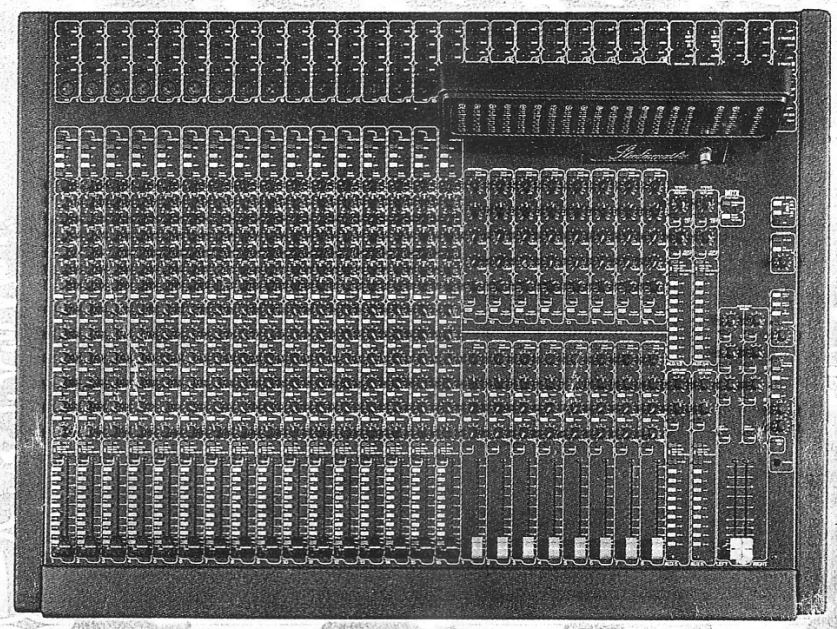
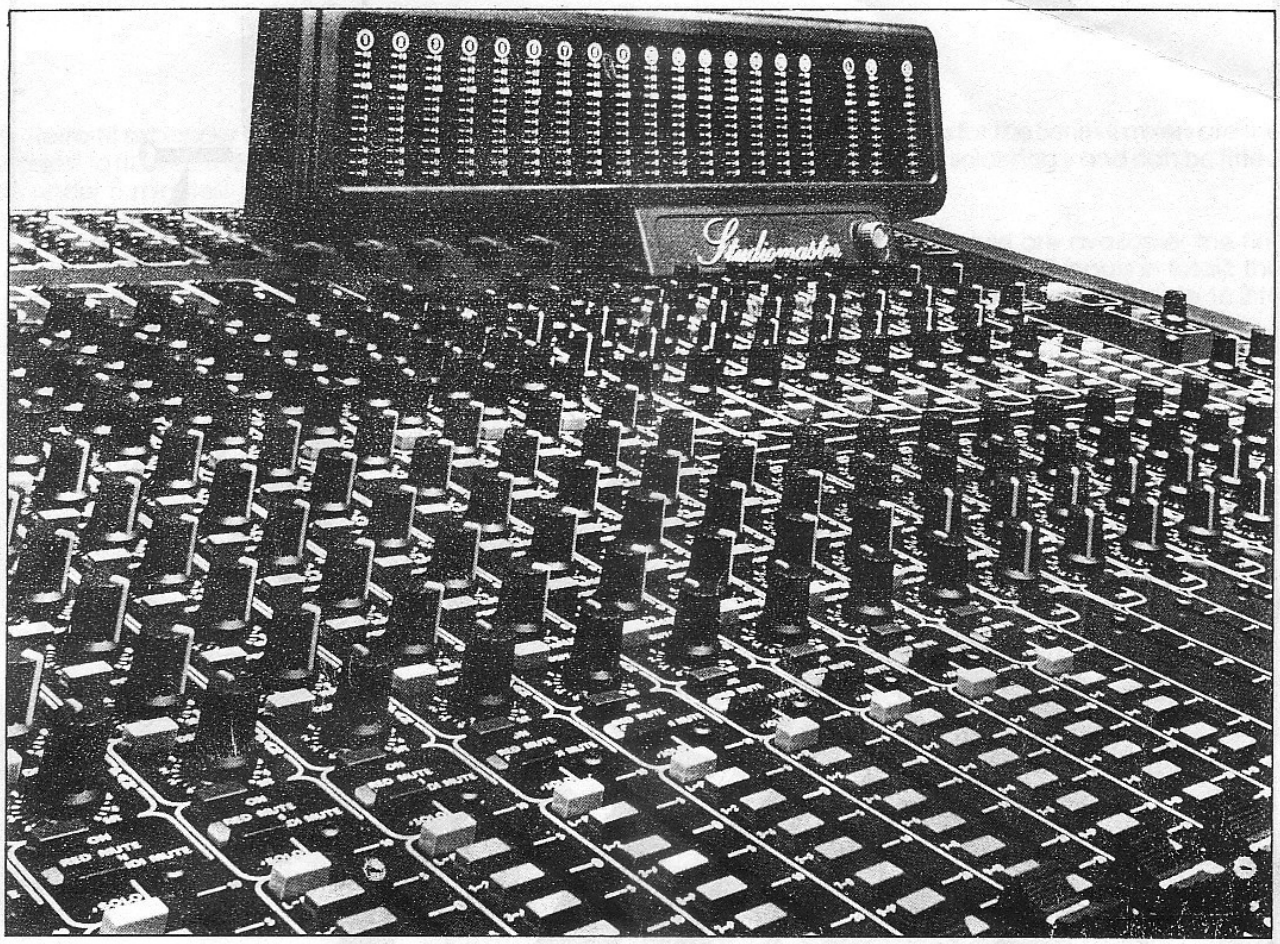
STUDIOMASTER

SERIES II



OWNERS MANUAL

CONTENTS



INTRODUCTION

For many years now, Studiomaster have been producing high quality mixing consoles which with each phase of development have brought improved standards of mixing within the reach of more people.

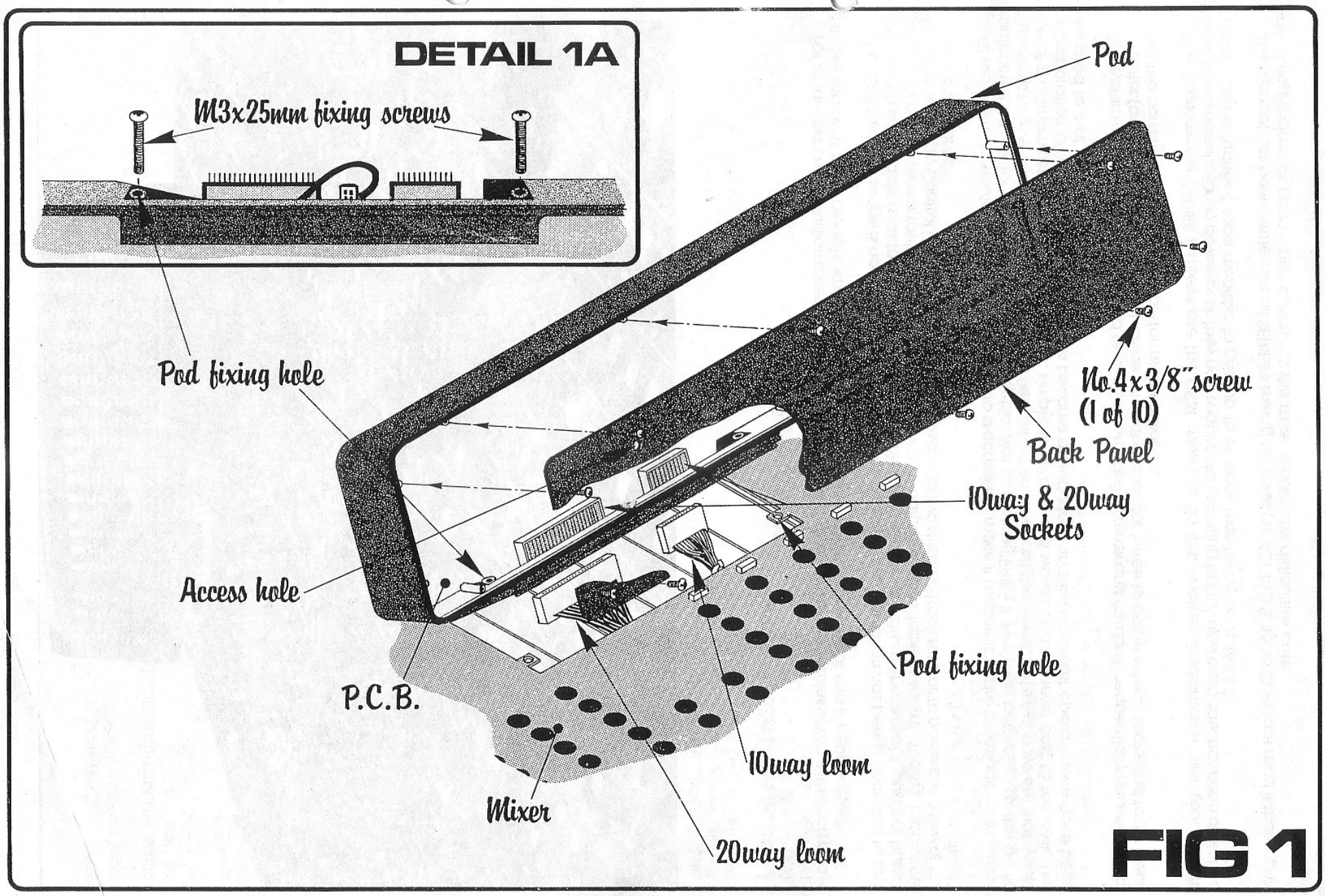
The SERIES II mixer range is no exception to this rule. Our acclaimed equalisation has been expanded to four bands with sweepable mids to give you even more control of the audio spectrum. There are six auxiliary busses with push-button return routing, push-button selection of output level to tape (+4dBm/–10dBv), tape remix function, separate Control Room and Studio Cue mixes, and two stereo 2-track returns to name but a few of the many refinements.

All too often 'computer functions' are added to a console to make it modern but are practically useless and outprice the desk for the audio facilities available. Not so on the SERIES II. Firstly we perfected all the audio functions to give supreme sound control and flexibility, then set about the development of a system that would be of maximum assistance to the operator, simple to employ and would add the least cost to the desk. The incorporation of MIDI was chosen as it has become an industry standard and most operators will have been exposed to it at some point.

The system mutes input channels and auxiliary returns during remix and mixdown sequentially under external computer (or MIDI sequencer) control. Once set up the operator is free to adjust effects racks and fader levels while the computer or sequencer performs the mixdown.

The Studiomaster SERIES II mixers are the FIRST mixers to do this. Another Studiomaster 'first' (our retro-fit expanders) has also been developed: they now require NO soldering to fit. A new expander has been designed which adds a further 8 tape monitors to give up to 24 track monitoring on a 16.16.2.

This manual has been written for all SERIES II mixing consoles (16.4.2, 16.8.2, 16.16.2). Please read it thoroughly and keep it close at hand when operating the mixer should any difficulties arise.


DETAIL 1A
M3x25mm fixing screws
Pod
Pod fixing hole
No.4x3/8" screw
(1 of 10)
Back Panel
10way & 20way
Sockets
Access hole
P.C.B.
Pod fixing hole
10way loom
Mixer
20way loom
FIG 1

METER POD FITMENT
REFER TO FIG 1

When initially packaged, SERIES II mixers have the meter pod detached from the main chassis. The pod is located in a section of the box in front of the mixer with two fitting screws taped to it.

Once unpacked, the pod must be permanently fixed as follows:

1 Remove the rear panel from the pod assembly via the 10 No.4 x ⅜" screws.
2 Position the pod above the hole in the front panel of the mixer. Locate two looms from inside the mixer and push their connectors onto the two sockets in the pod. Ensure that the cables are not twisted or under tension.
3 Press the pod into the front panel aperture front first and push home firmly the rear of the pod – it will click when located.
4 Insert the two fitting screws (M3 x 24mm) and tighten.
5 Refit the rear panel of the pod. Note the position of the 5mm access hole (top left corner, looking from rear of pod).

The pod is now permanently fitted. It is not recommended the pod be regularly removed. If the mixer is to be transported often, then a Studiomaster flight case should be purchased for the purpose.

QUICK REFERENCE SECTION
REFER TO FIG 2 / FIG 3

This section gives a brief description of all the facilities of the Series II and is for you to acquaint yourself with your mixer.

More detailed use of controls is outlined in the **'USE OF THE CONSOLE'** section.

INPUT CHANNEL

1 **TAPE INPUT.** Variable –10 to +30dB. Input impedance >10kΩ.
2 **INSERT POINT.** Maximum output +20dBm. Return input impedance 10kΩ.
3 **LINE INPUT.** Variable –10 to +30dB. Input impedance >10kΩ.
4 **MIC INPUT.** Variable 10 to 60dB. Input impedance 2kΩ (Balanced). Suitable for microphone impedances <600Ω.
5 **48V PHANTOM POWER** push switch and indicator LED. Caters for capacitor microphones.
6 **PAD** 22dB level drop.
7 **PHASE REVERSE.**
8 **LINE** switch selects unbalanced line input.
9 **TAPE REMIX** switch selects tape input. Overrides MIC/LINE selection.
10 **GAIN** varies input level of channel by amount specified above.
11 **EQUALISATION.** Studiomaster's acclaimed 3-band EQ has been expanded to 4 bands with semi-parametric midrange. 16dB of cut or boost at 12kHz, 500Hz – 15kHz, 100Hz – 3kHz & 100Hz.
12 **AUXILIARIES.** Aux 1 post fade/pre EQ, pre fade. Aux 2 post fade/pre fade. Aux 3/4 switchable (post fade). Aux 5 pre fade/post fade. Aux 6 pre fade. (Aux 5 & 6 can create a left/right mix for studio use via CUE output).
13 **PAN & PAN REV.** The **REV**(erse) button is used to pan directly opposite to its current position eg if the pan is set to R (an even numbered group), then depressing the **REV** button pans left. **NOTE:** On early models, this button **REV**(erts) the **PAN** to the centre position.
14 **CHANNEL STATUS.** Manual **ON/MUTE** switch and 3 colour LED to indicate **ON/MUTE/MIDI MUTE.** MIDI will control the channel status with the channel status switch in the **ON** position.
15 **SOLO** and LED indicator sends the pre-fade signal to the headphone monitor output and Control Room monitor output.
16 **ROUTING SWITCHES.** Routing is in pairs on the 16.16.2, but is discrete on 16.4.2 & 16.8.2 models.
17 **FADER.** Accurately calibrated 100mm ultra-smooth master fader makes your level adjustments noticably more precise.

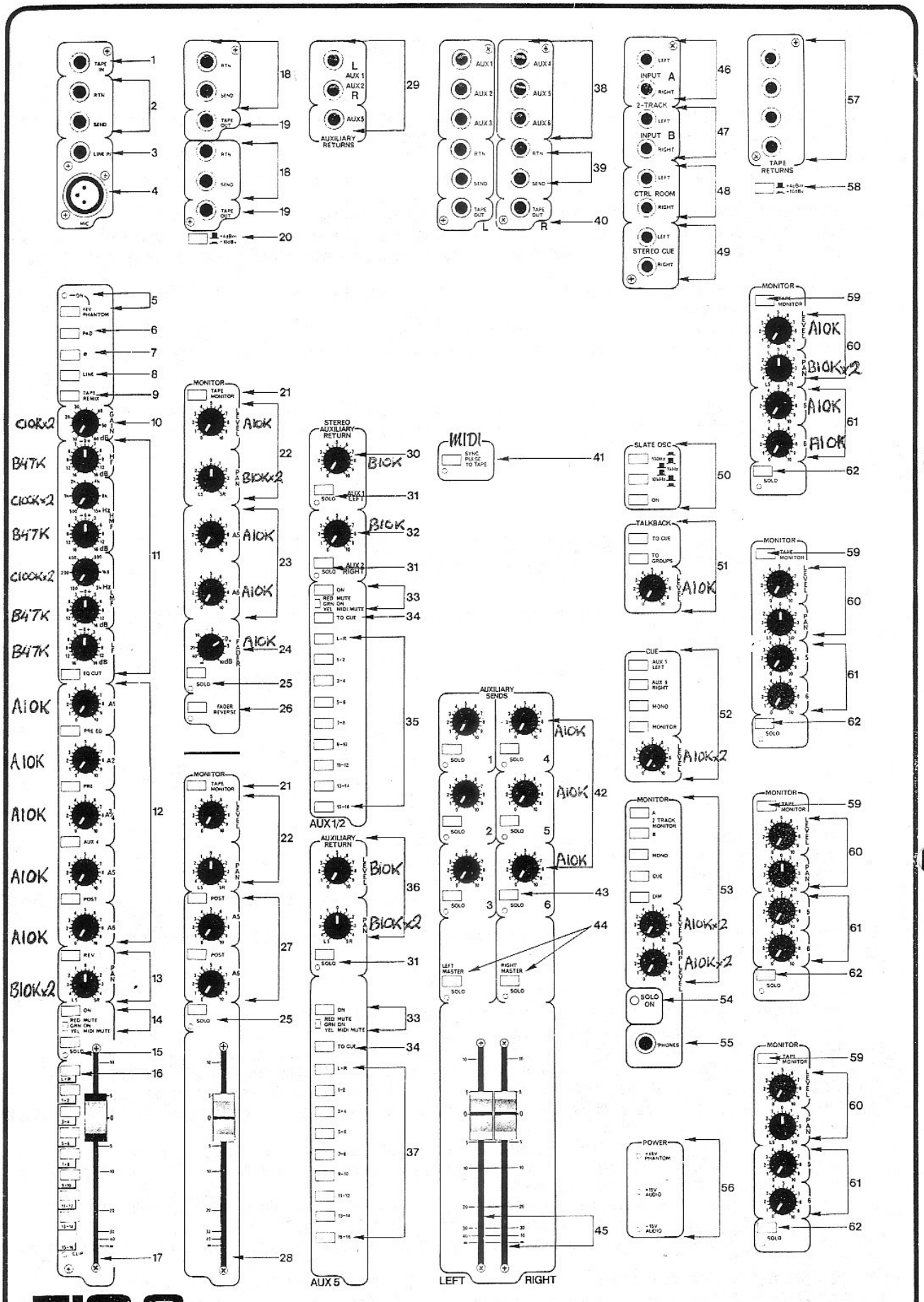

TAPE IN
RTN
SEND
LINE IN
MIC
TAPE OUT
AUX 1
AUX 2
AUX 3
AUX 4
AUX 5
AUX 6
AUXILIARY RETURNS
INPUT A
INPUT B
2-TRACK
CTRL ROOM
STEREO CUE
TAPE RETURNS
+48V PHANTOM
PAD
Φ
LINE
TAPE REMIX
GAIN
HF
HMF
LMF
LF
EQ CUT
PRE EQ
PRE
POST
REV
PAN
ON
RED MUTE
GRN ON
YEL MIDI MUTE
SOLO
MONITOR
TAPE MONITOR
LEVEL
FADER
FADER REVERSE
STEREO AUXILIARY RETURN
AUX 1/2
AUXILIARY RETURN
AUX 5
L-R
TO CUE
MIDI
SYNC PULSE TO TAPE
AUXILIARY SENDS
LEFT MASTER
RIGHT MASTER
LEFT
RIGHT
SLATE OSC
TALKBACK
TO CUE
TO GROUPS
CUE
MONO
DIM
SOLO ON
PHONES
POWER
+15V AUDIO
-15V AUDIO
C10Kx2
B47K
C100Kx2
A10K
B10Kx2
A10Kx2
A10Kx1

FIG 2

GROUP OUTPUT CHANNEL

ITEMS * = 16.16.2 only.

18 **INSERT POINT.** Maximum output +20dBm. Return input impedance 10kΩ.
19 **LINE OUTPUT.** Switchable output level +4dBm or –10dBv (ref: 0VU). Minimum recommended load 600Ω at +4dBm or 4kΩ at –10dBv.
20 **SENSITIVITY** switch selects +4dBm or –10dBv for outputs. Operates pairs of outputs (eg 1 & 9, 2 & 10) on 16.16.2, but discrete outputs on 16.4.2 and 16.8.2.
21 **TAPE MONITOR** switch allows monitoring of tape returns routed to the respective group output.
22 **MONITOR LEVEL & PAN** controls level and balance of signal to stereo monitor mix buss.
* 23 **AUXILIARY 5 & 6** level controls can be used either as auxiliary sends for mixdown/remix or as left/right sends for studio monitor (**CUE**).
* 24 **ROTARY FADER** is master fader for the top group channel (9-16).
25 **SOLO** and LED indicator sends the pre fade signal to the headphone monitor output and Control Room monitor output.
* 26 **FADER REVERSE** and LED indicator sends the top channel signal to the linear master fader, and the bottom channel signal to the rotary fader. The LED will light when the faders are in reverse mode. **N.B. ONLY** the faders reverse - associated monitors and connectors do **NOT** change.
27 **AUXILIARY 5 & 6** level controls, as (23), but have the additional facility of pre/post fade selection.
28 **FADER.** Accurately calibrated 100mm ultra-smooth master fader makes your level adjustments noticably more precise.

AUXILIARY RETURN CHANNEL

29 **AUXILIARY RETURNS.** Either 1, 2 & 5 or 3, 4 & 6. These can be used as 6 mono returns, or 2 stereo (1 & 2, 3 & 4) and 2 mono returns. Variable 0 to +30dB. Input impedance 220kΩ.
30 **AUXILIARY LEVEL (LEFT/1/3).**
31 **SOLO** and LED indicator sends the signal to the headphone monitor output and Control Room monitor output.
32 **AUXILIARY LEVEL (RIGHT/2/4).**
33 **AUXILIARY STATUS.** Manual **ON/MUTE** switch and 3 colour LED to indicate **ON/MUTE/MIDI MUTE.** MIDI will control the channel status with the channel switch in the **ON** position.
34 **TO CUE** routes auxiliary return to stereo **CUE** output.
35 **AUXILIARY ROUTING** switches route sends from input channels to the respective return. On 16.16.2 even numbered inputs are routed to the RIGHT return and odd numbered inputs are routed to the LEFT return.
36 **AUXILIARY LEVEL & PAN (5/6).** The **LEVEL** control governs the overall level, and (on the 16.16.2) the **PAN** determines the amount of even numbered or odd numbered input send that is returned. Panning left takes odd numbers, panning right takes even numbers.
37 **AUXILIARY ROUTING** switches route sends from input channels to the respective return. The 16.16.2 has paired routing (1-2, 3-4 etc.), etc.), while the 16.8.2 and 16.4.2 have discrete routing.

MASTER OUTPUTS & AUXILIARY SENDS

38 **AUXILIARY SENDS.** Maximum output +20dBm. Minimum load impedance 2kΩ.
39 **LEFT/RIGHT INSERT POINTS** for external graphic equalisers etc.. Maximum output +20dBm. Minimum load impedance 2kΩ.
40 **LEFT/RIGHT LINE OUTPUTS.**+4dBm nominal output level (ref: 0VU). Non- switchable, unbalanced. Minimum load impedance 2kΩ.
41 **MIDI 'SYNC PULSE TO TAPE'** and LED indicator. Sends 'click' to 'click-track' on tape machine for triggering computer automated patch changes.
42 **AUXILIARY SEND** level controls.
43 **SOLO** and LED indicator sends the signal to the headphone monitor output and Control Room monitor output.
44 **LEFT/RIGHT MASTER SOLO** and LED indicator sends pre fade signal to the headphone monitor output and Control Room monitor output.
45 **MASTER FADERS.** Individual 100mm ultra- smooth fader for **LEFT/RIGHT** masters, grouped close together for one finger operation if required.

MONITOR & CONTROL CHANNEL

46 **2-TRACK MONITOR RETURN (A).** Input impedance >10kΩ. Recommended minimum input level –10dBv.
47 **2-TRACK MONITOR RETURN (B).** As (46).
48 **CONTROL ROOM MONITOR OUTPUT.** Maximum output level +20dBm. Minimum load impedance 2kΩ.
49 **STUDIO (CUE) OUTPUT.** Maximum output level +20dBm. Minimum load impedance 2kΩ.
50 **SLATE OSCILLATOR.** Three frequencies are available: 100Hz, 1kHz & 10kHz. The oscillator signal is routed to all group outputs for setting output levels. The oscillator must be switched **OFF** when not in use.
51 **TALKBACK SECTION.** Talkback microphone (high quality electret condenser) can either be routed to **STEREO CUE** or to groups by pressing respective routing switch. Level of microphone is set by the rotary fader at the bottom of the section.
52 **STUDIO (CUE) SECTION.** This section is normally assigned to the **CUE** switches on the **AUXILIARY RETURNS**. Aux 5 (left) and Aux 6 (right) can be mixed in to create a stereo mix from any area within the mixing console. Stereo mix can be made **MONO** by depressing the switch. Alternatively, the **STUDIO CUE** output can be the **CONTROL ROOM** monitor mix by depressing the **MONITOR** switch. Level of output is set by the rotary fader at the bottom of the section.
53 **CONTROL ROOM MONITOR SECTION.** This section is normally assigned to the monitor mix controls on the group outputs/tape returns. The output automatically presents the **SOLO** output whenever any **SOLO** switch within the console is depressed. The following switches override the normal function of this section: **2-TRACK MONITOR A/B** are purely to monitor the 2-track returns, **MONO** creates a mono mix of any of the functions, **CUE** switch can override all previous functions and present the **STUDIO CUE** mix to the control room and the **DIM** switch is for those occasions when it is necessary to reduce the level in the control room (or headphones) quickly. Level of output is set by the rotary fader, likewise the headphone level is governed by its own rotary fader.
54 **SOLO ON** LED indicates control monitor section is in **SOLO** condition.
55 **PHONES STEREO OUTPUT.** Minimum load impedance 8Ω.
56 **POWER 'ON' INDICATORS.** Three LEDs to indicate when **+15V** and **–15V** and **+48V** bargraph supply rails are applied to the desk by the external power supply.

8-TRACK MONITOR ADD-ON CHANNEL

The tape monitor add-on gives 8 extra tape monitors for expanding your 16.16.2 to 24 monitors or your 16.8.2 to 16 monitors.

57 **TAPE INPUT.** As (1) from tape machine. Input impedance >10kΩ.
58 **SENSITIVITY** switch selects +4dBm or –10dBv (ref:0VU) input level for the four inputs.
59 **TAPE MONITOR** switch allows monitoring of the tape return.
60 **MONITOR LEVEL & PAN** controls level and balance of signal to stereo monitor mix buss.
61 **AUXILIARY 5 & 6** level controls can be used either as auxiliary sends for mixdown/remix or as left/right sends for studio monitor (**CUE**).
62 **SOLO** and LED indicator routes the signal to the headphone monitor output and Control Room monitor output.

REAR PANEL

63 **D.C. POWER INPUT.** Output cable from external power supply (Studiomaster EP3) is connected here (6-pin XLR).
64 **CHASSIS EARTH CONNECTION.** Brass screw to meet international electronic safety standards.
65 **MIDI IN.** 5-pin DIN socket for connection either to computer direct or to MIDI interface.
66 **MIDI OUT.** 5-pin DiN socket for connection either to computer direct or to MIDI interface.
67 **MIDI THRU.** 5-pin DIN socket for connection to MIDI controlled effects such as reverbs, compressors etc..
68 **TAPE SYNC OUT/SEND.** Mono jack socket for connection to multi-track tape machine to send synchronisation pulses. This connects to the input of the unused track (or 'click- track').
69 **TAPE SYNC IN/RTN.** Mono jack socket for connection to multi-track tape machine to sense synchronisation pulses. This connects to the monitor output of the tape machine's unused track (or 'click-track').
70 **MULTICORE BLANKING PLATE.** Pre-cut hole for EDAC connector for optional input channel multicore.
71 **MULTICORE BLANKING PLATE.** As (70) but this multicore can be used for anything the operator requires (such as effects, group outputs etc.).

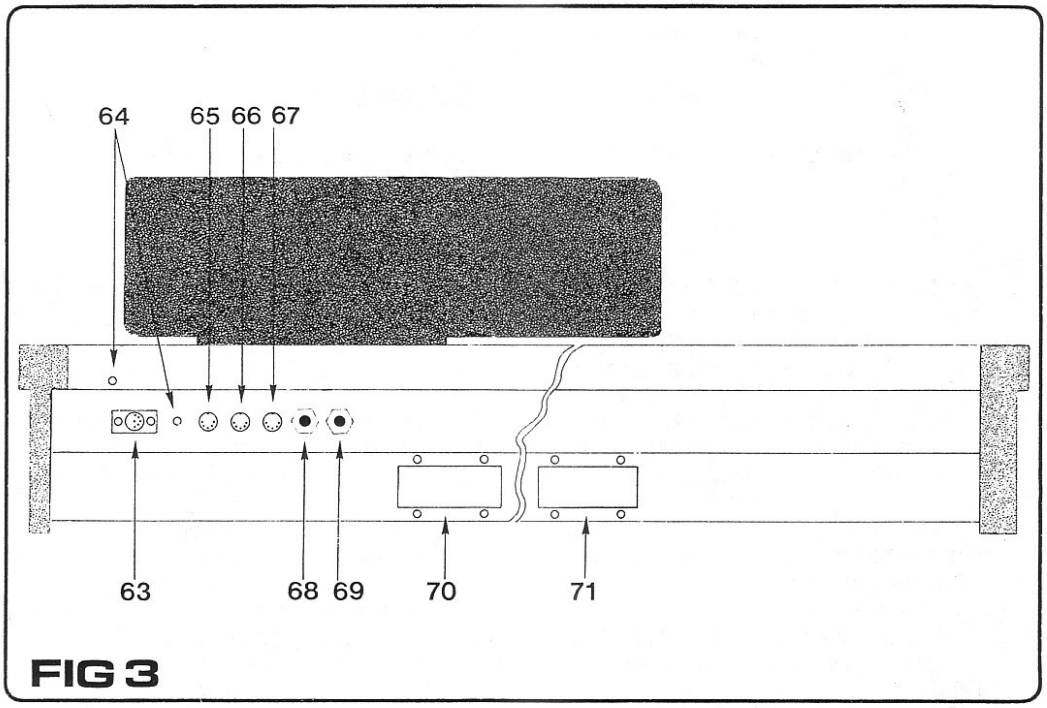


FIG 3

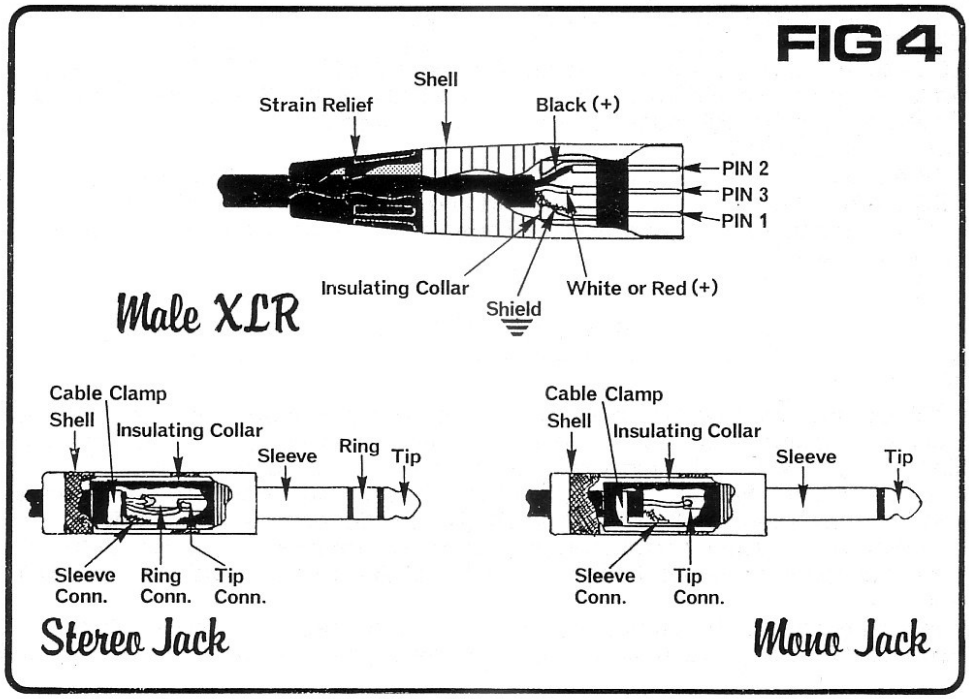
CONNECTOR WIRING

MIC Input 3-pin XLR
Pin 1 : Ground
Pin 2 : –
Pin 3 : +

Headphones ¼" stereo jack
Sleeve : Ground
Tip : Left
Ring : Right

All other connections ¼" mono jacks
Sleeve : Ground
Tip : Live

FIG 4



IN USE
WIRING UP THE CONSOLE

Connections should be made with the power supply disconnected

IN THE STUDIO (REF: FIG 5)

INPUT CHANNELS:

1 Connect the inputs first. All microphones plug into the **MIC** 3-pin XLR. All outputs from keyboards, electronic drums etc. plug into the **LINE** ¼" jack socket. The **LINE** switch on the channel allows selection of **MIC** or **LINE** input, allowing you to leave both MIC and **LINE** inputs plugged in.

** A multicore kit is available for inputs and outputs (see **MULTICORE** section of manual).

2 The **SEND** jack is a feed to an external processor (eg echo, compressor, expander, noise gate etc.) for discrete in-line effects. An example of this would be to use a noise gate purely on one synthesiser channel to eliminate hiss etc. between playing, rather than using an auxiliary buss. The **SEND** does not 'break' the channel, so it can be used as a listening in point (at line output level) without disturbing the signal path.

3 The **RETURN** jack is for returning a processed signal from an external processor when using in-line effects. The **RETURN** 'breaks' the signal path, so this point could be used as an 'input' for some other signal to be brought to the channel fader.

4 **TAPE** brings back tape returns from the tape machine for either remix or tape monitoring during recording. They may be left connected permanently as they only come into use when the **TAPE REMIX** button is depressed (this will then override any **MIC/LINE** selection).

GROUP CHANNELS:

5 Connect the **LINE** outputs to the inputs of the tape machine. The output level is selected by the switch in front of the sockets (+4dBm/–10dBv). This switch also matches the tape monitor levels. Check your tape machine manual for the level required.

6 The **SEND** and **RETURN** jacks can be used in the same way as the **SEND** and **RETURNS** on the input channels: **SEND** does not interrupt the signal path, but the **RETURN** does.

AUXILIARY SENDS:

7 The six auxiliary outputs are connected to your effects rack inputs. We suggest that **A1** and **A2** are connected to the two most frequently used effects, because they are **PRE/POST** selectable on all inputs. **A3** and **A4** should be carefully chosen as they cannot be simultaneously used on any one channel. Thought should also be given to using **A5** and **A6** as they are present on all inputs and outputs. **A5** and **A6** are also designed for use as a stereo feed for the studio (cue) monitoring system - **A5:LEFT A6:RIGHT**, and this should also be taken into consideration.

AUXILIARY RETURNS:

8 The auxiliary returns can either be used as six separate mono returns, or two stereo (**A1** & **A2**, **A3** & **A4**) and two mono. Used as stereo returns, the left and right levels are controlled individually to create stereo imaging.

The **LEFT** auxiliary, or panning left on **A5** & **A6**, routes the signal to odd numbered channels. Likewise the **RIGHT** auxiliary, or panning right, routes to the even numbered channels. Hence, when using the returns as six monos, **A1** & **A3** route to odd-numbered only and **A2** & **A4** route to even numbered only.

LEFT & RIGHT MASTER OUTPUTS:

9 The **LEFT** and **RIGHT** outputs in a studio situation are used for the 2-track master tape machine. Their output level is preset at +4dBm. The insert point (**SEND** and **RETURN**) on the master outputs is for final processing such as Noise Reduction, graphic equalisation etc..

MONITOR & CONTROL CHANNEL:

10 **2-TRACK A & B** returns are for Control Room monitoring of the 2-track machine(s).
CTRL ROOM left and right jack outputs are for the Control Room amplifier & speaker system.
STEREO CUE left and right jack outputs are connected to the studio foldback or headphone distribution amplifier.

P.A. USE (REF: FIG 6)

1 Connect your microphones, D.I. boxes etc into the stage box, then multicore to the Series II mixer and monitor mixer (eg Studiomaster 12M. The multicore is not mandatory as monitor mixers like the 12M have parallel output sockets on their inputs for sending to the Front-of-House desk).

2 Connect the **LEFT** and **RIGHT** outputs of the mixer to the amplifier system (these will be used as the main P.A. feed. Use the insert point (**SEND** and **RETURN** jacks) for graphic equalisation.

3 The groups may be used for session or group mixing prior to main P.A. mix (**LEFT/RIGHT** output) e.g. six drum mics could be mixed to **GROUP 1**, then sent to the **LEFT/RIGHT** output via the group **MONITOR** and **PAN** control.

For session recording the group outputs would be connected to the inputs of a multi-track tape machine, and for sub-group mixing, they would be used to re-patch a sub-mix to another input for

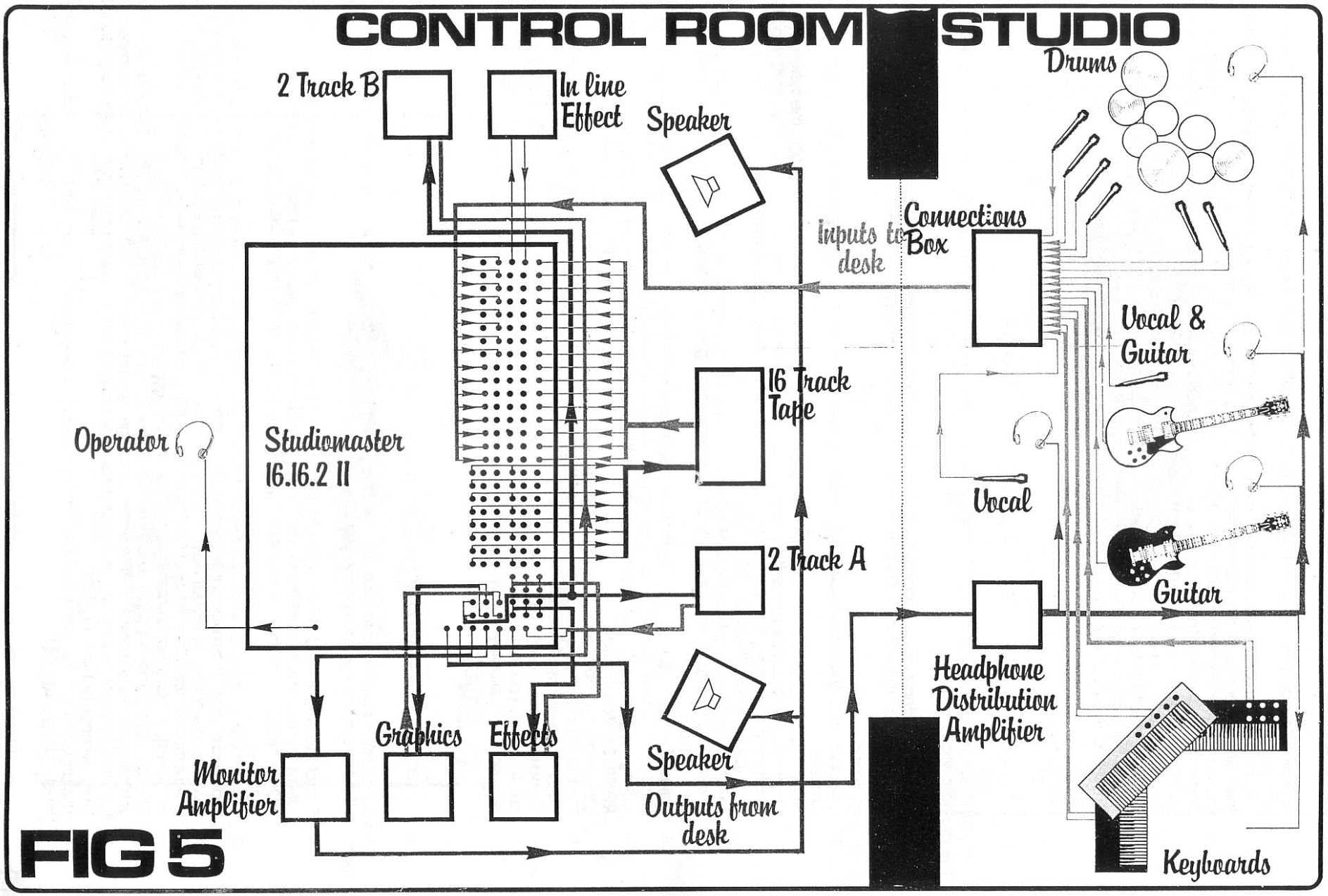

CONTROL ROOM
STUDIO
2 Track B
In line Effect
Speaker
Drums
Inputs to desk
Connections Box
Vocal & Guitar
16 Track Tape
Operator
Studiomaster 16.16.2 II
Vocal
2 Track A
Guitar
Headphone Distribution Amplifier
Graphics
Effects
Monitor Amplifier
Speaker
Outputs from desk
Keyboards

FIG 5

combined processing e.g. six drum mics mixed to **GROUP 1** then re-patched to **INPUT 7** for equalisation or effects.

If a separate monitor system is not to be used, then sub-groups can be used as foldbacks in which case their **LINE** output jacks are connected to amplifiers and wedge monitors on stage.

4 The auxiliary sends and returns would be connected as outlined in (7) and (8) of **'IN THE STUDIO'**, once again bearing in mind that A5 and A6 are present on all input and output channels and that they can be used as a stereo feed for foldback purposes.

5 The **2-TRACK** A & B return sockets have no real purpose when using the mixer live.
The **CTRL ROOM** outputs could be used for either operator listening (with monitor amplifier/speaker set-up), of for a sterio recording output – separate to the main P.A. mix.
STEREO CUE output can be used for additional foldback, monitoring or recording mixes.

USE OF THE CONSOLE

It is assumed in the following section that all connections to the desk have already been made (as outlined in the previous section)

1 Set all the faders to the $-\infty$ position, all rotary controls to their minimum position (pans to centre position). Set the equalisation flat, or **EQ CUT** and turn all channels to **OFF** (status LED red).

FOR EACH INPUT:

2 Select whether the input is to be **MIC** or **LINE**. Decide now if 48V phantom powering is required on the channel.
NOTE: Applying the 48V phantom power supply to the input will cause 'clicks' through the system if the channel is not muted. Similarly, the **PAD** may 'click' if used immediately after the application of 48V to the channel. It is advised that the channel is **ALWAYS** muted when selecting 48V phantom power.
Turn the channel **ON** (status LED green).

3 To set a sound up, it is advised to use both visual and aural monitoring. To achieve this, select **SOLO** on the channel, and note visually on the **SOLO** bargraph the signal level whilst listening to the sound in the headphones.

4 Adjust the input gain control so that on peaks, one gets a good registration on the bargraph (just illuminating the first red LED) and simultaneously no indication on the channel **CLIP** LED. If minimum setting on gain control is too high to achieve this, insert the 22dB pad. For normal operation the **PHASE REVERSE** switch should be out – this is for use only when at a later time, the operator experiences phase cancellation problems on that channel. Pressing the switch rectifies the problem.

5 Put the equalisation back in the signal path (release **EQ CUT** switch) and whilst using the headphones adjust the equalisation controls to give the tonal quality required, and to correct deficiencies in the sound response. Careful manipulation of the controls is required and it is good practise to **EQ CUT** in and out to check your adjustments. Constant attention to the signal level registered on the bargraph is required and 'clipping' should be corrected by gain control adjustment accordingly.

MIXER to TAPE MACHINE CALIBRATION

By using the mixer's built-in slate oscillator, it is advised to calibrate the group faders to the maximum recording level on the tape machine. This is done as follows:

1 Select the output level required to match the recommended zero reference level of your tape machine (using the buttons behind the pod). If this is unknown, refer to your tape machine handbook.
NOTE: Once these switches have been set, they may be left, unless you regularly change your multi-track machine).

2 Select **1kHz** on the oscillator and switch it **ON**. Then bring up all the group faders until a zero level is reached on both the mixer bargraphs and the tape machine's bargraphs/meters. These zero reference levels should always be equal. A serious mismatch would indicate that the level buttons behind the pod are incorrectly set. Mismatches of 1 to 2dB are possibly due to either the tape machine or the mixer being incorrectly calibrated. Further investigation will be required.

3 One can also check tape playback monitoring levels by recording a section of the continuous tone, by selecting the tape monitor button on the track/group in question, the off-tape level can be compared with that on the tape machine meter and the mixer bargraph. Serious mismatch indicates incorrectly set level switches behind the pod.

4 The group faders are now set at their optimum position, and should remain here as an initial reference level.

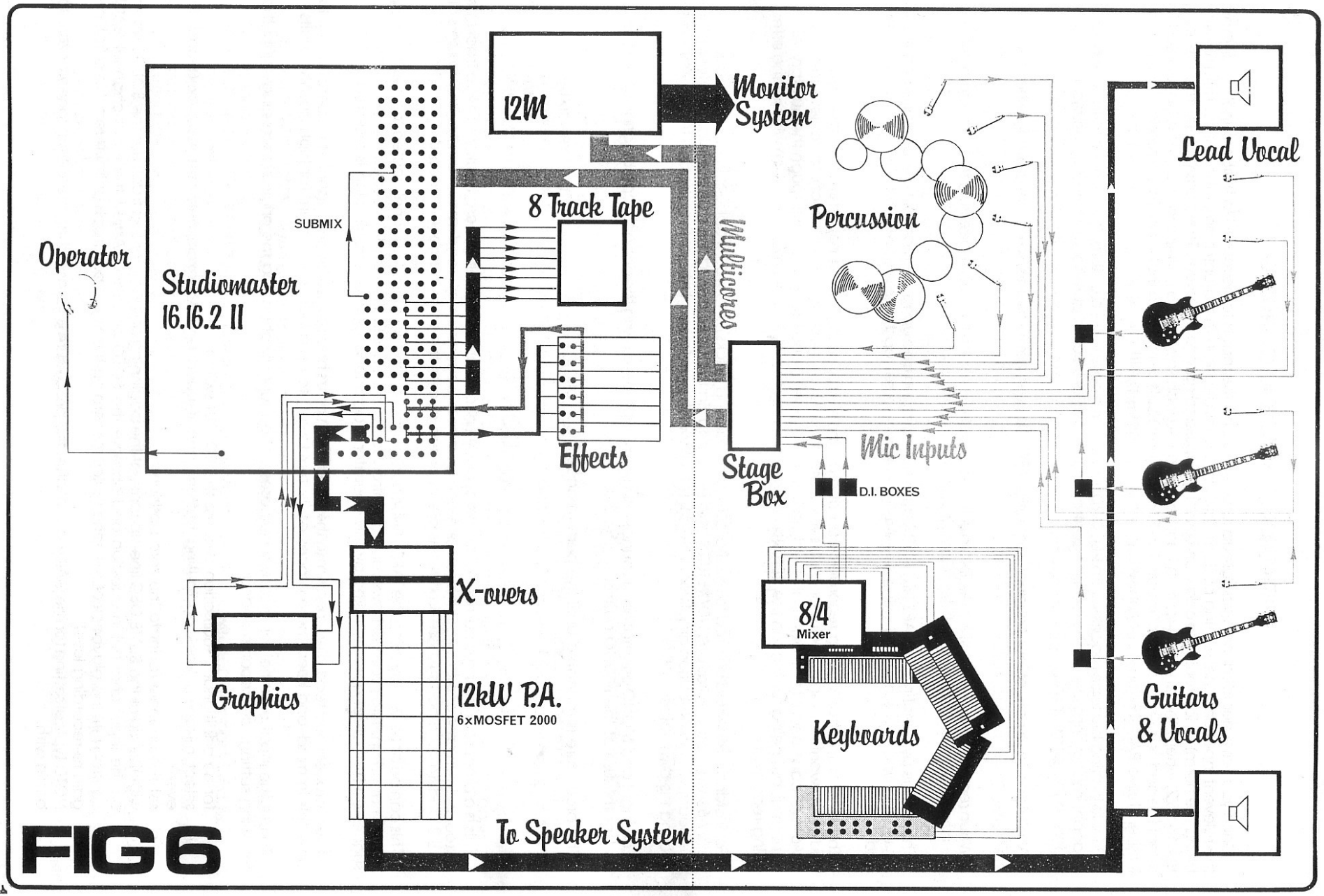

12M
Monitor System
Lead Vocal
8 Track Tape
SUBMIX
Operator
Studiomaster 16.16.2 II
Multicores
Percussion
Effects
Stage Box
Mic Inputs
D.I. BOXES
X-overs
8/4 Mixer
Graphics
12kW P.A.
6xMOSFET 2000
Keyboards
Guitars & Vocals
To Speaker System

FIG 6

INITIAL MULTI-TRACK RECORDING

Once you have decided the track/group to be used and the inputs to be routed to that group then depress the relevent input channel routing buttons. Take into consideration the orientation of the **PAN** control (centre being the norm) as left routes to odd-numbered groups, and right to the evens. This is particularly important on the 16.16.2, where the channel routing is paired and you wish to route to a single group – pan being used to select the odd or even number of a pair. The **PAN REV**(erse) button routes to the opposite orientation (early Series II mixers have **PAN REV**(ert) function which simulates centre position).

Prior to putting the tape machine into **RECORD**, the mix can be checked by listening to the monitor system and headphones by bringing up the monitor control on the group/track in question and setting the input channel faders to the correct mix.

At all times, take note of input channel condition (**SOLO** being useful for this) to ensure that 'clipping' does not occur.

When recording subsequent tracks, in order to synchronise them on tape, it is necessary for the performers and the mixer operator to monitor off-tape previously recorded tracks.

This is done by selecting the **TAPE MONITOR** button in question and using the monitor level and pan controls to set up the operator's mix and using the **A5** & **A6** levels to set up the stereo mix for the performers in the studio.

The level of the track being recorded can also be monitored using the same system. The performer in the studio may want to listen to, for instance, his voice with some level of echo (or other effect). To achieve this, the **A5** or **A6** level can be sent to an external effect via the auxiliary send and brought back through the auxiliary return as normal, but being routed (on the **RETURN** channel) to only the **CUE** studio monitor system without the effect being recorded.

For instance, **A5** would be used to monitor off-tape (backing tracks) and would appear in the left headphone while **A6** would be used as a **SEND/RETURN** and be routed via the **CUE** button to the **CUE** studio monitor system (the headphone distribution amplifier in **FIG 5**). This allows the performer to hear the backing tracks, while also hearing his own voice + effect

Left/right and **MONO** orientation of sounds can be manipulated using the opposite combination of auxiliaries and/or the use of the **MONO** button on the **CUE** section.

This procedure is repeated until the performance is complete.

MIXDOWN

This is a process of taking a number of tracks already on tape and combining these tracks onto two tracks as stereo or down onto one track – this is sometimes known as a 'bouncedown' – and applies particularly to users of 16.8.2 and 16.4.2 models where limitations are imposed due to the small number of recording tracks.

This can be achieved by using the **TAPE REMIX** button and subsequent input channels routed to the recording track in question. This process, however, can introduce gain, equalisation and subsequently more noise. It is suggested that great care be taken by the operator if additional gain or equalisation is required.

Every process and recording medium in the signal path adds noise to the original signal. The operator should bear this in mind, and keep these processes (ie mixdowns) to an absolute minimum for high quality results.

To use the input channel for mixdown purposes without unduly changing the original recording signal the following settings are recommended:

a for no additional equalisation depress the **EQ CUT** switch
b select mixdown track on routing buttons and if need be **PAN** exclusively to the track (L-odd, R-even)
c set the channel fader to the zero position
d with the aid of the **SLATE OSC** line-up tone, at the beginning of the recorded track use the **SOLO** button on the input channel in question and observe the **SOLO** bargraph. Adjust the input channel **GAIN** control until the playback of the tone indicates zero on the **SOLO** bargraph (this will result in a flat, no gain re-recording level).
NOTE: Typical setting for the **GAIN** control after this procedure is **40**: assuming the line-up tone was zero to begin with.

REMIX

This is a process of taking a number of tracks and remixing these tracks to create the master stereo 2-track recording. This process can be carried out in two ways:

a using the **TAPE REMIX** button and subsequent input channel where additional equalisation and effects can be added prior to routing to the **L-R** outputs. Auxiliary and effects returns will also be routed to the left and right in order to create the final mix.

b using the **TAPE MONITOR** button for the track in question and associated monitor level & pan controls to create the stereo image. This method applies no gain and no equalisation to the original signal, however effects and equalisation can still be added using this method by way of the **A5** and **A6** controls if required.

The 2-track machine can be monitored off-tape using either **2-TRACK A** or **B** buttons on the **MONITOR** section.

MIXDOWN OR REMIX WITH THE AID OF AUTOMATED MIDI CONTROLLED MUTING

This system gives the operator the added advantage of being able to turn on and off recorded tracks in sequence thus reducing overall noise buildup on the final mix.

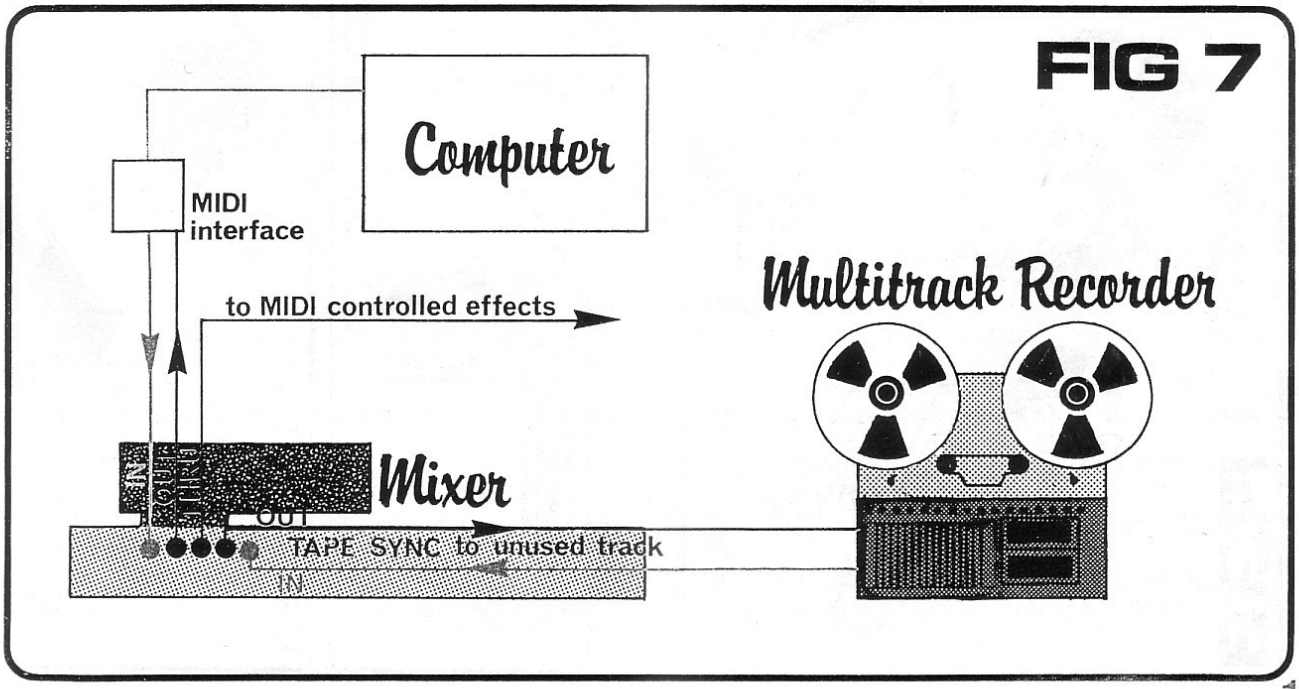
It can also be used effectively to chop out any "rogue" sounds picked up by microphones left open during inital recording and of course to the imaginative operator could be used to create subtle effects.

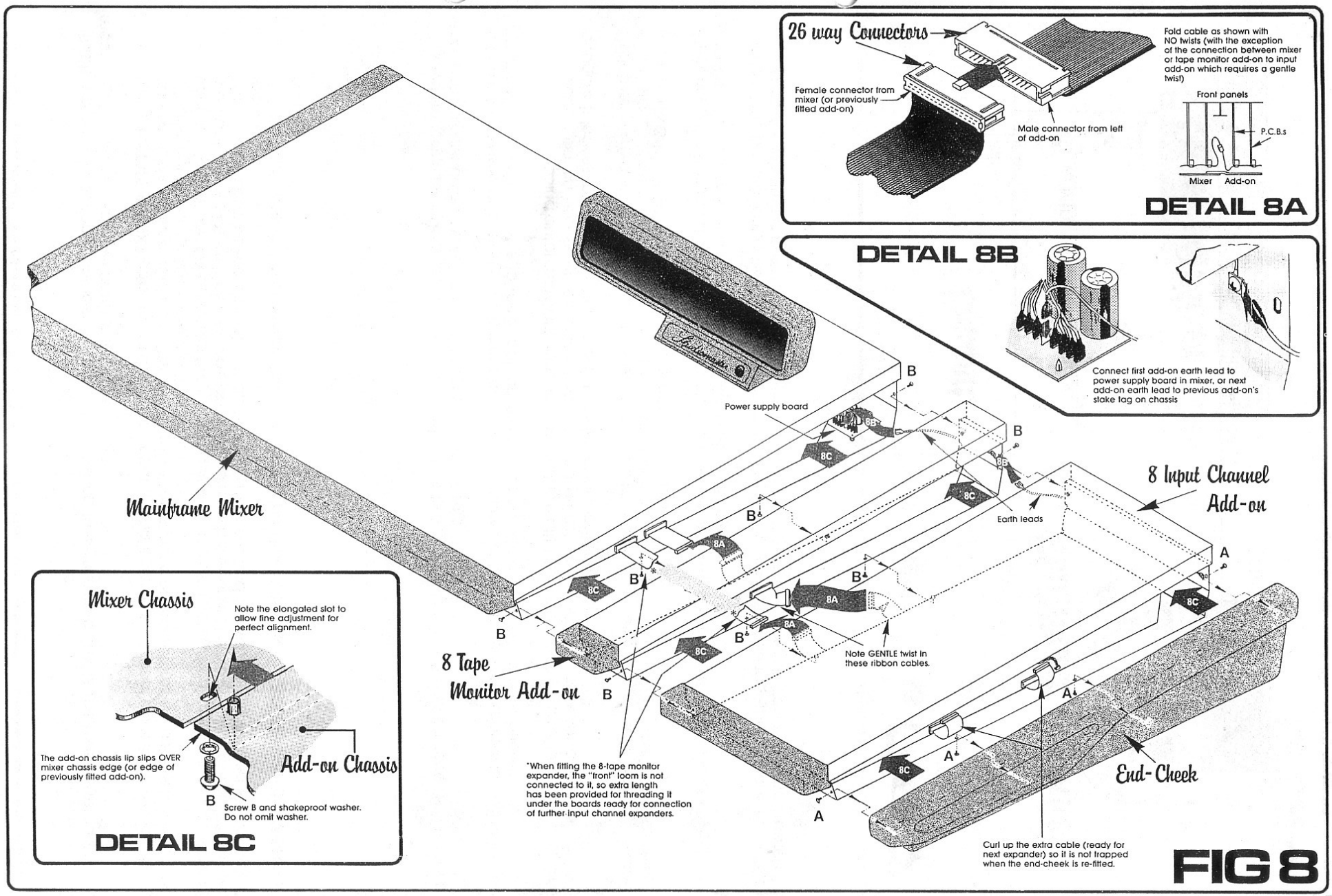
With this process being automated and synchronised to the multi-track machine by way of sync. pulses or time codes placed on an unused track, once finalised and programmed with an external computer or MIDI sequencer it leaves the operator free to adjust fader levels and effects racks.

During initial mixdown, the operator decides at which point certain channels and auxiliaries should be muted. The next stage is to record a pulse onto a spare tape track at these points (these are "clicks") and are put on using the **SYNC PULSE TO TAPE** button on the mixer front panel.

Then, using the computer software, the "patches" are set up on screen, basically this is where you decide the channels and auxiliaries you want on or off at a particular time.

Once all the patches are complete, the programme may be put in PLAY mode together with the multi-track recorder and each time a pulse is received by the computer the programme will step to the next patch.




26 way Connectors
Female connector from mixer (or previously fitted add-on)
Male connector from left of add-on
Fold cable as shown with NO twists (with the exception of the connection between mixer or tape monitor add-on to input add-on which requires a gentle twist)
Front panels
P.C.B.s
Mixer
Add-on
DETAIL 8A
DETAIL 8B
Connect first add-on earth lead to power supply board in mixer, or next add-on earth lead to previous add-on's stake tag on chassis
Mainframe Mixer
Power supply board
8 Input Channel Add-on
Earth leads
8 Tape Monitor Add-on
Note GENTLE twist in these ribbon cables.
*When fitting the 8-tape monitor expander, the "front" loom is not connected to it, so extra length has been provided for threading it under the boards ready for connection of further input channel expanders.
End-Cheek
Curl up the extra cable (ready for next expander) so it is not trapped when the end-cheek is re-fitted.
Mixer Chassis
Note the elongated slot to allow fine adjustment for perfect alignment.
The add-on chassis lip slips OVER mixer chassis edge (or edge of previously fitted add-on).
Add-on Chassis
Screw B and shakeproof washer. Do not omit washer.
DETAIL 8C
FIG 8

ADD-ON FITTING INSTRUCTIONS
REFER TO FIG 8

Retro-fit expander modules are an original Studiomaster idea and the expanders for the Series II mixers are the easiest to fit ever. They require only four screws, and three plug in connections – **NO** soldering – and can be fitted in under 5 minutes!

The new range of expanders fits on the right of the desk, and two types of module are available: the first contains 8 further input channels (up to two of these may be fitted to one desk – giving 32 inputs in total); the second is an entirely new model which contains 8 further tape monitors which enables your 16.8.2 or 16.16.2 to monitor 16 or 24 track recorders respectively.

To fit:

1. Remove the right hand end-cheek via the four pozi-drive screws (A).
2. Push together the connectors from the end of the main-frame mixer (or last add-on fitted) and the left of the add-on being fitted (**DETAIL 8A**). Make sure the cables are neither twisted nor under tension. Fold the cables neatly.
3. Connect the earth leads (these ensure that a perfect earth is maintained between chassis). The earth lead from the first add-on should be connected to the spare stake tag on mixer power supply board. Subsequent add-ons should have their earth leads connected to the previous add-ons chassis mounted stake tag (**DETAIL 8B**).
4. Offer up the add-on to the end of the main-frame mixer (or last add-on fitted) and taking care not to trap the cables push the add-on into place (**DETAIL 8C**). Fix via the four pozi-drive screws supplied (B).
5. Replace the end-cheek via the original four screws removed (A).
6. A maximum of three add-ons may be fitted (1 x tape monitor, 2 x 8 input channels). The tape monitor add-on should be fitted first (nearest the mixer).

MULTICORE

The Studiomaster Series II mixers feature the option of EDAC multicore connectors for inputs (a kit is available for this purpose) or for any other connections you require multicored such as effects, group outputs etc..

On the rear of every Series II mixer are two blanked holes where the EDAC connectors are fitted. The left one is for the 16 inputs and a kit is available from:

Kelsey Acoustics
28, Powis Terrace
London W11
ENGLAND

The kit is complete with pre-wired EDAC connector, and numbered looms to each of the 16 inputs where there is a vacant 5- way socket into which the loom is plugged.

The right hand hole has no fixed application and is for individual user's requirements (up to a 90-way EDAC connector may be fitted in the hole).

Each Studiomaster 8-channel input add-on also has provision for an EDAC connector. A fitting kit is also available from Kelsey Acoustics.

TECHNICAL SPECIFICATIONS

FREQUENCY RESPONSE
14Hz to 19kHz ±1dB

TOTAL HARMONIC DISTORTION
At 1kHz : <0.02%
At 10kHz : <0.02%

C.M.R.R.
At 1kHz : –79dB
at 10kHz : –62dB

EQUIVALENT INPUT NOISE (200Ω)
–128dB

SLEW RATE
6V/usec

CROSSTALK
Channel to adjacent channel @1kHz : –62dB
Group to adjacent group @10kHz : –58dB

MAXIMUM VOLTAGE GAIN
Microphone input to group output : 82dB

CHANNEL MUTE ATTENUATION
At 1kHz : –81dB
At 10kHz : –65dB

FADER ATTENUATION
At 1kHz : –78dB
At 10kHz : –72dB

MIC CHANNEL INPUT IMPEDANCE
Pad in : ≏6kΩ
Pad out : ≏ 3kΩ

MAXIMUM INPUT LEVEL BEFORE CLIPPING
Pad in : –18dB
Pad out : –40dB

PAD ATTENUATION
22dB

GAIN CONTROL RANGE
40dB

DIMENSIONS (W x H x D)
16.4.2: 888 x 245 x 718mm
16.8.2 & 16.16.2: 1016 x 245 x 718mm
8 input channel expander: 268 x 140 x 718mm
8 tape monitor expander: 76 x 140 x 718mm

5v RAIL (MIDI SUPPLY) > 4.75v
< 5.25v

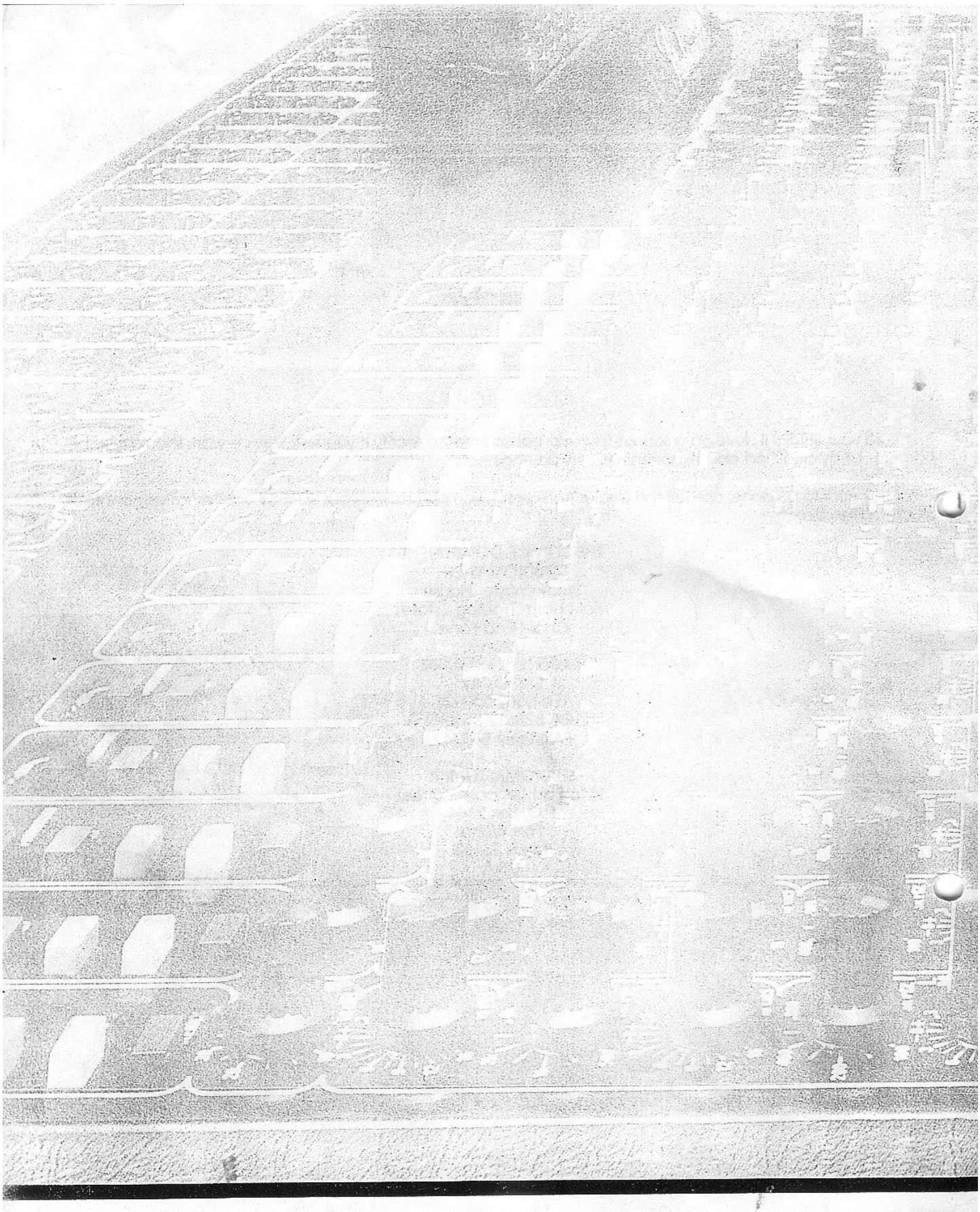
SERVICE

Should your SERIES II develop a serious fault, do not attempt to rectify it yourself. Service work should only be carried out by qualified and experienced service engineers.

For this work to be done, consult the dealer from which you purchased your SERIES II or alternatively contact Studiomaster direct:

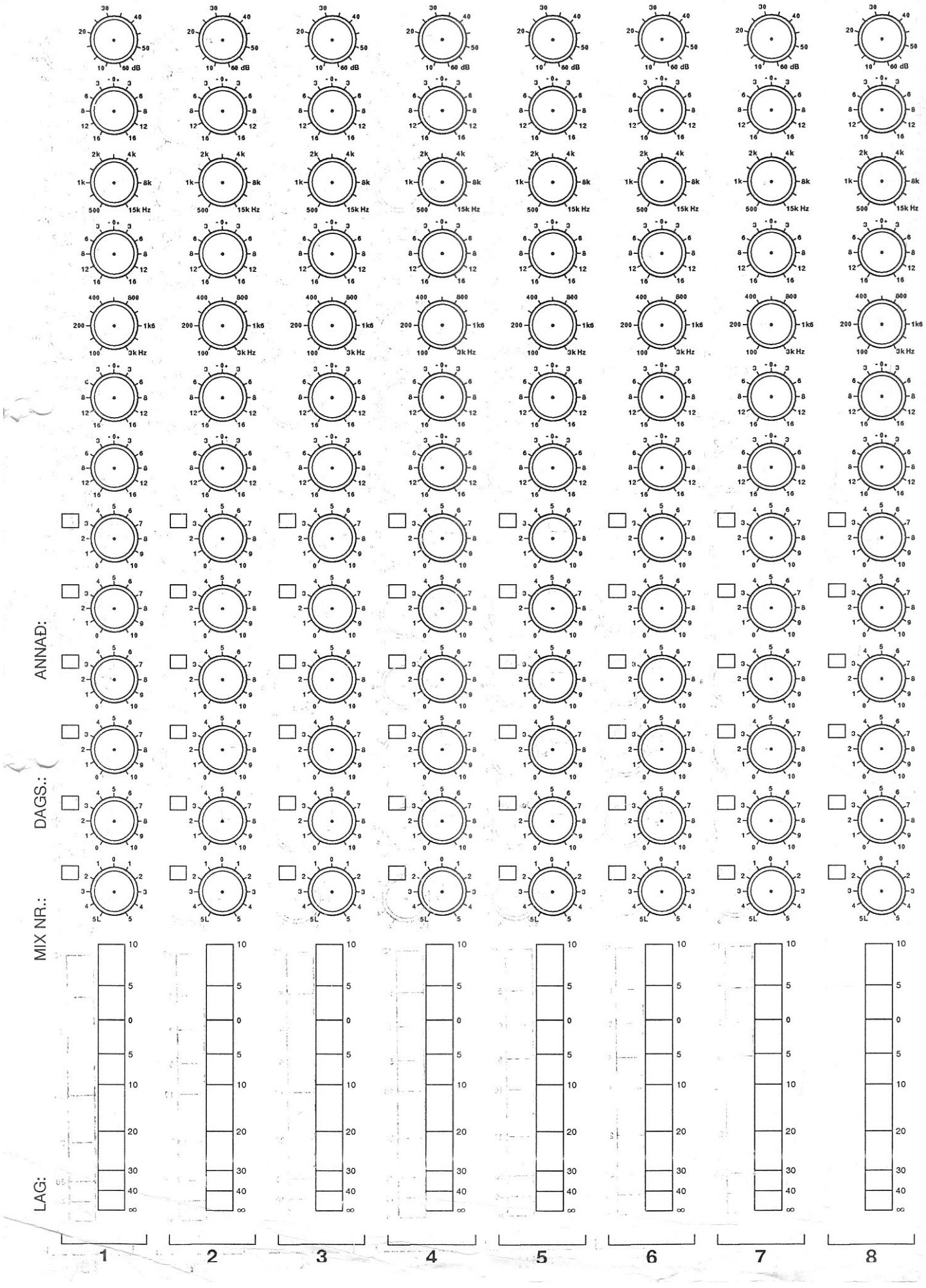
THE SERVICE DEPARTMENT
STUDIOMASTER
Studiomaster House
Faircharm Trading Estate
Chaul End Lane
Luton
Bedfordshire LU4 8EZ
ENGLAND
TEL: 0582 570621
TELEX: 825612 STUDIO G
FAX: 0582 570242

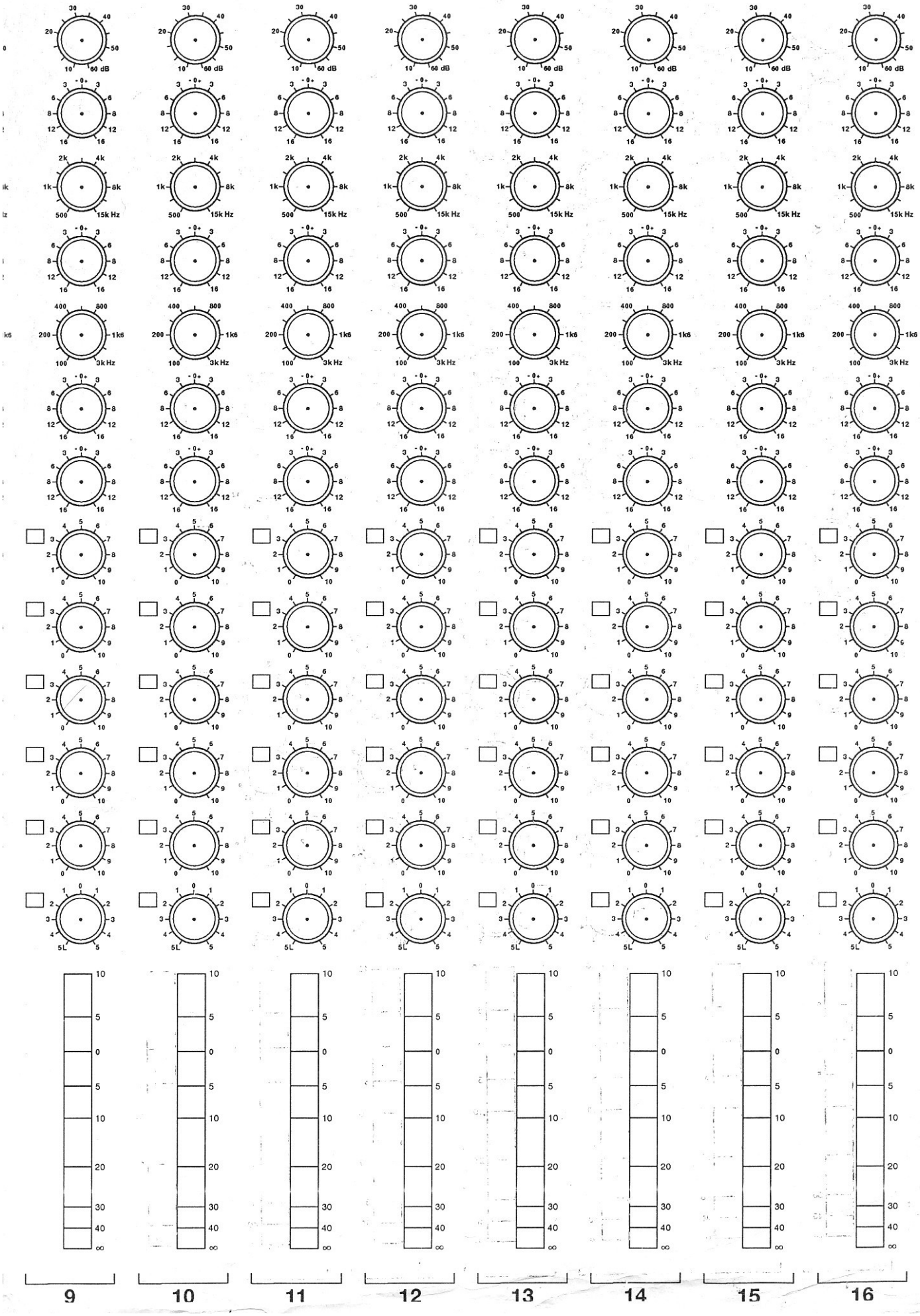
STUDIOMASTER Inc.
1316 East Lancaster Street
P.O. Box 2344
Fort Worth
Texas 76113
U.S.A
TEL: 817 336 5114
TELEX: 758285 IMCTXUT
FAX: 817 870 1271



STUDIOMASTER, Studiomaster House, Faircharm Trading Estate, Chaul End Lane, Luton, Bedfordshire LU4 8EZ, ENGLAND

TEL: 0582 570370 TELEX: 825612 STUDIO G FAX: 0582 570242


ANNAÐ:
DAGS.:
MIX NR.:
LAG:
1
2
3
4
5
6
7
8


30 40 20 50 10 60 dB
3 - 0 + 3 6 8 12 16
2k 4k 1k 8k 500 15k Hz
400 800 200 1k6 100 3k Hz
4 5 6 3 7 2 8 1 9 0 10
1 0 1 2 3 4 5L 5
10 5 0 5 10 20 30 40 ∞
9
10
11
12
13
14
15
16