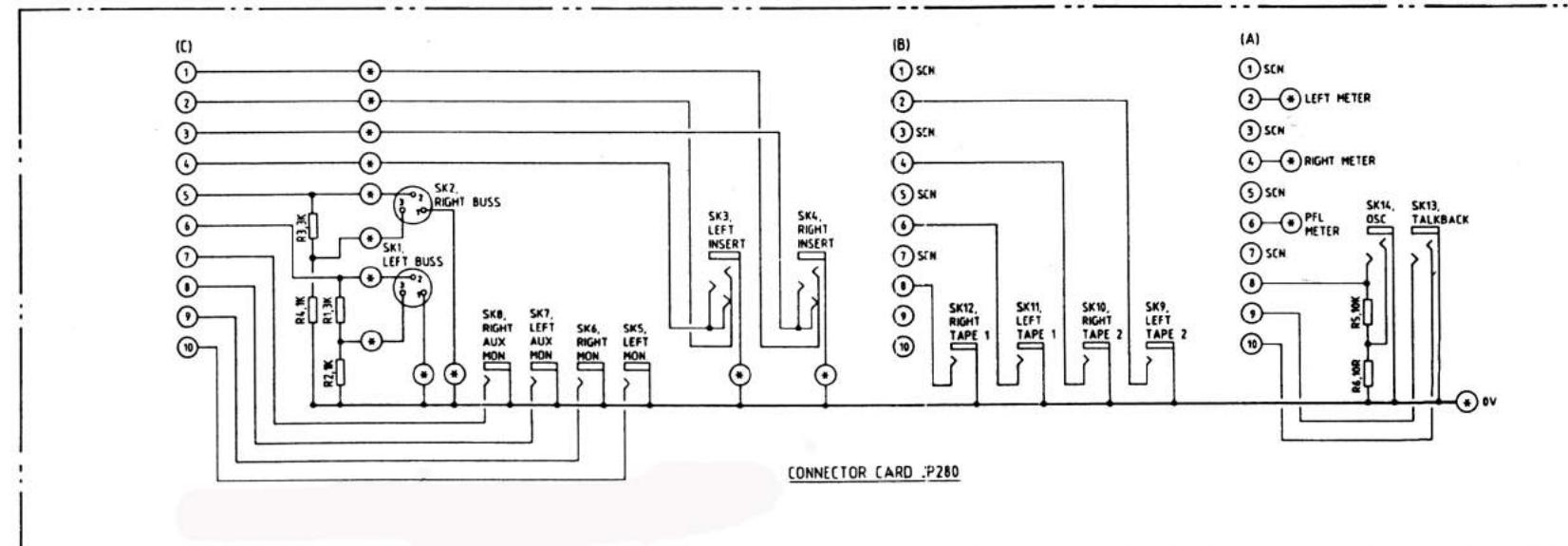
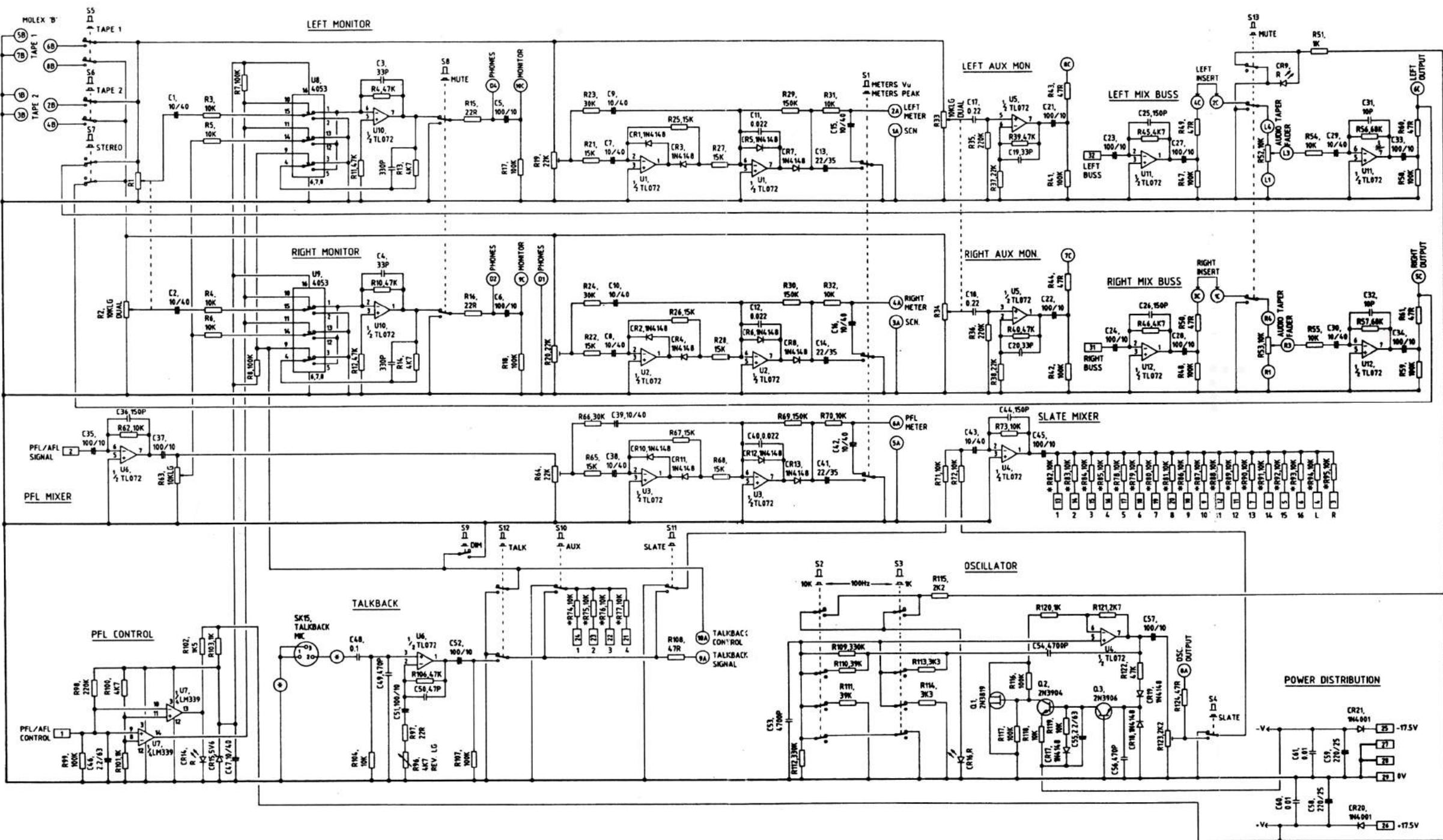


It is important that there is no gap between the new PCB and the motherboard.



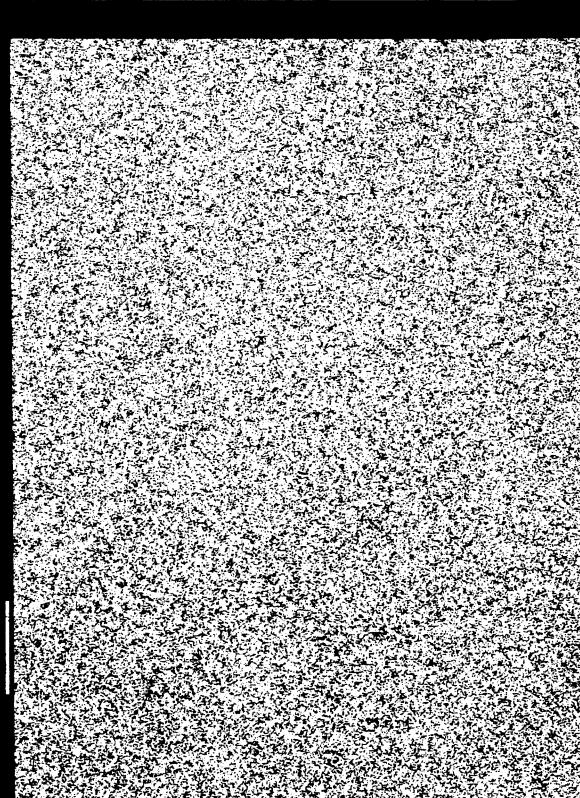
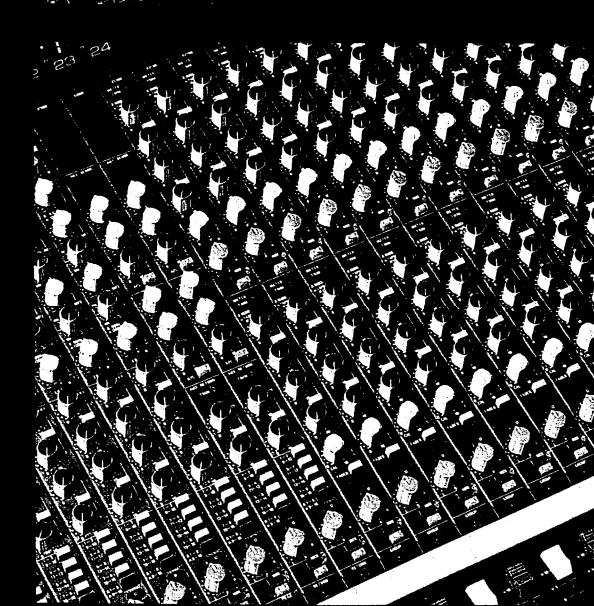
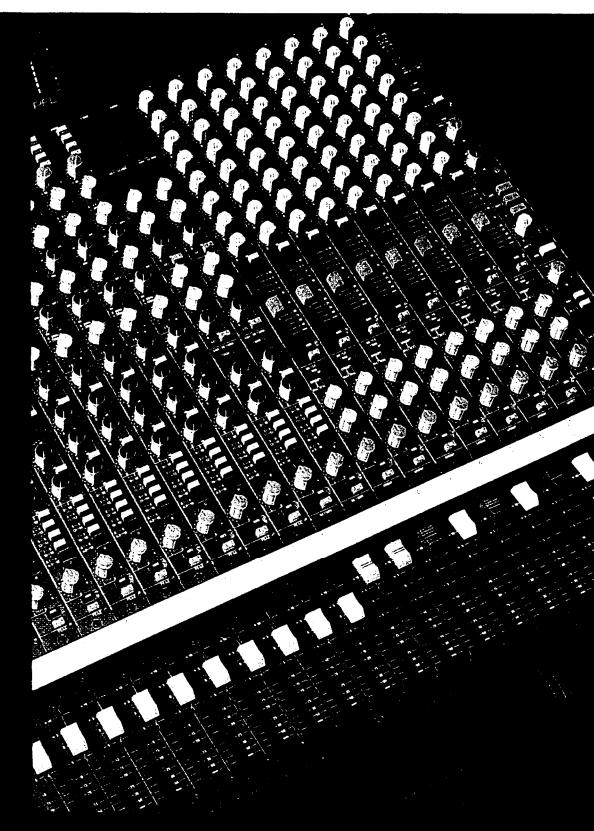
In order to match the size of the original LEDs it is necessary to fit some black tape to mask off the sides and reduce the visible area.
{This is of course optional}.

TAC SCORPION
S4000 CIRCUIT DIAGRAM





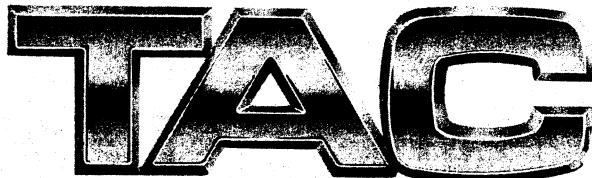
HAC



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TOTAL AUDIO CONCEPTS

GENERAL OVERVIEW

The TAC Scorpion multi-purpose audio mixing system offers an unbeatable combination of sonic performance, facilities and construction. Several thousand TAC Scorpions are in use round the world in many countries, including such diverse territories as Australia, the People's Republic of China, Japan, the USA and the USSR. Our client base covers a vast range, from the private home studios of Rock'n'Roll stars to institutions of worldwide renown, such as the Bolshoi Ballet.

This success rests, quite plainly, on one solid foundation: confidence. The confidence of the design, production, quality control and sales teams which have brought the TAC Scorpion to the world market; and the confidence that our approach has created in the people who have selected TAC above all other competing products.

This brochure gives a complete description of the evolving Scorpion system. We have expanded the already wide range of Scorpion configurations with the addition of several major new options, including 8 auxiliary sends on the input module; a new extended chassis; and a jackfield. At the time of writing, there are approximately 50 variations on the Scorpion theme, covering major applications in multitrack recording, concert sound reinforcement, and broadcast and video production. The basis of this flexibility is the method of construction of the console, which allows the system to expand without sacrifice of structural or electromechanical integrity.

The Scorpion console is based upon a system of modules that allows an extremely flexible range of configurations. The modules and bussing system are located in a folded steel chassis which is of exceptionally strong and robust construction. This mechanical system is much more advanced than is normally found in mixing desks of this general type, and sophisticated engineering concepts have been used to eliminate the stresses and torsional movements which can easily damage the electronics in a mixing desk.

Computer-grade backplane connectors with gold-plated pins are used to interconnect the modules via a hard (printed circuit board) bussing system. All the input and output connectors are mounted on the rear panel of the mixer and are connected to the individual modules by a ribbon connector.

The console is built on 3 tiers; the fader panel is horizontal; the modules are inclined at an angle of 10 degrees, whilst there is a separate penthouse-type meter hood which houses the LED meters. An armrest is fitted in front of the faders, and the console is trimmed with decorative endcheeks. High-quality components are used throughout, in advanced circuitry which provides low-noise, transparent signal quality, and superb equalization.

With its exceptional track record, we feel justified in claiming that the TAC Scorpion is one of the small handful of Pro-Audio products which have achieved the status of being the standard by which all others in its field are judged.

MODULES

The functions of the desk are subdivided amongst a number of different types of modules. These include:

INPUTS

S1000 mic-line input channel with 4-band equalizer, 4 auxiliary sends, routing to 16 busses and a separate stereo buss;

S1100 mic-line input channel with 4-band equalizer, 8 auxiliary sends, routing to 12 busses and a separate stereo buss;

S1200 stereo line input with 3-band equalizer, 4 auxiliary sends, routing to 16 busses and a separate stereo buss

AUXILIARY SEND MASTERS

S2000 master auxiliary send-return module, with two auxiliary master sends and one effects return input;

SUBGROUPS/BUSS OUTPUTS

S3000 subgroup with one Buss/Tape monitor mix section;

S3100 subgroup with two Buss/Tape monitor mix sections;

S3200 subgroup with 8 x 8 matrix output;

S3300 subgroup with one Buss/Tape monitor mix section and equalizer;

In each case, the subgroup fader is addressed via the input channel routing buttons. Each subgroup fader may be routed to the stereo buss, thus enabling the subgrouping function to be used and also terminated in a connector, providing an output from each buss,

The Subgroup modules with the Buss/Tape monitor mix sections are generally used in recording and production versions of the Scorpion whilst the matrix output version is normally used in sound reinforcement and theatre sound applications.

STEREO BUSS MASTER

S4000 master monitor/stereo buss module

This provides the stereo buss summing amplifiers, facilities for monitoring various signals on speaker systems and headphones, oscillator, and talkback system.

FOLDBACK SYSTEM MODULES

SFB1000 foldback input channel;

SFB2000 foldback single output with comprehensive equalizer;

SFB2100 foldback single output - basic version

SFB3000 foldback monitor/control module

The SFB foldback modules constitute a subsystem in the TAC Scorpion which is dedicated to on-stage Foldback applications.

All Scorpion input, output and monitor configurations are based on combinations of the above modules in the various chassis sizes.



SCORPION

CHASSIS SYSTEMS

There are 4 chassis sizes in the Scorpion range. These include:

SF (SHORT FRAME): - WITH 27 MODULE POSITIONS

This houses such typical configurations as 16/8/2 with 8 Buss/Tape monitor sections. The SF may be fitted with 11 or 19 meters to suit the particular input-output variant.

LF (LONG FRAME): - WITH 43 MODULE POSITIONS

This houses such typical configurations as 32/8/2 with 8 Buss/Tape monitor sections, and 24/16/2 with 16 Buss/Tape monitor sections. The LF may be fitted with 11, 19 or 27 meters to suit the particular input-output variant.

XLF (EXTENDED LONG FRAME): - WITH 53 MODULE POSITIONS

This houses such typical configurations as 40/8/2 with 8 auxiliary sends, and 32/16/2 with 32 Buss/Tape monitor sections and 4 aux sends. The XLF may be fitted with 11, 19, 27 or 35 meters to suit the particular input-output variant.

XPB (EXTENDED LONG FRAME WITH PATCHBAY): - WITH 45 MODULE POSITIONS

This houses such typical configurations as 28/12/2 with 8 auxiliary sends and 24 Buss/Tape monitor sections. The XPB is fitted with 11, 19 or 27 meters to suit the particular input-output variant.

FOLDBACK VERSIONS OF THE SCORPION

The foldback versions of the Scorpion use the SF, LF and XF chassis, giving three standard configurations: 18/8 in SF chassis, and 30/12 in the LF chassis, and 40/12 in the XLF chassis.

The outputs are all completely independent, being fed from 8 rotary controls on the input modules. In the 12 output version, the extra 4 rotary controls are located in the fader panel (in place of a fader).

One of the most outstanding features of the Scorpion FB is the 4-band equalizer fitted on each group output module. This equalizer is specially designed with very tight curves in the mid-range controls to assist in the removal of unwanted signal content over small frequency ranges. Additional equalization in the form of external graphic equalizers is not usually required with the Scorpion FB.

The Scorpion foldback console is supplied complete with flexible "gooseneck" lights, which plug into the console back panel on XLR 4 pin male connectors. On SF frames one light is supplied, on LF frames two, and on XLF frames 3. Please also note that the LF and XLF models are supplied with power supply type TAC M-PSU units because of the higher current the console draws than standard LF consoles, and thus if a spare PSU for an F/B is required, this must be specified.

METERING SYSTEMS

The Scorpion is provided with LED-display metering. Each meter is calibrated from -22dB to +3dB. The ballistics of the Left, Right and Pfl meters may be selected to either Peak or VU by a switch on the S4000 master monitor module.

All versions of the Scorpion have 3 separate meters for Left and Right outputs and Pfl/Afl signal. LF

chassis may be optionally supplied with two additional VU meters for left and right outputs. A third VU meter, for PFL/AFL signals may also be fitted, but replaces the left and right LED meters, due to overall space limitations. XLF chassis may be optionally fitted with three additional VU meters without the loss of any LED meters due to extra available space. There is an option of all VU metering on 8 Buss LF/XF consoles, ie. 11 VU meters, reading buss/tape, L, R and PFL, and a 13 VU meter option for LFB/XFB, ie. reading 12 buss and PFL.

A phase meter may be fitted to any chassis where a meter cut-out is available, eg. on a standard XLF chassis with LED metering 3 VU meters may be fitted or 2 VU meters and 1 phase meter. In addition, it should be noted, there is an Overload indicator on the input modules.

DUAL-LEVEL OPERATION

Recording versions of the Scorpion are supplied, without needing any modification, to work at either standard +4dBv or Fostex/TEAC -10dBv multitrack operating levels. On basic models this is achieved by providing these different levels on different pins of the input/output connectors, whilst on more complex versions the level is switched internally. This is more fully described in the users manual which accompanies every console. All switched models are factory set at +4dBv.

Jackfield versions of the Scorpion, however, will be supplied dedicated to either +4dBv or -10dBv multitrack operation; this must be specified at the time of order.

Stereo monitor returns operate at +4dB.

POWER SUPPLY UNIT

The Scorpion power supply is a 19" rack mounting unit 2'U" (3.5" - 89mm high) x 380mm (15") deep. The front panel has an illuminated on/off switch. Fuseholders are also mounted on the front panel for the A/C, +/-18 volt power rails and the 48v rail. The A/C inlet is on the rear, utilising a standard IEC 3 pin A/C connector. The DC outlet is on an XLR 4 pin female connector.

There are two versions of the power supply unit, although both are housed in the same case. The standard unit TAC PSU type S will power all SF, LF and XLF, except foldback versions of LF and XLF - these require the more powerful TAC PSU type M. Care must be taken when ordering spare PSU units that the correct version is specified. The higher power version is also fitted with an integral cooling fan.

SPARE PARTS KITS

Three standard spare parts kits are available - SS-SPK, SL-SPK, SFB-SPK. These include a selection of components most likely to be required for routine maintenance.

FLIGHTCASES

Flightcases are available for all models. The cases are manufactured in-house, and are of rugged durable construction. The cases are made using 9mm (3/8") birch plywood with a brown laminated covering, together with aluminium extrusions and standard steel case fittings. All LF and XLF cases are supplied with 100mm (4") heavy duty wheels.

Two case formats are available. The standard case has a normal tray and lid. The extended case has a compartment to the rear of the console, with a lid, to house wiring looms, patch-cables etc, into which multicores can be connected.

CONFIGURATIONS OF THE TAC SCORPION

Because there are so many configurations of the Scorpion, a coding system has been devised to describe them. The code gives a quick description of the console in terms of chassis size, number of inputs, number of groups, quantity of busses, number of meters, number of blank modules, and number of auxiliary sends.

The coding system will be extended from time to time as new options are introduced to the Scorpion system. Each models code number is the reference number for ordering it. For part-loaded consoles the appropriate number of modules are reduced and an equivalent number of blanks added.

At present the codes are denoted by letters and numbers, and operates as follows:

A: CHASSIS SIZES

S = Short -27 module positions; **L** = Long -43 module positions;
X = Extended Long -53 module positions;
XPB = Extended Long -45 module positions with Patchbay

B: TOTAL NUMBER OF INPUT MODULES TO BE SUPPLIED

C: (SUB)GROUP MODULE TYPE

B = **S3000** basic group; **D** = **S3100** dual monitor group; **M** = **S3200** matrix group; **E** = **S3300** basic group with eq; **F** = **SFB2000** foldback output with EQ; **N** = **SFB2100** basic foldback output - no EQ.

D: **TOTAL NUMBER OF GROUP MODULES TO BE SUPPLIED**

E: **TOTAL NUMBER OF GROUP BUSSES IN THE CONSOLE** (8, 12 OR 16)

F: **TOTAL NUMBER OF LED METERS TO BE FITTED** (11, 16, 27 or 35 on general purpose versions, 9 or 13 on foldback consoles)

G: **TOTAL NUMBER OF BLANK MODULES**

H: **NUMBER OF AUXILIARY SENDS**

In general terms, the configuration of the console is determined by the chassis size. In the description column of the table below, the expression ' + 4'(8, 16, 24, 32) indicates the number of Buss/Tape monitor channels available in the console; for example, 16/8/2 + 8 means 16 inputs, 8 groups, stereo buss, and 8 track monitoring.

Some similar Scorpions are available with different numbers of meters. For example, item 6 below has 8 busses and 16 Buss/Tape monitor channels, but only 8 Buss/Tape meters; item 7) is identical but has 16 Buss/Tape meters. The reason for having different quantities of meters is both for price and user preference.

Note that 8 Aux sends can only be fitted on 8 and 12 buss versions of the Scorpion.



SCORPION

SMALL CHASSIS

	A	B	C	D	E	F	G	H	GENERAL DESCRIPTION
1)	S	10	B	4	8	11	10	4	10/4/2 + 4
2)	S	10	E	4	8	11	10	4	10/4/2 with Eq on groups
3)	S	10	D	4	8	11	10	4	10/4/2 + 8
4)	S	16	B	8	8	11	0	4	16/8/2 + 8
5)	S	16	E	8	8	11	0	4	16/8/2 with Eq on groups
6)	S	16	D	8	8	11	0	4	16/8/2 + 16
7)	S	16	E	8	8	19	0	4	16/8/2 + 16, with 19 meters
8)	S	16	M	8	8	11	0	4	16/8/2 + 8x8 matrix

LARGE CHASSIS

9)	L	32	B	8	8	11	0	4	32/8/2 + 8
10)	L	32	E	8	8	11	0	4	32/8/2 with Eq on groups
11)	L	32	M	8	8	11	0	4	32/8/2 with 8x8 matrix
12)	L	32	D	8	8	11	0	4	32/8/2 + 16, 11 meters
13)	L	32	D	8	8	19	0	4	32/8/2 + 16, 19 meters
14)	L	30	B	8	8	11	0	8	30/8/2 + 8, with 8 Aux sends
15)	L	30	E	8	8	11	0	8	30/8/2, Eq on group, 8 Aux sends
16)	L	30	M	8	8	11	0	8	30/8/2 with 8x8 matrix and 8 Aux
17)	L	30	D	8	8	11	0	8	30/8/2 + 16, 11 meters, 8 Aux
18)	L	30	D	8	8	19	0	8	30/8/2 + 16, 19 meters, 8 Aux
19)	L	24	B	16	16	19	0	4	24/16/2 + 16
20)	L	24	E	16	16	19	0	4	24/16/2 with Eq on group
21)	L	24	D	16	16	19	0	4	24/16/2 + 32, 19 meters
22)	L	24	D	16	16	27	0	4	24/16/2 + 32, 27 meters
23)	L	28	D	12	12	27	0	4	28/12/2 + 24, 27 meters, 4 Aux
24)	L	26	D	12	12	27	0	8	26/12/2 + 24, 27 meters, 8 Aux

EXTENDED LONG CHASSIS

25)	X	40	B	8	8	11	0	8	40/8/2 + 8, with 8 Aux sends
26)	X	40	E	8	8	11	0	8	40/8/2 with Eq on group, 8 Aux
27)	X	40	M	8	8	11	0	8	40/8/2, 8x8 matrix, 8 Aux
28)	X	40	D	8	8	11	0	8	40/8/2 + 16, 8 Aux sends
29)	X	40	D	8	8	19	0	8	40/8/2 + 16, 19 meters, 8 Aux
30)	X	40	B	8	8	11	2	4	40/8/2 + 8, 4 Aux sends
31)	X	40	E	8	8	11	2	4	40/8/2 with Eq on group, 4 Aux
32)	X	40	M	8	8	11	2	4	40/8/2, 8x8 matrix, 4 Aux sends
33)	X	40	D	8	8	19	2	4	40/8/2 + 16, 4 Aux Sends
34)	X	40	D	8	8	19	2	4	40/8/2 + 16, 19 meters, 4 Aux
35)	X	32	B	16	16	19	2	4	32/16/2 + 16, 4 Aux Sends
36)	X	32	E	16	16	19	2	4	32/16/2 with Eq on group, 4 Aux
37)	X	32	D	16	16	19	2	4	32/16/2 + 32, 4 Aux sends, 19 meters
38)	X	32	D	16	16	35	2	4	32/16/2 + 32, 35 meters, 4 Aux
39)	X	36	D	12	12	27	0	8	36/12/2 + 24, 27 meters, 8 Aux
40)	X	36	D	12	12	27	2	4	36/12/2 + 24, 27 meters, 4 Aux

PATCHBAY VERSIONS

41)	XPB	32	D	8	8	19	0	8	32/8/2 + 16, 19 meters, 8 Aux,
42)	XPB	32	D	8	8	19	2	4	32/8/2 + 16, 19 meters, 4 Aux,
43)	XPB	24	B	16	16	19	2	4	24/16/2 + 16, 19 meters, 4 Aux,
44)	XPB	24	E	16	16	19	2	4	24/16/2, Eq on group, 4 Aux,
45)	XPB	28	D	12	12	27	0	8	28/12/2 + 24, 27 meters, 8 Aux,
46)	XPB	28	D	12	12	27	2	4	28/12/2 + 24, 27 meters, 4 Aux,

FOLDBACK VERSIONS

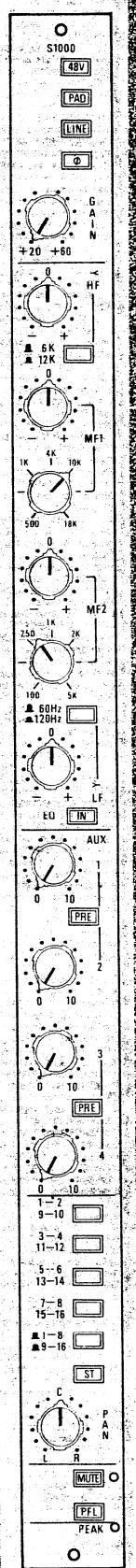
47)	S	18	F	8	8	9	0		18/8 Foldback EQ on output
48)	S	18	N	8	8	9	0		18/8 Foldback no output EQ
49)	L	30	F	12	12	13	0		30/12 Foldback EQ on output
50)	L	30	N	12	12	13	0		30/12 Foldback no output EQ
51)	X	40	F	12	12	13	0		40/12 Foldback EQ on output

See page three for alternative meter options.

Versions 47-51 are available with 48V phantom power as an additional option.

TAC

TOTAL AUDIO CONCEPTS



S1000 MIC-LINE INPUT CHANNEL

INPUTS

The Microphone and Line level inputs are selected using the Mic/Line selector switch. The Microphone and Line inputs are electronically-balanced.

The Line input is used for high-level sources, such as the output from a tape recorder or an effects device.

The Gain control functions for both inputs. In Mic, the gain range is +20 to +60dB, whilst in Line, the gain range is -10dB to +30dB.

Phantom power (+48 Volts DC) is supplied. When the +48V switch on the input is pressed, the phantom power will be fed to the mic input XLR on that socket. Normally phantom power does not harm dynamic microphones.

The PAD, when in, attenuates the input to the Microphone amplifier by 20dB.

The Phase \emptyset switch reverses the phase of the signals on the microphone input. Thus, if a microphone is wired out of phase, this switch enables you bring it back into phase with the other microphones without rewiring.

EQUALIZER

The equalizer is a 4-band device with swept frequency midrange controls. The control ranges are as follows:

HF : ± 15 dB boost/cut, switch-selectable to either of two turnover frequencies, 6KHz or 12KHz;

MF1 : ± 15 dB boost/cut, with bandcentre swept over the range 500Hz to 18KHz;

MF2 : ± 15 dB boost/cut, with bandcentre swept over the range 100Hz to 5KHz;

LF : ± 15 dB boost/cut, switch-selectable to either of two turnover frequencies, 60Hz or 120Hz

An eq in/out (bypass) switch is fitted.

AUXILIARY SENDS

The S1000 channel has 4 independent rotary auxiliary sends. The outputs from the sends are summed in the S2000 modules.

Auxiliary sends have two primary functions: to send signals from the channel to effects devices, such as reverbs, digital delays, etc; and to provide foldback for the musicians.

Each pair of auxiliary sends has its own pre/post switch. When the sends are pre, this means that movements of the channel fader will not affect the output from the sends. When the sends are post, however, fader movements will make the output of the sends vary in direct proportion to the fader movements.

ROUTING

The routing switches enable the signal from the channel fader to be sent to any of the buss outputs or to the main stereo output.

The busses are selected through a bank of 4 switches, which access 8 of the 16 group busses in pairs. The 4 switches are used in combination with the bank select master switch (labelled 1-8/9-16), and the panpot.

When the bank select master is not pressed, the 4 routing switches will send the signal to busses 1 – 8. When the bank select master is pressed, the 4 routing switches will address busses 9 – 16. Thus, if you want to send the signal to track 16, press the bank select switch, the routing button labelled '15 – 16', and turn the panpot hard right (Left corresponds to odd-numbered busses, and Right corresponds to even-numbered busses).

To address the stereo output, all you have to do is press the switch marked 'stereo'. It is, of course, possible to select any 8 busses and the stereo buss (ST) at the same time.

All panpots are -3dB at centre on the Scorpion.

The busses are summed in the group modules. Thus, when you select buss 2, for example, your signal will go to mix buss 2, which has its output controlled by group fader 2.

PANPOT, FADER and MUTE

The Fader is a high-quality 100mm travel unit of robust mechanical construction. Located above it is the main Panpot. This allows panning between odd and even (and Left & Right) busses as selected by the routing.

Like all panpots on the console, it is indented for quick location of the centre position.

The main channel Mute, when pressed, cuts all outputs from the channel.

The Pfl (Pre-fade listen) switch, normally latching, hears the pre-fader input to the channel and is also pre-the Mute switch in the circuit. Thus even if the channel is muted, you can hear if there is signal present using the Pfl switch.

The Overload LED illuminates when the post-equalizer signal reaches 4dB below clipping point, ie, at +18dBv.

INSERTS

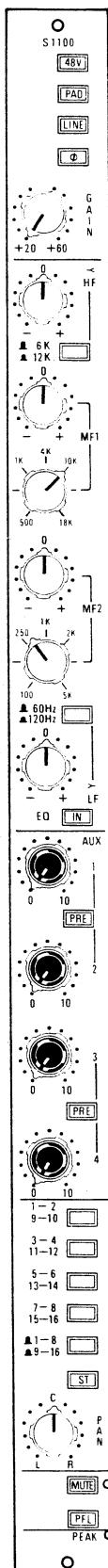
Whereas auxiliary sends are used to feed effects devices, which only require slow or occasional changes in input level, inserts are principally used for introducing fast gain control devices (ie compressor-limiters, expander-gates) into the channel circuit.

The channel insert is after the equalizer. Terminated in a stereo jack, the tip of the jack is insert send, whilst ring is return. The return is to the input of the fader.

DIRECT OUTPUT

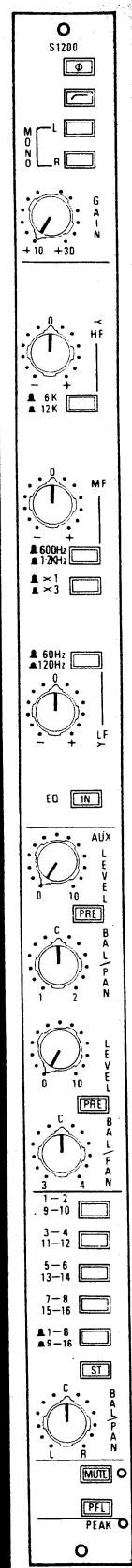
A post-fader direct output is also fitted to each input module. This signal is derived from a position before the routing switches and panpot. The direct output is used to feed a channel directly to a track of the tape machine. Thus for example, an 8 buss Scorpion can be used with a 16 track machine by using the 8 busses for tracks 1-8, and channel direct outs for tracks 9-16.





S1100 MIC-LINE INPUT CHANNEL

The S1100 Mic-line input module is identical to the S1000, but is fitted with a total of 8 independent rotary auxillary sends, fitted on 4 dual-concentric pots. The sends may be switched pre or post fader in groups of four (1-2, 5-6) (3-4, 7-8).



S1200 STEREO LINE INPUT CHANNEL

INPUT AMPLIFIERS AND ASSOCIATED CONTROLS

Both Line inputs are electronically-balanced with an impedance of 10K Ohms. Gain is controlled for both inputs from the same rotary pot, and covers the range -10dB to +30dB.

MONO LEFT allows the Left input signal to be routed equally to both Left and Right channels of the stereo module.

MONO RIGHT allows the Right input signal to be routed equally to both Left and Right channels of the stereo module.

If both MONO L and MONO R are pressed a mono sum of the left and right inputs is fed equally to both sides of the stereo module.

ROLLOFF selects a 120Hz, 12dB/octave High Pass Filter which may be used to eliminate undesirable low frequency noise.

PHASE reverses the Phase (polarity) of both the Left and Right signal sources.

STEREO EQUALIZER

The 3-band equalizer affects both channels of the module. The control ranges are as follows:

HF: ±15dB, with switched turnover points 6KHz/12KHz
 MF: ±15dB, with switched turnover points 600Hz/1.2KHz; with x3 control, 1.8KHz or 3.6KHz
 HF: ±15dB, with switched turnover points 60Hz/120Hz

EQ in/out switch.

STEREO AUXILIARY SENDS

Two stereo sends are fitted, each consisting of Level, Pan and Pre/Post.
 Stereo send 1 is panned across auxiliary busses 1 and 2
 Stereo send 2 is panned across auxiliary busses 3 and 4

ROUTING

Comprising a similar system to that used on the mono input module. However, the Left input signal is routed to the Odd-numbered busses whilst the Right input signal is routed to the Even-numbered busses.

The Balance/Pan control is -3dB at centre.

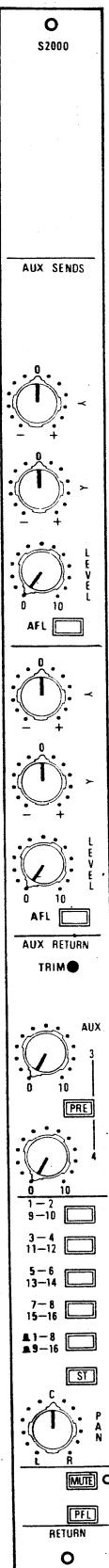
FADER, MUTE, PFL, OVERLOAD, INSERTS

A 100mm track length stereo fader is used, with a Mute which cuts both channels. PFL is a mono sum of Left and Right signals. The stereo Overload indicator indicates if signal level exceeds +18dBv on either Left or Right channels.

Separate Left and Right Inserts are provided.
 There is no direct output.



TOTAL AUDIO CONCEPTS



S2000 AUXILIARY MASTER SEND-RETURN MODULE

Two S2000 modules are fitted in versions of the Scorpion with 4 sends, and four S2000 modules in versions with 8 sends. Each module has two master auxiliary send outputs, and one auxiliary high-level input for Effects devices.

The auxiliary sends are summed at the S2000 module, and the overall output from the individual send busses is controlled by a rotary pot.

The output from each return is controlled by a fader.

AUXILIARY MASTER SENDS

Each master send has a level control, which has extra gain above the unity gain point (approximately 1 o'clock on the travel of the pot). During normal operation, the send master should be set at the unity gain position, as this gives an overall reference point to which to work.

Each master send has an AFL (after-fade listen) switch. This is similar to Pfl (Pre-fade listen), except that the signal is taken after the level control pot. Thus, if you listen on your monitor speakers, or headphones as you turn the level pot up and down, the AFL level will vary directly.

Each master send also has its own 2-band equalizer. The controls are :

HF: shelving, $\pm 14\text{dB}$ boost/cut, @ 10KHz
LF: shelving, $\pm 14\text{dB}$ boost/cut, @ 100Hz

The equaliser has several important uses:

a) When the auxiliary sends are used as effects sends the equaliser can process the signal to increase the range of the effect, eg. extra high frequency on a voice sent to a reverb emphasises the reverb effect.

b) When the auxiliary sends are used for headphone monitoring in recording, the equaliser may be used to modify the tonal range to suit the musicians requirements.

c) When the auxiliary sends are used for on-stage foldback the equaliser can help reduce feedback and increase the overall level.

AUXILIARY RETURNS

The returns are high-level (Line level) inputs suitable for Effects devices or the outputs of stereo tape recorders. Each return is similar to a normal input channel, except with reduced facilities.

The input level gain may be adjusted using the trim pot. This has a gain range of 20dB.

The output level of the return is controlled by a 100mm fader, which has Mute and Pfl switches which function in the same way as those on the S1000 input.

There are also two aux sends, with their own pre/post switch, addressing the aux return signal to auxiliary busses 3 and 4.

The reason for having auxiliary sends on the returns is twofold. Firstly, if foldback is taken from the input channels, it will be 'dry', ie without reverb. It can be helpful to the musicians to have some reverb on the foldback signal to enhance it; this can be added by feeding some of the reverb signal back into the sends.

Secondly, certain special effects can be obtained from some types of equipment by feeding some of the output back into the input ('spin').

The auxiliary return signals are routed to the output busses by an identical switching and panpot system to that provided on the S1000 input channel. Thus, if you want to record a signal with effects ('wet'), then you will have no difficulty in doing so.



S3000 SUBGROUP WITH ONE BUSS/TAPE MONITOR MIX SECTION

The S3000 module combines four functions: monitor mix for recording; buss output; as a subgroup; and as an additional effects return.

A) AS A MONITOR MIXER

The function of the A/B monitor mix is to provide the recording engineer and the musicians with a stereo mix which is built up from combinations of signals being sent from the desk (A, or BUSS OUTPUT) and signals being returned from the multitrack tape recorder (B, or TAPE RETURN). The B signals may be either replay or sync signals.

On the S3000 channel the switch which selects the input to the monitor mix channel is denoted Buss/Tape-FX. When the switch is up(Buss), the input to the monitor level control is taken from the group fader, and the output of the fader is fed to a socket which in turn is connected to the input of the same-numbered track on the tape machine (ie buss 1 feeds track 1, etc).

When the switch is down (Tape-FX), the channel receives whatever signal is present on the S3000 input socket. Normally, this will be the output of the tape machine, but it could be the output of an effects device, according to what you choose to plug into it.

The output of the monitor mix channels is to the stereo mix buss. You will normally listen with your monitor speakers (or headphones) to the stereo buss by selecting 'st' on the master monitor input selector switches on the S4000 master module.

The stereo master output faders on the S4000 module should be set to '0' (Unity Gain) on the fader scale, to provide a correct reference level for all other gain stages in the desk.

The usage of the monitor mix channels, then, is simple: when you begin to record tracks, you will set the respective channels to A(Buss), and you will listen to the output of the group faders. If you press B(Tape-FX) on those monitor channels, you will hear the output of the tape machine.

Once you have recorded your original tracks, you will want to overdub more signals (such as a guitar solo, lead vocal, etc). You will then set all the monitor mix channels to B, so that you will hear sync signals from the tape recorder.

These signals may be sent to foldback headphones using the auxiliary sends which are fitted to each monitor channel. They will follow the source selected on the Buss/Tape-FX switch. These auxiliary sends have outputs to aux busses 3&4, so your foldback amplifier will be connected with its left channel to aux master 3 and the right channel to aux master 4.

These two aux sends also have a pre/post switch. When using aux sends for foldback they should be set pre-fader, so that if you adjust the monitor level, it will not affect the foldback level. If on the other hand you use these auxiliaries as effects sends, you should set them post fader.

You will select those monitor channels you wish to use by pressing the 'st' button on each monitor channel. If the button is not pressed, the channel will not feed to the stereo buss. However, the auxiliaries, if pre fade, will continue to operate as usual. They can be muted by pressing the Mute button.

A panpot follows the monitor level control, allowing a proper stereo image to be set up for your monitor mix.

B) AS A BUSS OUTPUT

Each group fader serves as a buss master output level control. Thus fader 1 controls the level of buss 1; fader 2, of buss 2, and so on. The setting of "0" on the fader scale is the unity gain position. This means that the level you send to that buss from the input channels will be sent to the output XLR connector without any alteration.

C) AS A SUBGROUP

When mixing down to stereo or in sound reinforcement work, it is useful to make subgroups. A subgroup basically enables you to control the level of a number of input channels using one or two group faders, ie as mono or stereo subgroups.

To form a stereo subgroup, two busses will be selected on the input modules. For example, suppose your drum kit occupied 6 input channels (when recording these would be 6 previously recorded tracks being mixed down to stereo). To control the overall level of the kit, it would be easier to form a stereo subgroup by routing the 6 input channels to subgroup faders 1 & 2, and routing these in turn to the stereo buss. You will then find that by adjusting the subgroup faders, the level of the drum kit is completely variable, and there is no disturbance of balance between the different inputs which are being subgrouped.

When subgrouping the monitor level pot will be set to the "cal", or unity gain position. Since a Subgroup is set up by sending the signal from the buss back through the monitor section to the stereo output, settings of the monitor level control which were not at unity gain could lead to problems in levels. The "stereo" (ST) switch must be pressed, to allow the signal to be routed into the stereo buss.

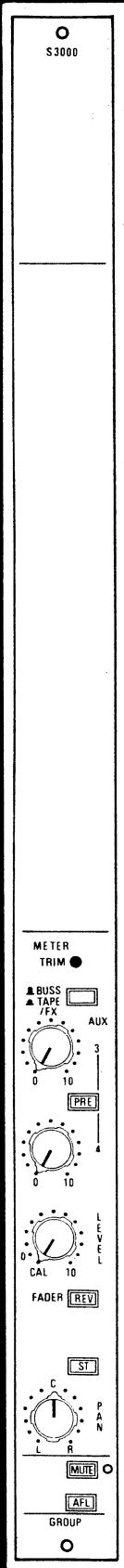
D) AS AN ADDITIONAL EFFECTS RETURN

It is also possible to use a monitor channel to return an effects device output to the stereo mix. The output of the device will be plugged into the input socket of the return and the Buss/Tape-FX switch pressed to enable the external signal to be brought into the module. The effects signal may then be panned across the stereo buss and its level controlled with the monitor level pot.

THE 'REV' SWITCH

When the 'rev' switch is pressed, the inputs to and outputs from the monitor level control and the fader are reversed (input reverse). This means that you can set recording levels using the monitor pot, and monitor (listen to) levels on the faders. This helps you to "pre-mix" – (try an approximate final mix) as you lay down tracks. Alternatively if the monitor is being used as an effects return, by reversing the monitor/fader, the effects return level can be controlled by the fader.

The meter trim control is a small trimmer-potentiometer which allows fine adjustment of the LED meter. This is used to recalibrate the operating level of the mixer if required.





TOTAL AUDIO CONCEPTS

S3100 SUBGROUP WITH TWO BUSS/TAPE MONITOR MIX SECTIONS

S3100 GENERAL

This module is very similar in function to S3000 except that it has two separate monitor mix sections. Thus, for example, in the 16/8/2 chassis fitted with the S3100 module, it is possible to have complete 16-track monitoring (16/8/2 + 16); whilst in the larger chassis, it is possible to have 24-track (28/12/2 + 24) or 32-track monitoring (24/16/2 + 32). This allows the Scorpion to be used as a complete 16, 24 or 32-track recording console.

The value of the dual subgroup lies in compactness of operation; and also keeps the overall size of the desk small in applications where this is important. In sound reinforcement applications, the 8 additional monitor inputs may be used as 8 separate inputs for effects returns.

LOWER MONITOR SECTION

In each S3100 module, the controls of the lower monitor section (ie next to the fader) function in exactly the same way as do those of the S3000 module, except that 4 separate auxiliary sends are fitted, each pair with its own pre/post fader switch. Thus, sends 1 & 2 could be used for phantom echo (echo on monitor) whilst 3 & 4 could be used for foldback to the musicians.

UPPER MONITOR SECTION

The upper monitor section is completely independent from the lower monitor. The controls are similar to those of the lower monitor, with the exception of the Fader Reverse switch and the 'CAL' position on the monitor level pot, neither of which are required. The output of the upper section is to the stereo buss, to which it is routed by pressing the Stereo assign switch ('ST'). The Mute cuts all outputs from the monitor section, including the 4 auxiliary sends.

Each upper monitor section has its input selected by the Buss/Tape-FX switch. In Buss position, the input will come from the direct output of inputs 9 – 16 in the SF version (16/8/2), and from the direct outputs of 17-24 in the LF version (24-16-2) and 17-32 in the XLF version (32-16-2). In the 28/12/2 + 24 version, direct outputs are derived from input modules 13 – 24. This means that 16 tracks may be recorded and monitored simultaneously with the SF version, and 24 tracks simultaneously with the LF version, and 32 tracks simultaneously with the XLF version.

In the Tape-FX position, the signal is received from the input jack connector (ie, the output of tape machine or an effects device would be inserted here).

The upper monitor section has no 'cal' position on the monitor pot, as this is not required. The unity gain position on the pot is found at about 1 o'clock.

The dual level selection for +4dBv/or -8dBv operation is set up from a switch inside each module, and is normally factory set at +4dBv.

INSERTS

A pre-fader insert is provided on each group output.

S3300 BASIC SUBGROUP with EQUALIZER

S3300 is identical to the S3000 module with the following additions:
4 aux sends, switchable pre/post fader in pairs.

An AFL switch on the monitor section.

A 3-band equalizer in the monitor section, with in/out switch.

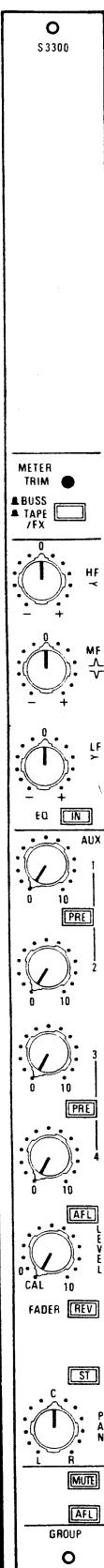
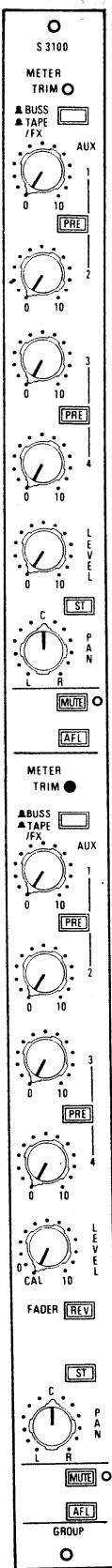
The equalizer characteristics are:

HF: ±14dB shelving at 10KHz

MF: ±14dB peak-and-dip at 3KHz

LF: ±14dB shelving at 80Hz

S3300 is normally used when more signals needing equalization are being mixed to stereo than the desk has input channels. For example, a 24/16/2 fitted with S3300 modules allows 40 Line inputs to be equalized and mixed to stereo. It is particularly useful for applications where a number of programmable musical instruments will be recorded direct to 2-track (eg drum machines and certain synthesisers) at the mixdown stage in conjunction with material previously recorded on a multi-track tape machine.



S3200 SUBGROUP WITH 8 x 8 MATRIX OUTPUT

S3200 SUBGROUP/MATRIX MODULE

The S3200 subgroup/matrix module is intended for use in sound reinforcement and theatre sound applications where a number of secondary signals are required to be distributed round the auditorium in support of the main stereo signal.

The matrix is defined as 8x8 because there are normally 8 subgroups, each of which can have up to 8 secondary outputs. This is achieved by having an array of 8x8 (64) pots above the 8 subgroup faders.

SUBGROUPING

The signals from the input channels are routed to the group busses and the stereo buss in the normal way. The levels on the 8 busses are controlled by the faders, which are used to create subgroups (as previously described for S3000).

To bring the subgroups into the stereo buss, it is necessary to press the switch marked 'ST' on the subgroup controls. The signal then passes to the panpot, which pans Left-Right across the stereo buss. An output from the fader is also terminated in an XLR which may be used as a direct group output.

The subgroup is also provided with Mute and AFL controls.

MATRIX CONTROLS

The matrix is fed from 8 independent rotary sends which are driven directly from the buss, and may be derived pre or post subgroup fader according to the setting of the pre/post switch. If pre, movements of the subgroup fader will not affect levels sent from the matrix pots; if post, subgroup fader movements will alter all levels sent from the matrix pots equally.

The 8 matrix outputs are each summed in one of the 8 S3200 modules. Matrix output one is therefore controlled by the short fader on S3200 module one, and so on, through to module 8. Each matrix output is terminated in a jack socket.

The matrix has its own Mute and AFL controls, completely independent of those provided on the

subgroup itself. The AFL control is post-fader. The Mute will cut off all outputs from the matrix only.

A unique feature of the Scorpion, is that it is possible to assign an input channel directly to the matrix, without the signal feeding to the sub-groups at all. This is because on PA formats mix-busses 9-16 are not used, and thus these are available. Thus if the bank-selector on the input module is set to 9-16, and buss assign 9-10 is pressed, with the pan hard left, the signal will be assigned to buss 9, and this will feed the input modules signal directly to matrix one. Accordingly buss 10 is matrix 2, and buss 16 matrix 8. On versions with 8 auxiliary sends only busses 9-12 can be assigned direct to the matrix, ie to matrix send 1-4.

This novel feature has many applications. Apart from obviously being able to assign signals to the matrix which are not in the stereo mix, it is also possible, for example, to parallel a signal to 2 input modules. One can then feed the subgroups in the normal way, whilst the other is assigned to a matrix send, which can be Equalised independently of the signal fed to the main PA. This can be particularly useful when on-stage foldback is being mixed from the front of the desk, to provide both additional mixes, and signals equalised to suit the on-stage solo, as opposed to the main PA mix.

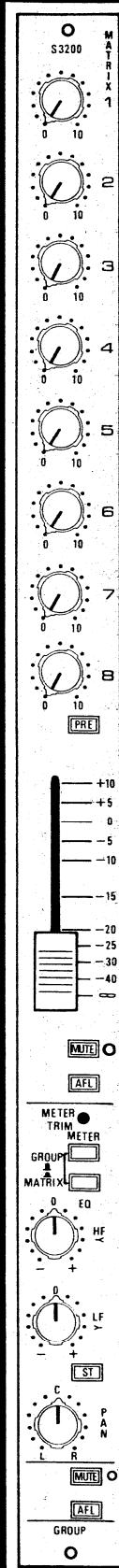
EQUALIZER

A simple two-band shelving equalizer, with ±14dB boost/cut at 10Khz in the High frequency, and at 80Hz in the Low frequency, is fitted. Using the selector switch, this may be routed either into the subgroup, or into the matrix, as required.

METERS

Each subgroup/module has its own LED meter, the input to which may be selected by the Group/Matrix switch. In 'Group', the meter reads the subgroup output, whilst in 'Matrix', the meter reads the matrix output.

A meter trim is provided for recalibration purposes.

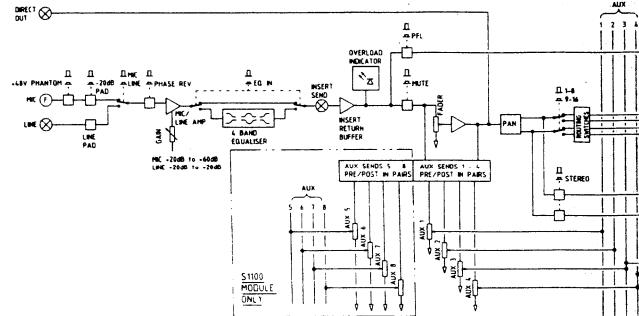


TAC

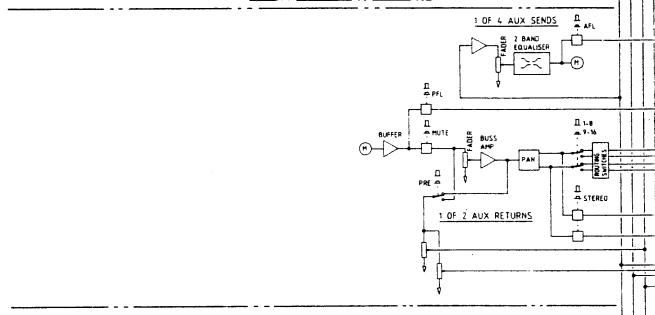
TOTAL AUDIO CONCEPTS

TAC SCORPION

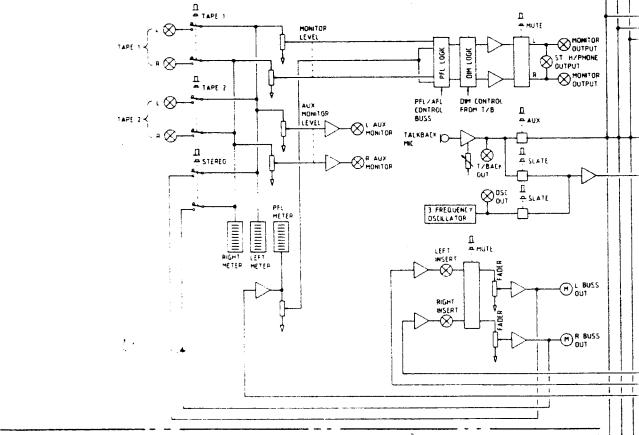
S1000 MIC/LINE INPUT MODULE



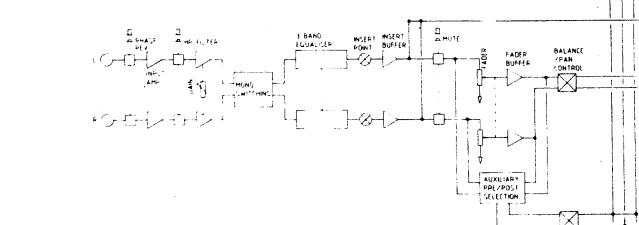
S2000 AUXILIARY SEND/RETURN MODULE



S4000 MONITOR MODULE



S1200 STEREO INPUT MODULE



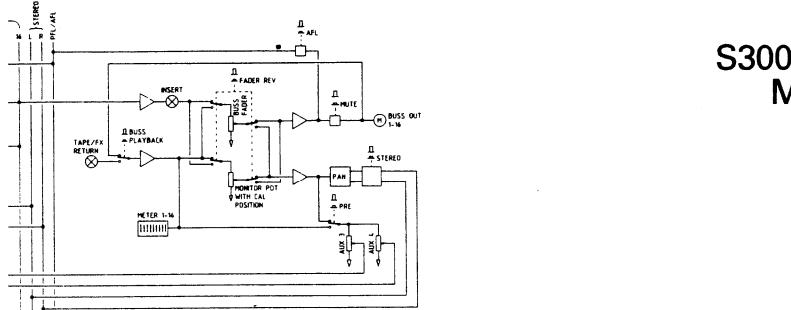
LEGEND

- ⊗ JACK SOCKET
- Ⓜ MALE XLR.
- Ⓕ FEMALE XLR.

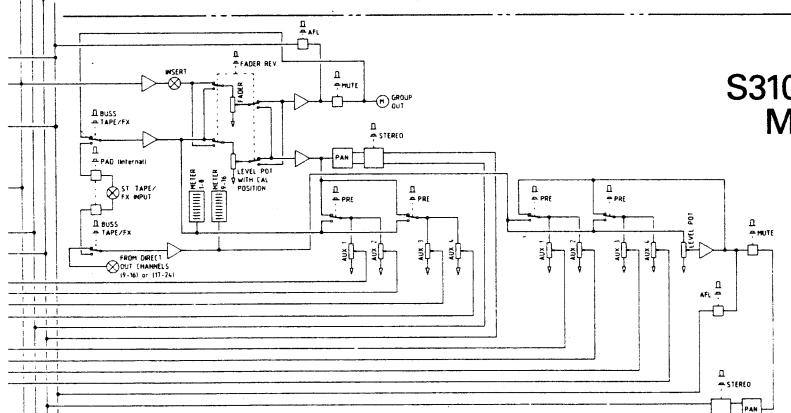


SCORPION

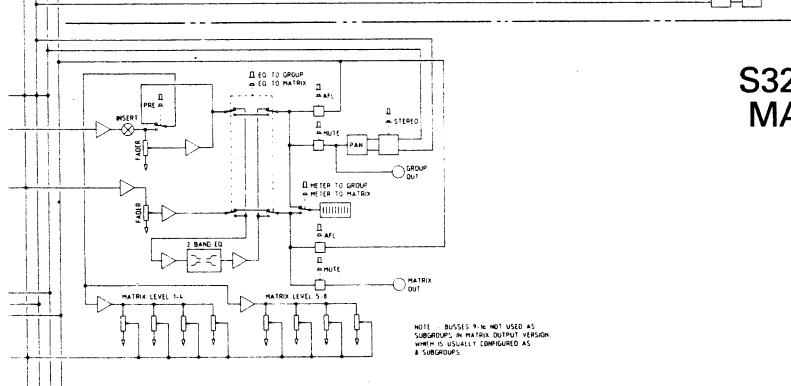
LOCK DIAGRAM



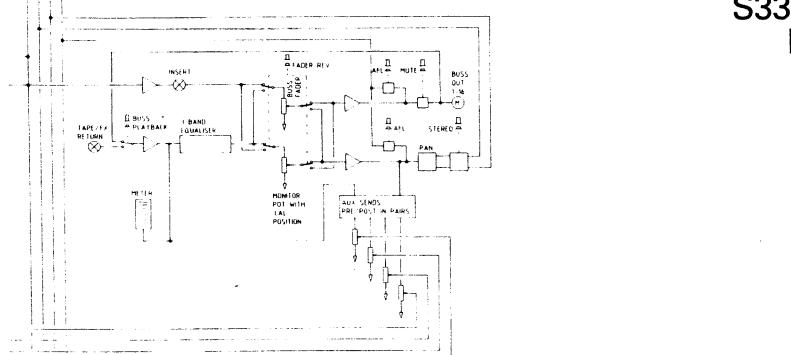
S3000 SUBGROUP/SINGLE
MONITOR MODULE



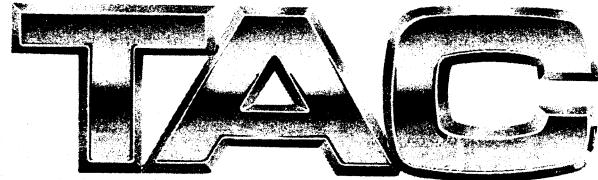
S3100 SUBGROUP/DUAL
MONITOR MODULE



S3200 SUBGROUP/
MATRIX MODULE

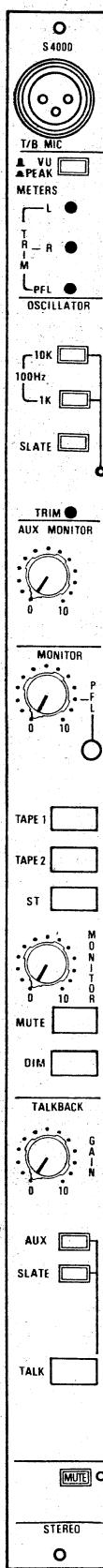


S3300 SUBGROUP/SINGLE
MONITOR MODULE



TOTAL AUDIO CONCEPTS

S4000 MASTER MONITOR/STEREO BUSS OUTPUT MODULE



S4000 GENERAL

The S4000 module provides the overall master monitor and control functions for the console. This includes:

- Line-up oscillator with three switch-selectable frequencies;
- VU/PEAK ballistic selector switch for the Left, Right and Pfl meters;
- Talkback system;
- Headphone and monitor speaker input selection system;
- The stereo buss output

THE STEREO OUTPUT

In the Scorpion console all monitoring and mixing are done through the stereo mix buss, which is used at all times. During recording, buss signals will be fed to the multitrack machine via the group (buss) faders and the monitor mix sections will feed the stereo buss with A/B (buss/tape) signals; during mixdown, all signals will go to the stereo buss, which in turn will feed the stereo mixdown machine and the monitor speakers at the same time.

In sound reinforcement applications, the stereo buss will be used to drive the speaker system amplifiers; headphone monitoring is provided.

The stereo mix buss is summed in the S4000 module. Separate faders are provided for Left and Right outputs, but they are so close that it is no problem to move them up and down together.

During normal operation, these faders will be set at 0 on the scale. By doing this, you create a reference point to which you can work, and which will assist you to optimize your signal-to-noise ratio and headroom. The stereo output can be completely cut by pressing the mute switch located immediately above the faders.

MONITOR INPUT SELECTION

The normal monitoring mode will be to listen directly off the stereo buss in the master monitor section. 3 interlocking switches provide the input to the monitors, with selection between two external stereo sources, and the stereo buss output.

The two external sources will normally be stereo tape machines (your mixdown machines), but they can be any high level stereo source, such as effects devices, etc.

Level is controlled by the monitor level pot. The

Mute switch cuts the monitors off completely, whilst Dim drops the monitor level by 20dB.

When you press any of the Pfl (or AFL) buttons on the console, the signal will automatically override the monitor input you have taken from the selector switches, and the warning LED will illuminate. The overall Pfl/AFL level in the monitors or headphones can be adjusted using the Pfl level control.

AUXILIARY MONITOR OUTPUT

A second monitor output, denoted 'Aux Monitor', is provided. This follows the main monitor input selection, but is taken pre-monitor level control, so that adjustments of the main monitor pot do not affect the aux monitor output. The aux monitor output can be used to drive a cassette recorder, or a second set of loudspeakers.

OSCILLATOR

The Oscillator gives a fixed output level of +4dB at one of 3 switch-selectable frequencies: 10KHz, 1KHz or 100Hz. A trimmer is also provided for re-calibration of the oscillator frequency should it happen to come out of adjustment.

By pressing the Slate switch, oscillator output will be fed to the 16 output busses and the stereo buss. A separate output is also available on the rear panel of the module, by stereo jack connector. Levels are +4dB (0VU) on the tip and -56dB (-60VU) on the ring. The signal may be patched as required into the console or other equipment for line-up purposes.

TALKBACK

A female XLR socket is provided for a talkback microphone. The input is suitable for any low impedance microphone. The microphone will not function unless the talkback switch is pressed, this automatically dims the main monitor output by 20dB. The talkback signal may be routed to either the 4 auxiliary busses, or to the buss outputs, by pressing the selector switch provided and the 'talk' button.

METER TRIMMERS

Trimmers are fitted for calibration of output levels of Left, Right and Pfl meters. The Scorpion is normally set up for 0VU = +4dB operating level.

If you require another operating level, you may re-calibrate the oscillator and the meters using the trimmers.



SCORPION

SFB1000 FOLDBACK INPUT CHANNEL

INPUTS

The Microphone and Line level inputs are selected using the Mic/Line selector switch. The Microphone and Line inputs are electronically-balanced.

The Line input is used for high-level sources, such as the output from a tape recorder or an effects device.

The Gain control functions for both inputs. In Mic, the gain range is +20 to +60dB, whilst in Line, the gain range is -10dB to +30dB.

Phantom power (+48 Volts DC) is supplied as an option. When the +48V switch (located on the rear panel of the console) is selected on (switch down), the phantom power will be fed to the mic input XLR on that socket. Normally phantom power does not harm dynamic microphones if they are wired balanced.

The PAD, when in, attenuates the input to the Microphone amplifier by 20dB.

The Phase (\emptyset) switch reverses the phase of the signals on the microphone input. Thus, if a microphone is wired out of phase, this switch enables you bring it back into phase with the other microphones without rewiring.

EQUALIZER

The equalizer is a 4-band device with swept frequency midrange controls. The control ranges are as follows:

HF : $\pm 15\text{dB}$ boost/cut, switch-selectable to either of two turnover frequencies, 6KHz or 12KHz;

MF1: $\pm 15\text{dB}$ boost/cut, with bandcentre swept over the range 500Hz to 18KHz;

MF2: $\pm 15\text{dB}$ boost/cut, with bandcentre swept over the range 100Hz to 5KHz;

LF : $\pm 15\text{dB}$ boost/cut, switch-selectable to either of two turnover frequencies, 60Hz or 120Hz
An eq in/out (bypass) switch is fitted.

OUTPUTS

The SFB1000 channel has 8 independent rotary auxiliary sends. The 4 extra rotary sends required in the 12 output version of the SFB are located in the fader panel area.

The outputs from the sends are summed in the SFB2000 group modules.

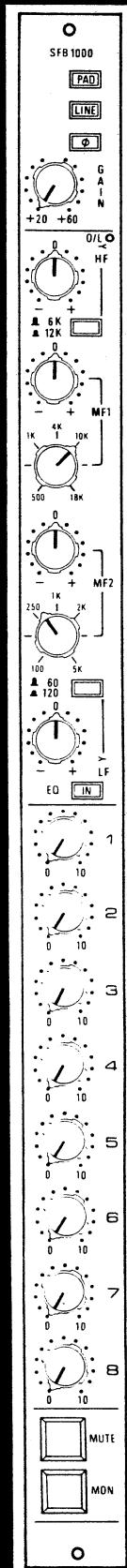
MUTE and PFL

The main channel Mute, when pressed, cuts all outputs from the channel. The latching Pfl (Pre-fade listen) switch hears the pre-fader input to the channel and is also pre- the Mute switch in the circuit. Thus even if the channel is muted, you can hear if there is signal present using the Pfl switch. Both Mute and Pfl switches are illuminated when pressed.

The Overload LED illuminates when the post-equalizer signal reaches 4dB below clipping point, ie, at +18dBv.

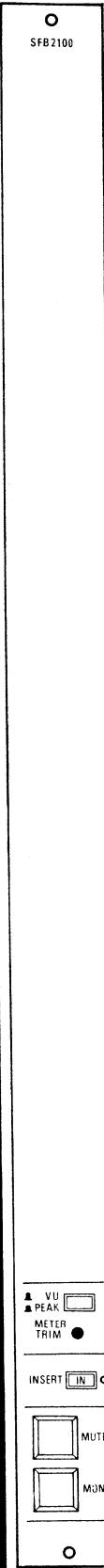
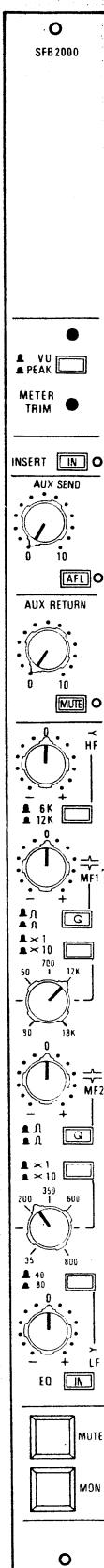
INSERTS

The channel insert is after the equalizer. Terminated in a stereo jack, the tip of the jack is insert send, whilst ring is return. The return is to the input of the output level controls.





TOTAL AUDIO CONCEPTS



SFB2000 FOLDBACK SINGLE OUTPUT WITH COMPLEX EQUALIZER

FADER, AFL, MUTE

Output level is controlled by a 100mm fader.
The MUTE cuts all output from the module.
MON (Afl) hears the post fader signal and routes it to the engineer's output on the SFB3000 master monitor module.

COMPLEX EQUALIZER

The equalizer is 4-band. Midrange controls have bandcentre swept over a very wide range and two switch-selected Q (slope) rates.
The characteristics are as follows:

HF : $\pm 14\text{dB}$ at 6KHz or 12KHz

MF1: $\pm 14\text{dB}$, with high or low Q (slope) selector

Frequency range swept between 80Hz and 1. 6KHz; with x10 multiplier, from 800Hz to 16KHz

MF2: $\pm 14\text{dB}$, with high or low Q (slope) selector

Frequency range swept between 35Hz and 700Hz; with x10 multiplier, from 350Hz to 7KHz

LF : $\pm 14\text{dB}$ at 40Hz or 80Hz

EQ IN/OUT.

The equaliser is of an entirely different design to that of the input module, and functions as a notch filter, to help eliminate feedback. The particular value of this equaliser is that users of the Scorpion FB report that it is rarely necessary to add outboard graphic equalisers, resulting in a substantial cost saving.

OTHER FACILITIES

An Auxiliary Return (line input) to the output is included, with Level control and Mute. This may be used as an effects return to a group. It is also useful for applications when more inputs are required and two mixers need to be linked. the auxiliary mixers outputs can be brought into the main mixer through the aux return, and thus controlled and monitored by the group mute/AFL switches.

The Auxiliary Output is a secondary output from the group, derived pre fader. An AFL switch is provided.

The insert on the output may be switched in/out.

The LED meter pertaining to that output may have its ballistic selected either VU or PPM. The trimmer allows the meter to be calibrated if required.

SFB2100 – FOLDBACK SINGLE OUTPUT WITH NO EQUALISER

The SFB2100 is identical in function to the SFB2000, but is a basic format without output equalisation or auxiliary sends and returns. It has been introduced for applications where either cost-considerations are of critical significance and/or where these facilities are not required (eg the console will be used with racks of outboard equalisers).

SCORPION

SFB3000 FOLDBACK MONITOR MODULE

TALKBACK SYSTEM

An XLR socket is provided for a talkback microphone.

Mic gain is adjusted using the rotary control. The mic is activated when the press-to-talk switch is pressed.

A bank of 13 selector switches allow the monitor mix engineer to talk to all the outputs, using slate, or any combination of them, using the 12 individual output routing switches.

The Comm to Output switch connects the communication system to the selected output mixes.

The Comm switch activates an external control line which can interface with the communication

system on the front-of-house mixer.

MONITOR OUTPUTS

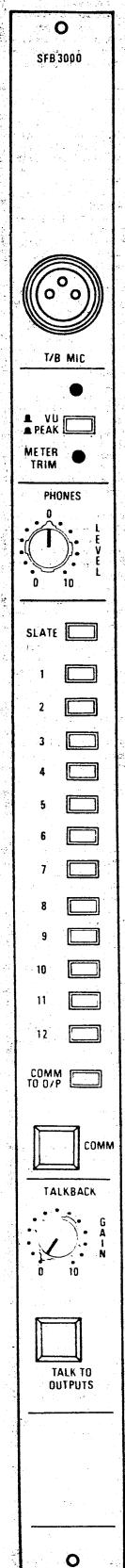
Two outputs are provided, one for headphones and one for the engineer's own monitor wedge speaker. Each output has its own level control, the headphone level is controlled by a rotary pot, whilst the wedge through a 100mm fader. This is located on the main fader block, directly below the monitor module.

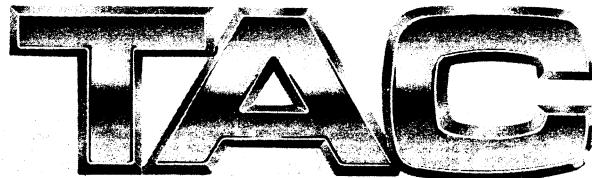
One LED meter associated with SFB3000 reads the wedge output level. The ballistic may be selected between VU and PEAK. A trimmer is provided for recalibration.

SCORPION FOLDBACK CONNECTIONS: FUNCTION, NOMINAL LEVEL AND IMPEDANCE.

FUNCTION	BALANCED	LEVEL	IMPEDANCE	CONN
Mic I/P	Yes	-6dB/-20dB	1K Ohms	XLR fem 3-pin Pin 1 screen Pin 2+0 Pin 3-0
Line I/P	Yes	-30dB/+10dB	>10K Ohms	6. 35mm Jack Sleeve screen Ring -0 Tip +0
Insert Send/Return	Yes	0dB	Send <100 Ohms Return 10K Ohms	6. 35mm Jack Sleeve screen Ring return Tip send
Group out	No	0dB	100 Ohms	XLR Male 1+3 Screen 2 Hot
Group insert Send/Return	No	-6dB	Send <100 Ohms Return >10K Ohms	6. 35mm Jack Sleeve screen Tip send Ring return
Aux send	No	0dB	<100 Ohms	6. 35mm Jack Sleeve screen Tip hot
Aux return	No	0dB	5K Ohms	6. 35mm Jack Sleeve screen Tip hot
Wedge O/P	No	0dB	<100 Ohms	XLR Male Pin 1+3 Screen Pin 2 hot
Headphone O/P	No	0dB	8-600 Ohms	
T/B In	No	0dB	<10K Ohms	Sleeve screen Tip signal Ring control
T/B out Tip signal	No	0dB	<100 Ohms	Sleeve screen Ring control

Mic I/P	Yes	-6dB/-20dB	1K Ohms	XLR fem 3-pin Pin 1 screen Pin 2+0 Pin 3-0
Line I/P	Yes	-30dB/+10dB	>10K Ohms	6. 35mm Jack Sleeve screen Ring -0 Tip +0
Insert Send/Return	Yes	0dB	Send <100 Ohms Return 10K Ohms	6. 35mm Jack Sleeve screen Ring return Tip send
Group out	No	0dB	100 Ohms	XLR Male 1+3 Screen 2 Hot
Group insert Send/Return	No	-6dB	Send <100 Ohms Return >10K Ohms	6. 35mm Jack Sleeve screen Tip send Ring return
Aux send	No	0dB	<100 Ohms	6. 35mm Jack Sleeve screen Tip hot
Aux return	No	0dB	5K Ohms	6. 35mm Jack Sleeve screen Tip hot
Wedge O/P	No	0dB	<100 Ohms	XLR Male Pin 1+3 Screen Pin 2 hot
Headphone O/P	No	0dB	8-600 Ohms	
T/B In	No	0dB	<10K Ohms	Sleeve screen Tip signal Ring control
T/B out Tip signal	No	0dB	<100 Ohms	Sleeve screen Ring control





TOTAL AUDIO CONCEPTS

SCORPION CONNECTIONS: FUNCTION, NOMINAL LEVEL AND IMPEDANCE.

FUNCTION	BALANCED	LEVEL	IMPEDANCE	CONNECTOR
Mic I/P	Yes	-60dB/-20dB	1K Ohms	XLR Fem 3-pin Pin 1 screen Pin 2 +0 Pin 3-0
Line I/P	Yes	-30dB/+10dB	>10K Ohms	6. 35mm Jack Sleeve screen Ring -0 Tip +0
Insert Send/Return	No	0dB	Send <100 Ohms Return 10K Ohms	6. 35mm Jack Sleeve screen Ring return Tip send
Direct out	No	Tip 0dB Ring -12dB	Tip <100 Ohms	6. 35mm Jack Sleeve screen
Aux return	No	-10dB/+10dB	>10K Ohms	XLR fem 3-pin Pin 2 hot. Pin 1 +3 screen
Aux send	No	Pin 2 0dB Pin 3 -12dB	<100 Ohms	XLR Male 3-pin Pin 1 Screen
Group out	No	Pin 2 0dB Pin 3 -12dB	<100 Ohms	XLR Male 3-pin Pin 1 Screen
Group insert Send/return	No	-6dB	Send <100 Ohms Return 10K Ohms	6. 35mm Jack Sleeve screen Ring return Tip Send
Tape return	No	Tip 0dB Ring + Tip -12dB	>10K Ohms	6. 35mm Jack Sleeve screen
Tape return Dual monitor	No	0dB or -12dB	>10K Ohms	6. 35mm Jack Sleeve screen Tip lower mon Rings Upper mon
Talkback O/P Talkback Control	No	TB O/P 0dB	<100 ohms	6. 35mm Jack Sleeve screen Ring TB cont Tip TB O/P
Osc O/P	No	Tip 0dB Ring -60dB	<100 Ohms	6. 35mm Jack Sleeve screen
Stereo tape inputs 1+2	No	0dB	5K Ohms	6. 35mm Jacks Sleeve screen Ring N/C Tip signal
Aux monitor	No	0dB	<100 Ohms	6. 35mm Jacks Sleeve screen Ring N/C Tip signal
Main monitor	No	0dB	<100 Ohms	6. 35mm Jacks Sleeve screen Ring N/C Tip signal
Stereo buss output	No	Pin 2 0dB Pin 3 -12dB	<100 Ohms	XLR male 3-pin Pin 1 Screen
Parallel stereo buss output	No	Tip 0dB Ring -12dB	<100 Ohms	6. 35mm Jacks Sleeve screen
Stereo insert	No	-6dB	Send <100 Ohms Return 10K Ohms	6. 35mm Jacks Sleeve screen Ring return Tip Send
Headphones O/P	No	0dB	8-600 Ohms	6. 35mm Jack Sleeve screen Ring right O/P Tip left O/P
Talkback I/P	No	-60dB	1K Ohms	XLR fem 3-pin Pin 2 Hot. Pin 1 +3 screen
Power I/P	N/A	N/A	N/A	XLR male 4 pin Pin 1 OV Pin 2 +18V Pin 3-18V Pin 4 +48V

Please Note: Impedance refers to 0dB where applicable.



TOTAL AUDIO CONCEPTS SCORPION — GENERAL SPECIFICATIONS

1) PERFORMANCE DATA

All input module measurements are made at the channel pre-fade insert point; all other measurements are made at the respective buss outputs. Measurements are made with the equalizers out of circuit (except equalizer measurements).

Noise measurements were obtained using a RADFORD ANM3 set to DIN weighting and true RMS characteristics. The signal source is a RADFORD LD04B oscillator. The distortion measuring set was a RADFORD DMS3.

Frequency response measurements were made on a RADFORD ANM3 set to WIDEBAND weighting and true RMS characteristics.

a) Microphone input noise: -126dBV DIN
Source impedance 200 Ohms; 20dB pad out of circuit; input gain set at maximum.

b) Maximum input level to mic amp (without pad):
+1dBV
Sine wave source; 20dB pad out of circuit; input gain at minimum; supply rails \pm 16. 5V

c) Microphone input CMRR: 64dB
Mic gain set to 40dB; Sine wave source giving output of +10dBV from mic amp; frequency 200Hz, 2KHz

d) Line amp noise: -85dBV
Input short-circuited; input gain set for unity

e) Channel distortion, 20Hz to 20KHz: Microphone input: 0. 02%
Gain set to 40dB; mic amp output +10dBV
Line input: 0. 02%
Gain set to unity; amplifier output +10dBV

SYSTEM MEASUREMENTS

(made on 24/16/2 version, comprising 24 S1000 input, 2 S2000 auxiliary send-return, 16 S3000 subgroup/monitor, and one S4000 master monitor)

f) buss noise, 24 inputs routed to 1 buss, master closed: -88dBV; master at 0 (unity gain): -75dBV
Input faders at maximum attenuation.

g) Distortion, 20Hz to 20KHz: 0. 05%

From input module with 40dB gain setting, via subgroup and main stereo output at +10dBV with all faders at unity gain. Measured at main stereo output.

h) Frequency response, 20Hz to 20KHz: \pm 1dB.
From input module, via mic amp with 40dB gain setting, to main stereo output.

i) Crosstalk, at subgroup output: -60dBv
Sine wave signal on input module at 10KHz and 0dBv routed to a subgroup output at 0dB. Measurements made at adjacent subgroup outputs.

j) Crosstalk, at stereo buss output: -56dBv
Set up as for i)

k) Operating level ref: 0dBV (. 775mV). Subgroup and Stereo buss pre-fade inserts operate at -6dBV.

l) Aux send output noise, masters closed: -85dBV;
masters set for unity gain: -75dBV
All channel sends closed, 24 input modules.

2) POWER SUPPLY UNIT

19-inch rack-mounting unit giving console DC supply rails and +48V DC phantom power rail; factory pre-set for 110, 220, or 240V AC operation.

3) CHASSIS SIZES

Front-to-back: 842mm (33.15");
Height (at meter hood): 263 mm (10.35");
Width, SF : 915mm (36") LF: 1411mm (55.55")
XLF, XPB: 1721mm (67.75")

4) FREIGHTING SIZES

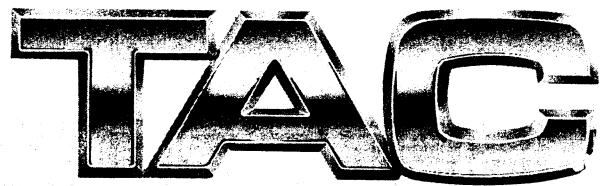
SF: 104x99x53cm (41x39x21 inches)
Approx weight 95Kg (209 pounds)

LF: 154x99x53cm (61x39x21 inches)
Approx weight 120 Kg (264 pounds)

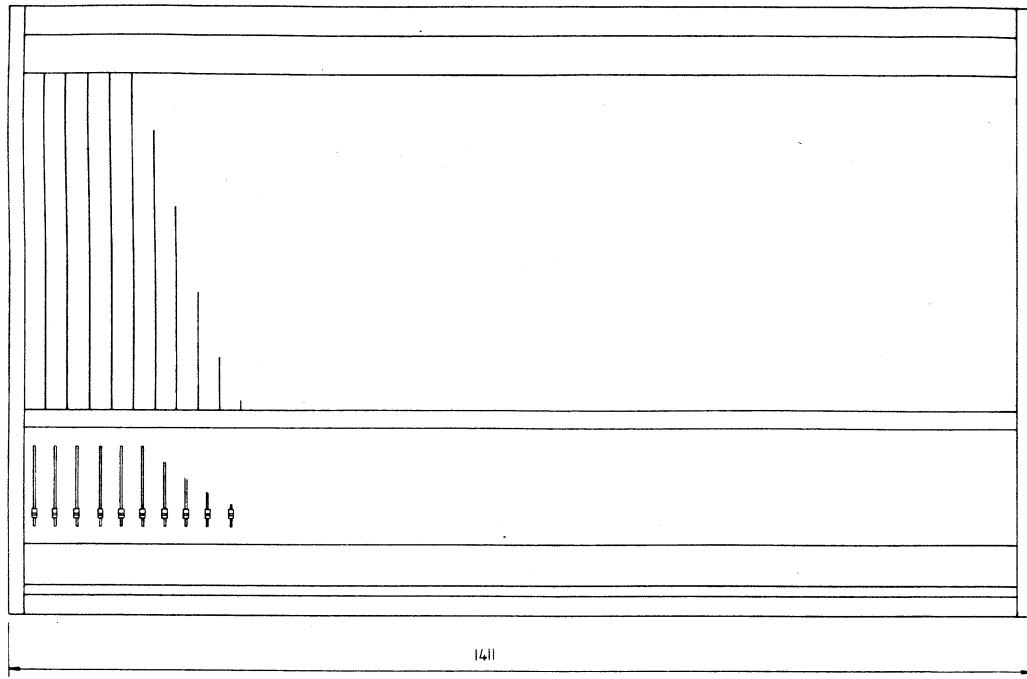
XLF, XPB: 185 x 99 x 53cm (73 x 39 x 21 inches)
Approx weight 155Kg (341 pounds)

TOTAL AUDIO CONCEPTS Ltd reserves the right to change or modify specifications without prior warning.

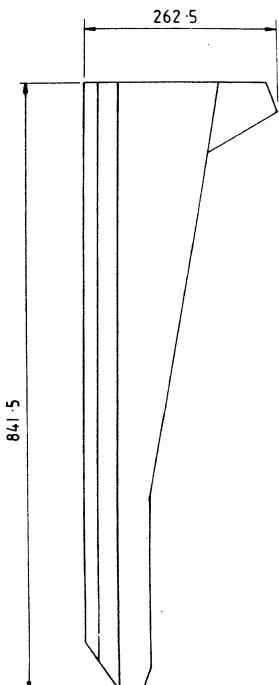
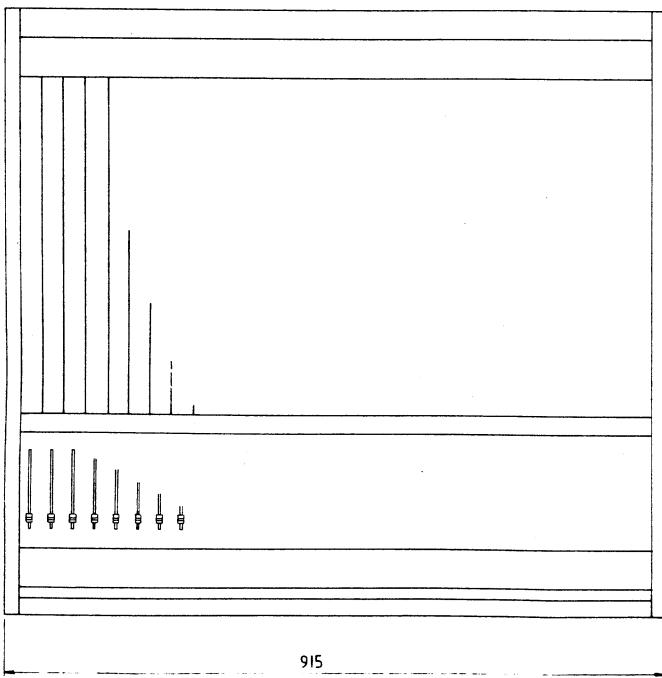




TOTAL AUDIO CONCEPTS



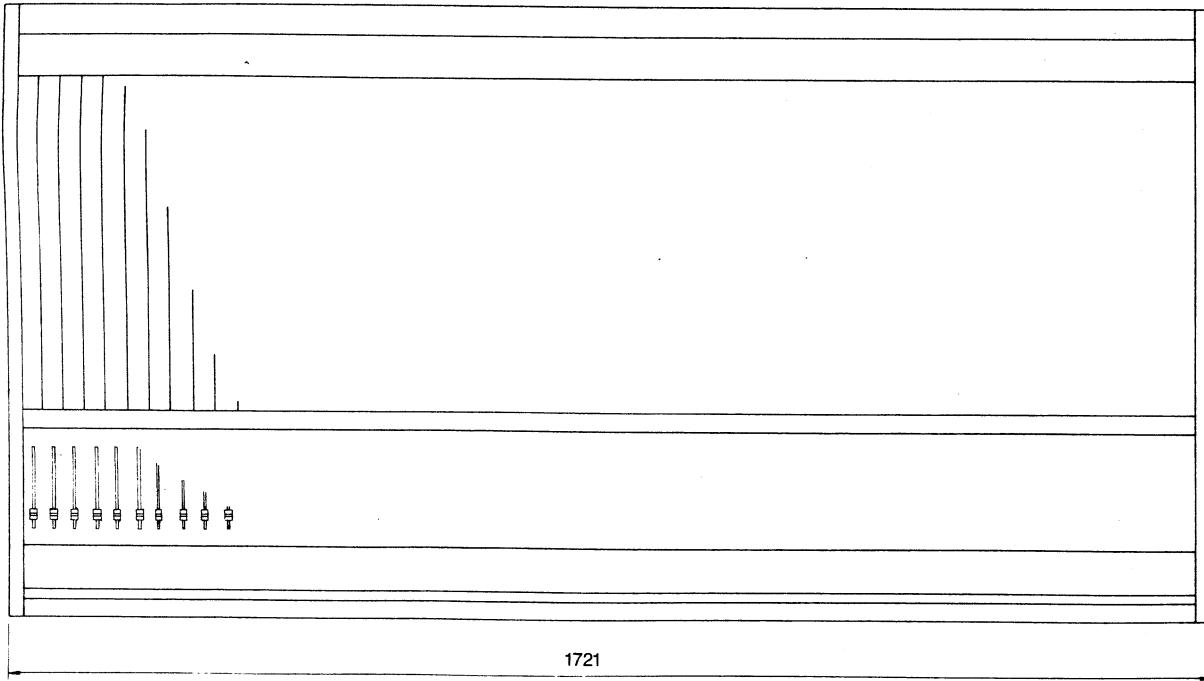
SCORPION – 43 MODULE POSITION



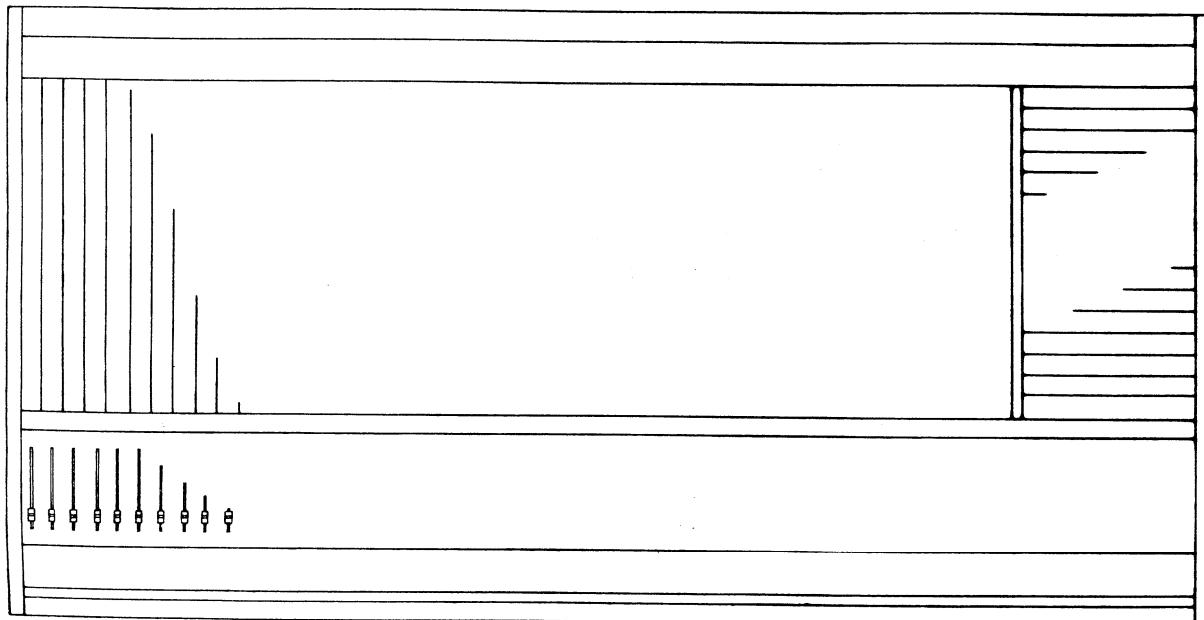
SCORPION – 27 MODULE POSITION



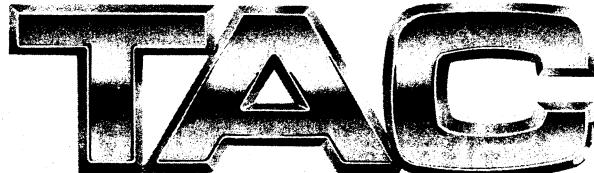
SCORPION



SCORPION – 53 MODULE POSITION



SCORPION – 45 MODULE POSITION PLUS JACK BAY



TOTAL AUDIO CONCEPTS

PATCHBAY FACILITIES ON SCORPION CONSOLES

As the range of facilities on the Scorpion, and accordingly the number of applications, has increased, so the demands for a more convenient form of signal patching have been requested.

In response we are now pleased to offer the Scorpion with a full on-board patchbay, utilising printed circuit board mounting TT 4mm jacks.

There are three different patchbay layouts, to accomodate the various input and output configurations of the Scorpion. One patchbay format is for 24 input, 16 buss models; another for 28 input, 12 buss 24 monitor models; and a third for 32 input, 8 buss models, with 16 monitor returns.

The patchbay is a one piece panel which occupies 8 module positions of the XLF chassis.

The Scorpion jackfield is arranged in rows of 20 sockets, each row being 180mm wide. The jackfield provides normalised connections for all insert points, tape sends and returns, auxiliary sends and returns and all outputs. Two rows (ie 40 points) are provided for connecting external equipment (for example effects units) to the patchbay in order that external devices can simply be patched without moving away from the console.

On Scorpion patchbay versions all microphone XLR input connectors are mounted on the back panel together with some of the output connectors. All other connectors are mounted instead in the jackfield. A list of the connectors on the rear panel is as follows:

REAR TERMINAL PANEL CONNECTORS

All microphone inputs	XLR
All Auxiliary Sends and Returns	XLR
Main Stereo Output L and R	XLR
Monitor Outputs L and R	1/4"Jack sockets
Auxiliary Monitor Outputs L and R	1/4"Jack sockets
Tape 1 Inputs L and R	1/4"Jack sockets
Tape 2 Inputs L and R	1/4"Jack sockets
Talkback Output	1/4"Jack socket
Oscillator Output	1/4"Jack socket

PATCHBAY PATCHPOINTS

Each Scorpion Jackfield has the following points available on TT jack sockets:

All input channels have line input; insert send and returns; and direct output.

All subgroups have output, insert send and return, and tape monitor/effects points available. On consoles with the S3100 dual monitor facility, points are available to access both the tape monitors for the tape returns.

Auxiliary sends and returns

Main stereo outputs L and R, insert send and return on main Stereo outputs L and R.

Main stereo tape input L and R.

Monitor outputs and monitor amp inputs L and R.

Tape 1 outputs and monitor inputs L and R.

Tape 2 outputs.

Oscillator output.

Talkback output.

20 external inputs and 20 external outputs are fitted. These also appear on two 56-way EDAC connectors mounted on the terminal panel at the rear of the console. This is to provide an interface with external effects racks etc.

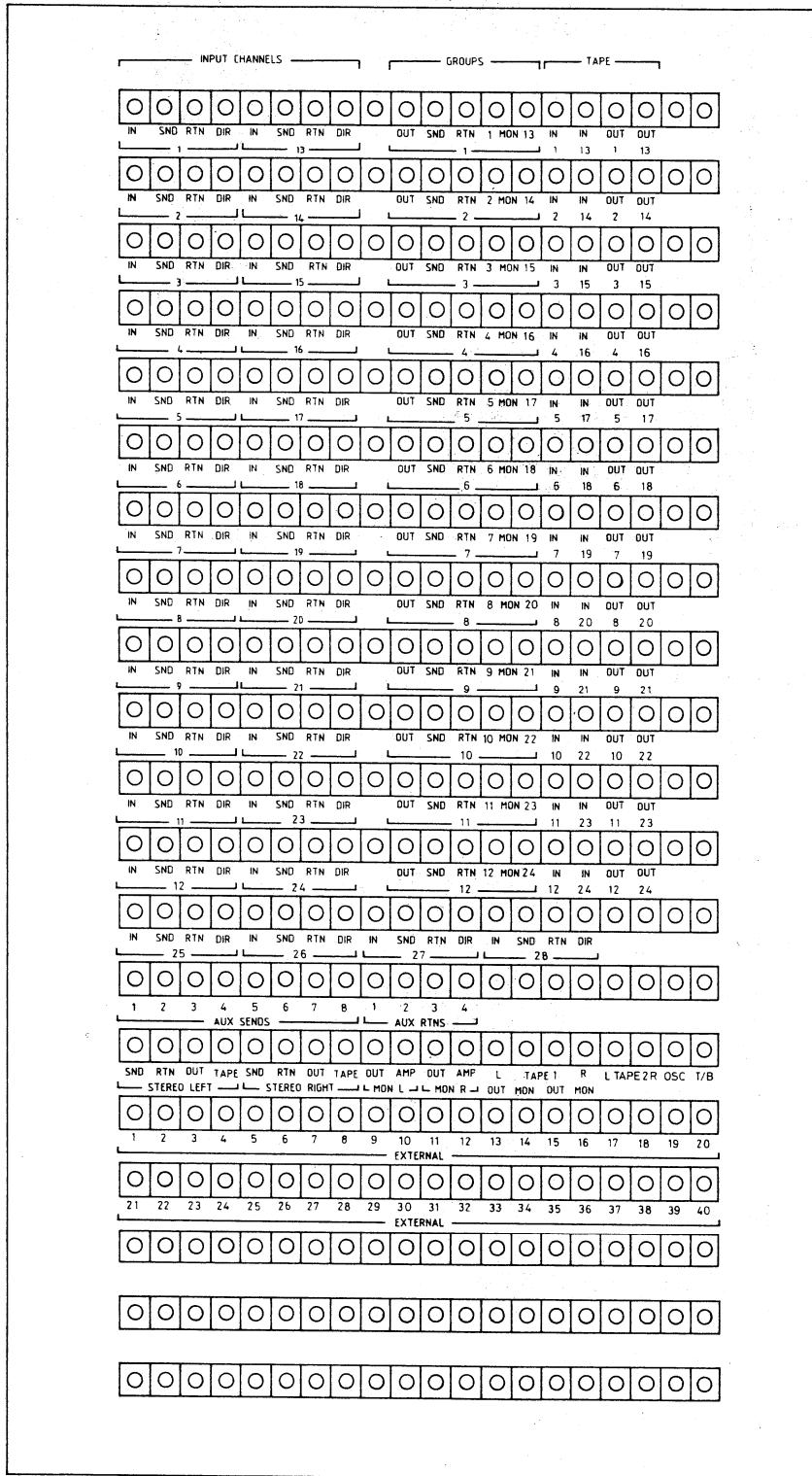
The multi-track inputs and outputs to and from the tape machine also appear on two 56-way EDAC connectors mounted on the terminal panel on the rear of the console. Depending on the patchbay version between 14 and 17 rows of jack connectors are fitted. Two additional jack rows may be fitted to suit individual requirements.

The patchbay layout example shown is for the Scorpion 28 input, 12 buss, 24 monitor (model 44 on the configuration list on page 5). Other versions are similar with either more inputs or monitors depending on the configuration.



SCORPION

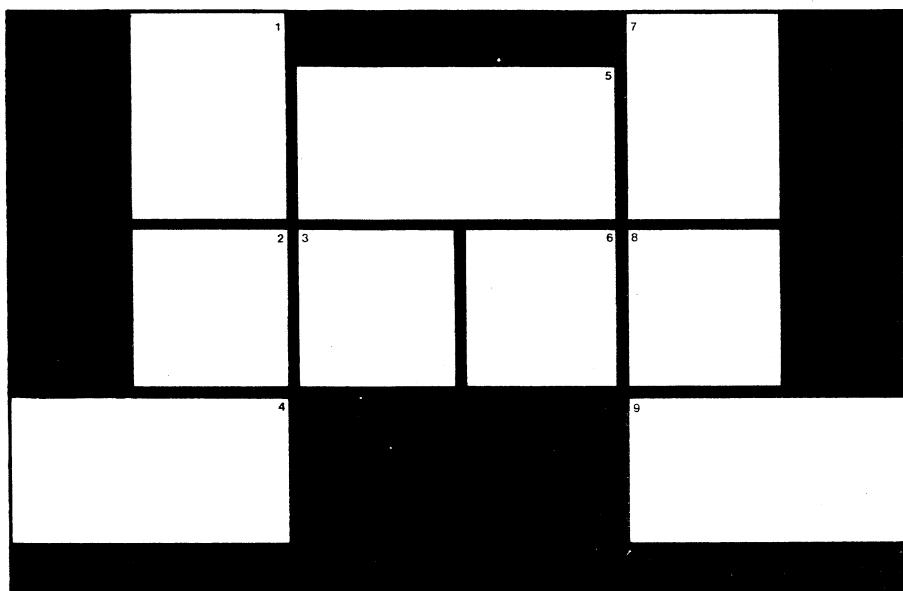
JACKFIELD LAYOUT – SCORPION 28-12-2-24



TAC

SCORPION

TOTAL AUDIO CONCEPTS



KEY TO INSIDE COVER ILLUSTRATIONS

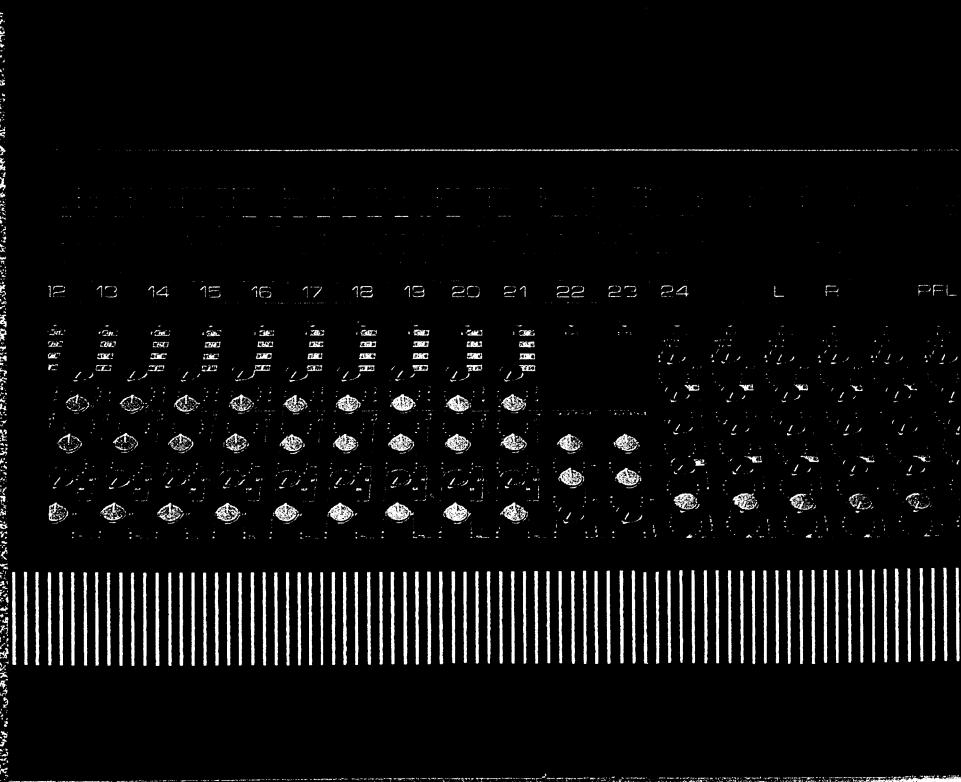
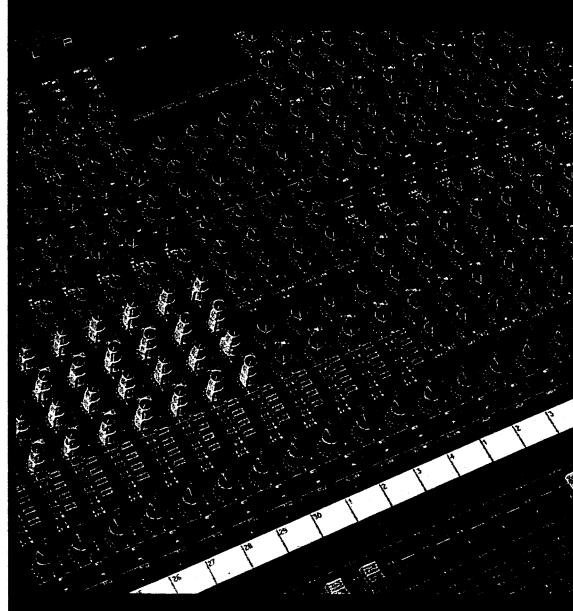
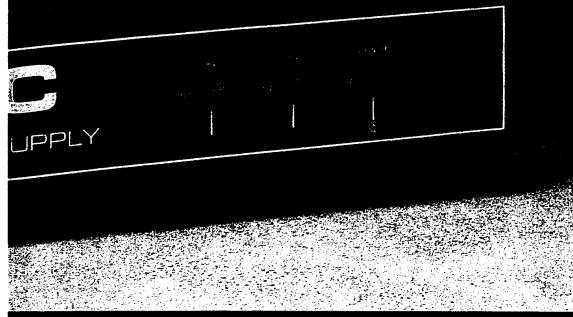
1. **SCORPION** 32-8-2 + 8×8
Showing S3200 8×8 Matrix output
2. 28-12-2 + 24
Showing S3100 Dual Monitor Section
3. 30-12 Foldback in flightcase
4. **TAC** input modules
5. **TAC** power supply unit
6. 30-8-2 + 16 Monitor
Showing S1100 input module with
8 auxillary sends.
7. 16-8-2 with S3300 Group return module
with EQ.
8. 30-12 Foldback
Showing S2000 Output modules with EQ.
9. **SCORPION** meter bridge
Showing 27 meters on 28-12-2 + 24

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