2. System Information

2.1.1. Multitrack Recording

Input mic or line signals are fed via the channel path and large fader to the multitrack routing matrix. The inputs can be processed using the high and low pass filters, equalizer and dynamics units. The channel path can be routed directly to the track send of the same number or designated as part of an audio subgroup; the latter allows overall dynamic, equalization and level processing to be achieved on a mix of inputs before the signals are recorded on tape. The track level control provides simple level adjustment for the track send.

2. System Information

2.1.2. Mixdown

In mixdown the configuration of the I/O module is effectively the opposite of the multitrack recording situation. The channel path feeds the 4-track routing matrix via the large fader and accepts primary multitrack return mix inputs with full in-path processing and auxiliary sends. The monitor path has the following three distinct purposes:

- It accepts secondary mix inputs and makes available unused channel path processing. Access to the 2-track main outputs is provided on the multitrack routing matrix.

- In a similar way effects returns can be accepted by the monitor path.

- The path can be used for channel post-fade effects sends. The monitor path fader controls the send level to any one of the 48 groups available from the multitrack routing matrix.
2. System Information

2.1.3. Track Bouncing

Patch free track bouncing can be easily achieved on the console. The I/O module is configured so that the multitrack return feeds the monitor path but is then routed back to the multitrack routing matrix. By simply selecting the bounce facility and making a routing selection on each track return to be bounced, the whole operation can be quickly achieved. Equalization and dynamics can be configured in the monitor path to allow processing while bouncing.
2.1.4. Overdubbing

Note: The master overdub pushbutton is shown as master \([\text{O/D}]\).

The individual channel overdub pushbutton is shown as channel \([\text{OD}]\).

The console has a sophisticated monitoring and cue send system for tracklaying and overdubbing which allows the engineer total monitoring freedom in the control room whilst maintaining the correct cue sends to the studio.

The system works with interactive controls which cover the various monitoring requirements. To explain the system, six diagrams are used which, although not covering every situation, do give a good understanding of the system operation.

Five master controls operate the system with additional channel \([\text{OD}]\) pushbuttons on each I/O module. Master monitor status is controlled by three interlocking Multitrack Monitor pushbuttons \([\text{OP}]\), \([\text{PB}]\) and master \([\text{O/D}]\) and the CUES pushbuttons \([\text{MIXED CUE}]\) and \([\text{CUES POST EQ}]\).

The Multitrack Monitor pushbuttons switch control room monitoring on a master basis from multitrack send \([\text{OP}]\), to multitrack return \([\text{PB}]\), and overdub master \([\text{O/D}]\) where multitrack send is selected on individual (channel \([\text{OD}]\)) switched tracks and multitrack return is selected on the backing tracks. The individual channel \([\text{OD}]\) pushbuttons affect cues being sent to the studio as well as switching control room monitoring in the master (master \([\text{O/D}]\)) monitoring mode. The multitrack send of any module switched into channel \([\text{OD}]\) is applied to the cues. The backing track cues (no channel \([\text{OD}]\) selected) receive multitrack return.

The cue sends on channel \([\text{OD}]\) tracks can also be switched to \([\text{MIXED CUE}]\), a mix of multitrack send and return, which can be varied on an individual basis with a trimmer on each I/O module. The backing track cues can be assigned to a 'follow monitor' condition using \([\text{CUES POST EQ}]\), when any monitor equalization and dynamics are also heard on the cues. The facility automatically cancels when the control room monitoring is switched to \([\text{OP}]\) because the cues still require \([\text{PB}]\).

2.1.5. \([\text{OP}]\)

This configuration is shown in Figure 2.4. The control room monitors multitrack sends, cues monitor multitrack returns.
2. System Information

2.1.6. Overdubbing

This configuration is shown in Figure 2.5. Control room and cues monitor multitrack return.
2.1.7. Overdubbing [PR] and Channel [OD]

This configuration is shown in Figure 2.6. Control room monitors multitrack return. Cues monitor multitrack return on backing tracks and multitrack send on selected overdub tracks.
2. System Information

2.1.8. Overdubbing Master [OD] and Channel [OD]

This configuration is shown in Figure 2.7. Control room and cues monitor multitrack return on backing track and multitrack send on selected overdub tracks.
2.1.9. Overdubbing Master [OD], Channel [OD] and [MIXED CUE]

This configuration is shown in Figure 2.8 Control room monitors multitrack return on backing tracks and multitrack send on selected overdub tracks. Cues monitor multitrack return on backing tracks and mix of multitrack send/return on overdub tracks CUES.
2. System Information

2.1.10. Overdubbing [PB] or Master [O/D] and [POST EQ]

This configuration is shown in Figure 2.9. The backing track in overdub or the complete mix in playback (no individual channel [OD] track selected) can feed the cues complete with monitor equalization and dynamics. The facility automatically cancels if [OP] is selected as the cues are still required to send multitrack return to the studio.
2.1.11. Broadcast Mode

This configuration is shown in Figure 2.10. This mode 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.
2.2. Guided Tour of VR Operation

2.2.1. Multitrack Routing Matrix

The routing matrix offers 48-track routing with panning selectable between odd and even track sends. Access is provided to the main outputs to facilitate extra mix inputs and effects returns through the monitor path during mixdown. Track bouncing is easily achieved, sending the relevant multitrack return back to the routing matrix via the monitor path. Routing to the 2-track outputs is automatically cancelled to prevent doubling of the monitoring signal level. The bounce signal can be processed by placing the equalization and dynamics units in the monitor path.

2.2.2. Inputs

The gains of the mic and line inputs are varied on two continuously variable pots providing a total range of −10dB to +70dB (in conjunction with −30dB PAD) for mic and −10 to +10dB for line. Both inputs can also be phase reversed. Patch free audio subgrouping is available as the highest priority input, thus allowing a group output signal to be processed as a channel signal before being rerouted.

2.2.3. Filters

These comprise 12dB/octave high-pass and low-pass filters, with frequencies ranges from 31.5Hz to 315Hz and 7.5kHz to 18kHz respectively; the filters can be switched into the channel path independently.

2.2.4. Dynamic Control

The sophistication and technical performance of the unit allow superb dynamic control whilst retaining a natural sound. Full limiter/compressor and gate/expander facilities are available with a fully flexible sidechain.

The gate/expander has a 70dB threshold range, 50dB gate range, switchable attack time, release from 30ms to 3s and variable hysteresis. Hysteresis control allows precise triggering on the wanted signal whilst still allowing the correct amount of signal 'tail' through. The expander has a 2:1 expansion ratio.

The limiter/compressor attack and release times are dependent on programme material, i.e. impulse or steady overload. 'Anti pumping and breathing' circuitry allows the unit to operate on the source musically whilst retaining absolute control.
over the dynamic range. The control ranges are up to 50dB threshold range, ratio 1:1 to limiting, release from 30ms to 3s with an end stop, fully programme dependent auto release and 30dB of gain make-up.

The module equalizer can operate in the dynamic sidechain to provide frequency dependent dynamic control effects such as de-essing.

2.2.5. Auxiliaries

Eight auxiliary sends are available which can be configured with a large amount of flexibility. Either channel or monitor path can be the signal source and the sends can be pre- or post-fader, mono or stereo (four stereo pairs with pan).

Operationally, the pre-–auxiliaries send signals to the artists in the studio in tracklaying mode and some effects sends in mixdown. The source point for the two functions is arranged so that in tracklaying mode the signal is taken precut to enable cut solos to be performed in the control room and still retain cue sends, whilst in mixdown the signal is taken post cut so that the effects send is cut with the source.

2.2.6. Insert

Inserts can be positioned in either the channel or monitor path independently of the equalizer. Configuration pre–equalizer and pre–dynamics is also possible.

2.2.7. Formant Spectrum Equalizers

The sound of Neve equalizers is the result of years of research and extensive studio experience. The no–compromise design philosophy has made it possible to produce a 4–band parametric equalization unit with generous 18dB cut and boost. Mid–band Q is variable from 0.5 to 9 and outer band Q is switchable to either 0.7 or 1.2. Peak/shelving characteristics on the outer bands may be varied independently, avoiding the problems associated with interactive control ranges. The result is a truly musical equalizer.
2. System Information

2.2.8. Track Level Control
The track level signal can be controlled between −10dB and +10dB. The channel signal can also be routed directly to the corresponding track send, thus avoiding the multitrack routeing matrix. In this mode, signals from other channels cannot be routed to this track send.

2.2.9. Module Status
Fader and status swaps can be achieved on an individual module basis. The flexibility offered by these facilities can be realized in many session situations and allows the operator to concentrate on creativity without being constrained by the console’s ability.

2.2.10. Monitor Path Selectors
The monitor path selectors assign the module dynamics, insertion, equalizer and auxiliaries to the monitor signal path. The channel postfade output can be connected to the input of the monitor path thus allowing additional effects sends to be set up via the multitrack routeing matrix.

The selector pushbuttons are grouped for easy viewing so that the signal structure of each module may be quickly assessed.

2.2.11. Monitor Path Switching
The console has a sophisticated monitoring system allowing monitoring freedom in the control room whilst retaining the correct cue sends. The system works in conjunction with master monitor selection.
2.2.12. Solos and Cuts

The solo system on the console is very sophisticated with selectable momentary, interlocking and latching action pushbuttons performing either in-place solo, or PFL or AFL type solos. The two identical systems for the channel and monitor paths work regardless of fader swap. The modules can be isolated from solo mute action to provide effects returns in both paths. Groups of large faders can be cut on a master basis by selecting one of two mute groups. This action is always on the large fader regardless of positioning.

2.2.13. 4–Track Routing Matrix

Selectable access to the main outputs for mixdown and simultaneous monitoring during recording is available from the 4–track routeing pushbuttons with pan between odd and even outputs.

2.3. Central Facilities

2.3.1. 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.

2.3.2. 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.