5. MONITOR SECTION

5.1. Central Facilities

5.1.1. Console Status Configuration

Using the status selectors, mic/line switching, fader swapping, tracklaying/mixdown status switching and broadcast selection the console can be configured with great versatility including status assignment to allow split monitor operation. The console status can also be changed on each I/O module on an individual basis. Broadcast mode provides 'simulcast' mixing allowing simultaneous multitrack and broadcast production work to be easily accomplished.

5.1.2. Solo System

The console has a remarkable solo system which combines the monitoring facilities of prefade listen (PFL), after fade listen (AFL) and solo-in-place (cut solo) into a flexible and simple control system.

All console solo pushbuttons are electronically latched providing individual but identical solo facilities for both signal paths regardless of fader swap. Individual path solo-safe controls can be linked to tape machine record functions or 'on air' signalling for auto changeover.
5.2. Oscillator and Signal LED Threshold Control

The oscillator can be switched to frequencies of 40Hz, 100Hz, 400Hz, 1kHz, 4kHz, 10kHz and 15kHz using the rotary switch (FREQUENCY) in the centre of the oscillator (OSC) panel.

Output level is controlled by the rotary control (LEVEL) directly above the frequency selector switch.

5.2.1. **MTK**

Switches the oscillator signal onto the console group outputs to allow easy line-up of multitrack machines.

5.2.2. **MIX**

Switches the oscillator signal onto the main 4-track outputs.

The oscillator output is also available at the patchbay.

5.2.3. **CAL**

This pushbutton switches a calibrated level (set by the adjacent trimpot) to the selected oscillator outputs.

The **SIGNAL LED THRESHOLD** control is variable in steps between −30dB and +26dB and controls the level indicated by the signal threshold LED for the channel path.
5.3. Auxiliary Master Section

The auxiliary sends located on the **AUX MASTER** panel can be configured as eight mono auxiliary sends or four stereo pairs with level and balance.

The effect of the stereo pairing pushbutton (**ST**) for auxiliary sends 1 and 2 is as follows, the operation of the other stereo pairs (3-4, 5-6 and 7-8) is similar:

a) With **ST 1-2** pushbutton not pressed.

The 1 and 2 pushbuttons act as individual switches for auxiliary sends 1 and 2; the integral LED illuminates when the pushbutton is pressed. The rotary controls act as individual level controls.

b) With **ST 1-2** pushbutton pressed.

When pressed, the 1 pushbutton switches the stereo pair on. The LEDs in both 1 and 2 pushbuttons are illuminated, the switching action of 2 being disabled. The rotary control associated with auxiliary 1 becomes the level control for the pair and the rotary control associated with auxiliary 2 (BAL) becomes the balance control.
5. Monitor Section

The master level controls feed the cue mix system, allowing the operator to build up a mix of auxiliary outputs as a cue mix.

The master level controls also adjust the level to the reverberation send outputs. Pushbuttons 1 to 8 enable the cue/reverb send outputs. Each send has a patch insertion.
5.4. Cue Mix System

This module provides two stereo cue sends with stereo equalization, filtering, level and balance control.

Pressing the \text{EQ} pushbutton switches in the equalizer. A high pass filter with three selectable cut-off frequencies is activated using either the \text{47} or \text{82} pushbuttons above the \text{EQ} pushbutton. Pressing both filter pushbuttons together, inserts the filter with a cut-off frequency of 150 Hz. Balance and level adjustment are provided by the \text{BAL} and \text{LEVEL} rotary controls. The \text{BAL} pushbutton inserts the balance control while the \text{ON} pushbutton switches the signals through to the cue outputs.

A mix of any of the auxiliary outputs (mono AUX 1 to 8 or stereo AUX 1-2 to 7-8) with the console 2-track mix outputs (1-2 and 3-4), control room monitor \text{MON} output, or dedicated patchbay \text{PATCH} stereo input can be built up using the selection pushbuttons at the top of the module.

Each cue output has a patch insertion for direct injection.
5.5. Rev Returns

The REV RETURN section provides facilities for up to four stereo, reverberation/effects returns with stereo equalization, filtering, level and balance control.

Pressing the \[EQ\] pushbutton inserts the equalizer. A high-pass filter with three selectable cut-off frequencies is activated using either or both of the \[47\] Hz or \[82\] Hz pushbuttons above the \[EQ\] pushbutton; pressing both pushbuttons together inserts the filter with cut-off at 150 Hz. Balance and level adjustment are provided by the appropriate rotary controls (BAL and LEVEL). The \[BAL\] switch inserts the balance control while the \[ON\] pushbutton switches the return signal onto the 2-track mix outputs as selected by \[1\], \[2\], \[3\] and \[4\].

Reverberation can be added to the cue mixes using the cue/rev controls (CUE/REV 1 and CUE/REV 2). An \[ON\] pushbutton below each control enables these sends.
5.6. Master Status Selector

Pressing the arrowed pushbuttons on either 
BROADCAST ,  
MIC ,  
FADER SWAP or  
MIXDOWN in the 
STATUS section changes the status of channels for the left hand side of the 
desk (← ) or the right hand side of the 
desk (→ ). This allows the console to 
be configured with a separate monitor 
section.

Pressing the centre pushbutton of each 
function resets the whole console for 
that function. Pressing either of the 
arrowed pushbuttons, resets the 
corresponding side of the console to that 
function. Each of these master controls 
has a corresponding pushbutton on each 
I/O module which reverses the selected 
master status. An LED next to each 
module pushbutton indicates when that 
channel has reversed status compared 
with the master status.

5.6.1.  
MIC

This pushbutton operates as a master 
mic/line changeover; illuminated 
pushbuttons indicate mic selection.

5.6.2.  
FADER SWAP

Pressing this pushbutton exchanges the 
large fader plus its solo and cut with the 
small fader plus its solo and cut. The 
normal power-up state (multitrack 
recording) is for the large fader to be in 
the channel path and the small fader to
be in the monitor path; **FADER SWAP** reverses this condition for the whole console, the associated left and right arrows reverse the faders on the corresponding section (left or right) of the console; the integral lamps illuminate to indicate that the swap has taken place.

### 5.6.3. **MIXDOWN**

Pressing the **MIXDOWN** pushbutton alters the state of the paths from tracklaying mode to mixdown mode for multitrack tape playback and mixdown to two track.

The channel input is automatically set to line and the channel path is directed to the main 2-track mix outputs via the pan control (closest to the operator). In **MIXDOWN** mode the monitor path is directed to the multitrack pan and routing pushbuttons so that the small fader can control additional effects sends or returns. Conversely, in tracklaying mode, the monitor path is directed to the main 2-track mix outputs for simultaneous monitoring.

### 5.6.4. **BROADCAST**

Allows simultaneous broadcast and multitrack recording. When **BROADCAST** is pressed the signal is taken prefade, post-equalization and applied to the input of the secondary
path. Fader swap is automatically engaged when [BROADCAST] is selected; Fader swap can be cancelled whilst broadcast is still engaged.

This facility allows the small fader to control the multitrack mix, and the large fader to control the broadcast signal.

5.7. Meter Selection

5.7.1. 2-track Meters

Four bargraph meters are fitted to the 2-track metering system; two of these are permanently attached to the control room monitor for metering any of the desk sources or 16 external sources selected for control room monitoring. The other two meters follow the 3-button interlocked selector located in the METERS section of the panel, to allow metering of the 2-track console mix outputs by selecting [MIX 1-2] or [MIX 3-4] and also metering of the external source selector on the control room monitor by pressing [EXT].

5.7.2. Multitrack Meters

[O/P]

Pressing this pushbutton allows metering of the multitrack send signal.

[P/B]

This pushbutton allows metering of the multitrack return signal.

[MON]

This pushbutton allows the metering to follow the multi-track monitor selection.

5.8. Cues

The CUES section contains the following pushbuttons:

5.8.1. [MIXED-CUE]

When this pushbutton is pressed, a mix of multitrack send and multitrack return is sent to the monitor prefade cues on the I/O modules which have individual [OD] pushbuttons selected. Switching the control room monitor to cues allows this mix to be monitored.

5.8.2. [CUES POST EQ]

This pushbutton switches the cue sends on the paths that do not have individual [OD] selected to a 'follow monitor' condition, to allow backing tracks to be heard with the same frequency/dynamic correction as the control room monitor mix. The facility automatically cancels should the engineer decide to monitor the console output using the master [O/P] pushbutton. The backing track cue mix is still available to the artist (without processing) as it is now taken straight from the multitrack return. With this system any loss of cue signal is prevented regardless of control room monitor condition.
5.9. Solo and Master Cut System

Overall control of the separate monitor and channel solo systems is provided via the SOLO+CUT section of the panel. The systems are normally in 'cut solo' mode unless the tape machine is in record mode or one of the corresponding pushbuttons is pressed.

When an individual I/O module pushbutton is pressed in the cut solo mode, all other channels which have no SOLO or effects RET pushbuttons pressed are automatically cut, leaving the solo selected signal at the 2-track mix output.

In solo safe mode (with either the CHAN SAFE or MON SAFE pressed) the path is not cut and solo monitoring is achieved by a separate stereo bus via the main monitor. The system normally provides positional AFL (after fader listen) solo but PFL (prefader listen) can be selected by the master PFL pushbutton on the SOLO+ CUT panel.
The operation of the channel SOLO pushbuttons can be configured in the following modes:

LATCH

Switches provide the normal push-on push-off action with the addition that all solos may be cancelled by the master RESET.

VL

Interlocking solo which releases as the next SOLO is pressed. A group solo can be formed by holding one pushbutton down whilst other solos are selected; the grouping is cancelled by pressing another SOLO pushbutton, or by RESET.

5.9.1. Momentary Action Solo

A group solo can be formed by holding one pushbutton down whilst the group is selected, but the group is cancelled when the last pushbutton is released.

CUT A and CUT B

These pushbuttons cut all large fader paths that have their corresponding CUT A or CUT B pushbuttons pressed. This facility mutes or enables a group of paths simultaneously.

SOLO LINK

This pushbutton combines the monitor and channel solo systems.

5.10. Multitrack Monitoring and Overdubbing

The MULTITRACK MONITORS section of the panel switches the I/O module monitor paths between multitrack send and return. In overdub mode the modules that have the individual overdub pushbuttons pressed are monitored as multitrack send; all other modules are monitored as multitrack return.

5.10.1. O/P

Selects multitrack send. Interlocked with P/B and O/D.

5.10.2. P/B

Selects multitrack return. Interlocked with O/P and O/D.

5.10.3. O/D

Selects overdub. Inter-locked with O/P and P/B. (Refer also to OD explanation in mixdown and large fader in section 2 of this handbook).
5. Monitor Section

5.11. Control Room Monitor

The CONTROL ROOM MONITOR section allows stereo monitoring of selected sources. The feeds to the control room monitor loudspeakers have insertions on the patchfield; monitoring can be cut, dimmed or mono-mixed by selection of **CUT**, **DIM** or **MONO** depending on the function required.

The **DIM** level can be varied using the associated rotary control (DIM). The monitor signal can be offset up to 6dB using the **IN** switch and the balance pot above the master level control. Monitor level of PFL/AFL signals can be adjusted with the rotary control above the **AFL/PFL** indicator monitor cut. Individually, left and right monitor cut can be selected with **CUT L** and **CUT R**; momentary **L-R SWAP** can also be selected.

The **LARGE**, **SMALL** and **MINI** pushbuttons allow selection between three different loudspeaker systems. Preset trimmers immediately below these pushbuttons allow the level of each system to be adjusted individually. The rotary control (LEVEL) below the presets is the master level control and adjusts all three systems.
5.11.1. Monitor Selection

Located in the CONTROL ROOM MONITOR section, the monitor selection controls are as follows:

**EXT**

When pressed this pushbutton allows selection of any one of 16 external stereo sources for 2-track playback using the selection pushbuttons above it; 1 to 16.

**INT**

This pushbutton is interlocked with **EXT**. It allows monitoring of the auxiliaries (AUX 1 to 8 and 1-2 to 7-8), cues (CUE 1 and 2) and 2-track mix outputs (MIX 1-2 and 3-4) via the selection pushbuttons above it.

When **CHAN SAFE** or **MON SAFE** in the SOLO+CUT section is selected, and an individual channel/monitor solo pushbutton is pressed, the AFL/PFL lamp next to **INT** and **EXT** pushbuttons illuminates, indicating that the main monitor has switched over to solo monitoring. The solo level can be adjusted using the rotary control above the AFL/PFL indicator.
5.12. Studio Monitor

The following controls are located in the STUDIO MONITOR section:

**CUT**

Pressing this pushbutton cuts the studio monitor.

Note: The studio monitor is automatically cut when the **RED LIGHT** pushbutton on the TALKBACK section is engaged.

**EXT**

This pushbutton selects the studio monitor to follow the control room monitor external source selector.

**FOLLOW MON**

Pressing this pushbutton selects the studio monitor to follow the control room monitor.

Level adjustment is provided by the rotary control (**LEVEL**) above the pushbuttons.
5.13. Talkback System

Talkback to various destinations is controlled from the TALKBACK section using the following controls:

[CUE 1] [CUE 2]

Pressing either of these pushbuttons sends talkback to CUE 1 and CUE 2 respectively.

[ALL]

Pressing this pushbutton sends talkback to all cues and the studio loudspeakers.

[SLS]

This pushbutton sends talkback to the studio loudspeakers.

[SLATE]

Pressing this pushbutton sends the selected oscillator tone with talkback to the multitrack and two track outputs.

The above pushbuttons are all momentary action (press and hold to talk).

[AUTO TB]

This latching pushbutton opens Cue 1 and Cue 2 talkback channels when the multitrack is 'passive' (parked or winding) but closes the talkback when the transport is in [PLAY].

[PFL]

Return talkback from the studio to the control room is enabled when this pushbutton is pressed. Level adjustment is provided by the rotary controls (RTB LEVEL 1 and 2) on this panel.

PHONES

This rotary control provides level adjustment for the headphone jack socket located in the console leg. Similarly the adjacent rotary control marked LEVEL controls the talkback level.

[RED LIGHT]

The studio warning light e.g. 'Recording In Progress' lights when this pushbutton is selected.

[F/B 1-2] [F/B 3-4] [F/B 5-6] [F/B 7-8]

Allows talkback to the auxiliaries to be configured as cue sends in pairs.