

SOUND CRAFT  
TSC24  
IN-LINE CONSOLE



# Soundcraft

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# THE COMPANY

Soundcraft Electronics Limited, founded in 1973, started with the aim of providing the Professional Audio Engineer a choice of sound mixing consoles for virtually every application. The company has become one of the world's largest console manufacturers by turning this philosophy into reality.

The Soundcraft range of mixing consoles extend from automated multitrack consoles for master recording studios, to compact professional mixers for personal recording facilities, as well as a variety of consoles for concert sound and broadcast applications.

In 1985 the company opened a new manufacturing facility in Borehamwood, Hertfordshire,

England, incorporating state-of-the-art assembly plant and techniques to enable it to meet the ever increasing demands of the market.

This brochure introduces to you the flagship of the Soundcraft product range – the TS24 Music Recording Console.

Considerable research went into the concept and design of the TS24, combining the input of experienced and qualified recording engineers with that of our leading designers, to produce one of the most versatile consoles available today.

The TS24, with its range of enhancement options, is a new concept in in-line console design, providing outstanding performance and exceptional value.





# SOUNDCRAFT TS24

The Soundcraft TS24 heralds a new generation of studio mixing consoles full of features designed to make recording more instant and flexible, and yet remaining compact, simple to operate, and, due to the clarity of lay-out, easy to understand.

When it came to designing the TS24, we, at Soundcraft decided to do away with the confusion that exists on more conventional in-line consoles.

In the past these designs have often suffered from an illogical lay out resulting in confusion on behalf of the engineer and an inability to reconfigure the console in an efficient manner.

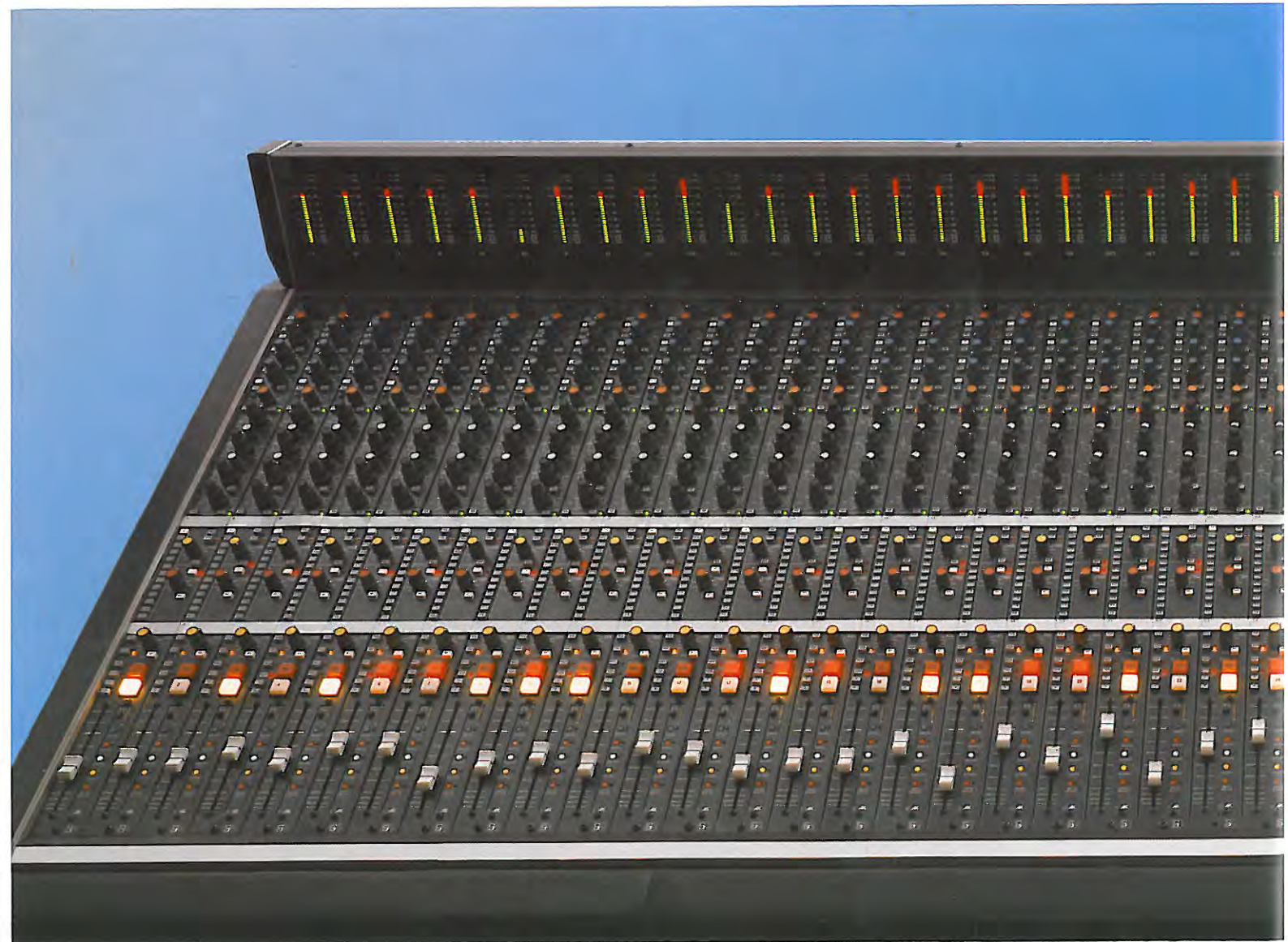
With this in mind we produced a design with the compactness and flexibility of an in-line configuration, but reflecting the ease of use of a "split" console.

We believe that in the TS24 we have succeeded!

To accomplish this we utilized the experience gained from many years of manufacturing high quality sound control desks and the constructive comments received from many of our existing clients.

Like all the best ideas, the TS24 concept is simple. Unlike any other "in-line" console, the two signal paths on a module do not change functions throughout the complete recording process. The signal path designated MIX is fed from either the group output or the tap return. Thus it is the monitor mix during track-laying, AND the final mix when going to mono or stereo. The path labelled CHANNEL always feeds the 24-track routing matrix, and its input may be a microphone, direct injection or line input.

Quite often with conventional "in-line" consoles, this section becomes largely unused during the mix-down stage. However, on the TS24 this path may also





# IN-LINE CONSOLE

be used as an extra input to the main stereo bus, or as an extra auxiliary send utilising otherwise redundant group buses.

The entire design philosophy behind the TS24 is keyed to this simple concept. Single push-button control for console configuration without sacrificing local control is provided. And these are true master resets, not master toggles, as found in some other consoles. Instant in-place "bounce-down", retaining level and stereo image, easy assignment of foldback mixes, and talkback which doesn't place the engineer on the echo-plate are just a few of the many features incorporated to make sessions run more smoothly.

Visual clarity is second only to a "split" console, with clearly defined sections for MIX and CHANNEL, each having its own separate scribble strip for instant identification of signals present.

Years of successful design have gone into the TS24, which embodies the quality and attention to detail that one would expect from a studio mixing console of this kind.

A special broadcast mode is included which completely reconfigures the console to suit a "live" broadcast situation, and yet at the touch of just one button, the console can be switched back to its normal state.

Drop-ins are easier on the TS24 since there is a special facility which allows both the performer and the engineer to hear the sound being recorded AND the respective track off the tape machine.

Various other specialist options and automation controls are already available, and, as you would expect from Soundcraft, research and development continues all the time.





# THE COMMMA

The Command Module, as the name suggests, incorporates all the master controls, including the master faders, the Communications section and the Oscillator.

The internal OSCILLATOR of the console is provided with frequency switching, level control, pad and on/off switch. Output from the Oscillator may be routed to the main mix outputs, the multitrack and aux sends via the 2T, 24T and CUE switches. Since PTCH routes the Oscillator to the Patchbay the signal may also be inserted into any point of the console for test or alignment purposes. When 2T is pressed the oscillator only goes to the 2T outputs, allowing the rest of the console to function normally. This means that the console does not become inoperative whilst a stereo machine is being lined up or a tone sent down a transmission line.

Additionally, the Oscillator output can be either sine or square wave or an asymmetrical pulse which is designed for the easy location of phasing errors.

Two stereo HEADPHONE circuits are available on the console, the source to each can be any combination of Auxiliary pairs for stereo sends, individual Auxiliary sends feeding both left and right or the Control Room Monitor mix. With these options available two different stereo headphone mixes can be set up for cue sends to the studio.

Six masters are provided to control the overall level of the auxiliary sends, each with its own AFL facility.

The comprehensive TALKBACK system available on the Soundcraft TS24 console facilitates communication between the Control Room and the Studio.

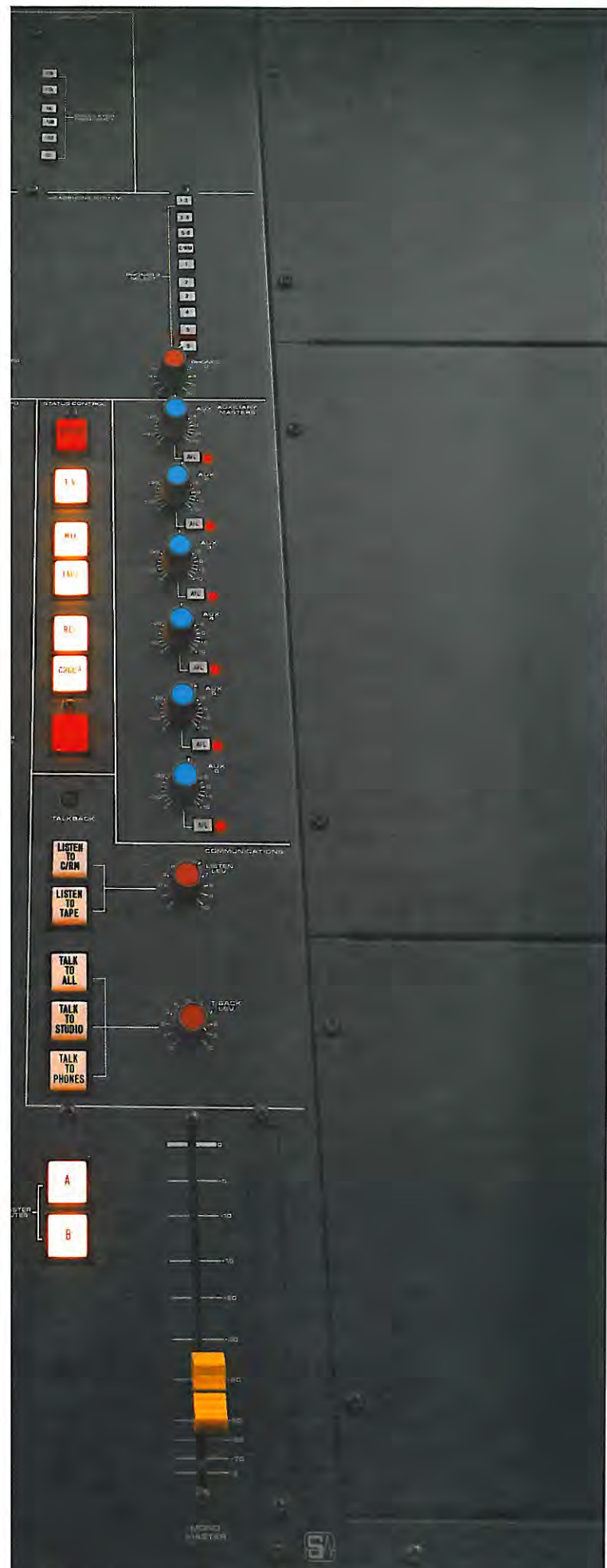
A Talkback microphone and amplifier, with variable gain control, is provided. The Talkback signal can be routed to the auxiliaries, the Headphone circuits and the Studio monitor speakers. There is also a jack socket available on the patchbay to enable the engineer to route the Talkback signal to any other sections of the Console.

The LISTEN microphone input, with a gain control, is provided, whose signal may be routed to the Control Room or to Tape by pressing the appropriate buttons. There is also a jack socket available on the patchbay should the signal need to be routed elsewhere. Sending the LISTEN mic to Tape, via the Group Outputs, allows floor counts etc to go directly to





# ND MODULE



tape. When routed to the control room, the button latches allowing easy two-way conversation with the studio.

Outputs are provided for three sets of monitor speakers, these would normally be the main Control Room monitors, an Alternative pair of speakers and Studio monitors, each of these outputs is provided with a variable gain control and CUT facilities.

The main Control Room monitors are provided with a DIM level control to allow the output to be attenuated, should the engineer require to check the low level balance, or receive that vital telephone call!

The MONO button sums the left and right outputs for a mono compatibility check, as well as being useful for checking phasing of a stereo signal. There is also a separate mono output controlled by its own fader.

The source for the monitors can be the main stereo mix, the separate mono output, or one of five external sources, (2-track A, B or C, Ext 1 or 2).

The MASTER MUTE controls are located between the two main faders, when A is pressed any modules with mute A selected will be cut, similarly for B. These can be very convenient when a number of signals need to be cut at the same time. On the TS24 the electronic muting allows a mute to be primed prior to when the CUT is to take place and you need only press one button when the CUT is to occur, eliminating the need for that extra pair of hands!

The Main STEREO and MONO FADERS are long throw, Penny and Giles, plastic conductive devices with 0dB at the top of their travel.

METERING for each module is provided by a 30 segment LED bargraph display. The characteristics may be either Peak or VU and are determined by a master switch located in the overbridge. The meter above each module always relates to the Mix path signal, unless Tape and Group has been selected, in which case the meter will monitor only the Group Output, even though you are listening to both tape and group.

Additional Bargraph meters are also provided to monitor the six auxiliary sends.

The main Mix outputs have both wide scale VU meters and LED bargraph meters for the left and right outputs and a Phase correlation meter to assist the engineer in checking the phase relationship of the recorded signal. Should a studio require PPMs instead of the standard VUs these are available as an option.



# THE INPUT/OU

The format of the TS24 I/O module has been specifically designed to give the engineer complete flexibility and control by virtue of its uncluttered lay out.

The Group and Line trims, located at the top of the module, are concentric controls allowing individual adjustments of the group outputs of the console and the returns to the input of the Mix path. The Group trim is part of an active gain control which virtually eliminates any potential overload problems.

Beneath the Group/Line trims is the channel input section which contains the input gain control and pad, phantom power switching, Mic/DI select and phase reverse.

The DI switches the input to receive a signal into a high impedance, 47kOhms, which is suitable for the direct injection from an instrument, or, when used in conjunction with the PAD, can accept a normal line level signal.

The Equaliser block, including the high pass filter, is normally available to the channel path in RECORD mode and the Mix path in MIX mode. This may be changed locally by pressing the FLIP button, when an LED indicates that the block is available to the CHANNEL path. This ensures that the engineer is aware of the console configuration at all times.

The HIGH PASS FILTER has a continuously variable turnover frequency between 50Hz and 800Hz, below which the signal is attenuated at a rate of 12dB/Octave and may be switched in or out independently of the equaliser using the FIL button, effectively removing any extraneous noises.

The HIGH FREQUENCY control has a shelving characteristic with a continuously variable turn over frequency of 1.2kHz to 20kHz, 15dB of boost or cut is available.

The HI MID frequency control has a peak/dip characteristic with a continuously variable turnover frequency of 600Hz to 10kHz, 15dB of boost or cut is available. The bandwidth (Q) of the filter may also be varied, with a range of "Q" from 0.4 to 2.5 giving precise control of individual sounds.

The LO MID control is identical to the Hi Mid except that the frequency is continuously variable between 75Hz and 1.2kHz.

The LOW FREQUENCY control has a choice of either a peak/dip or a shelving characteristic with a continuously variable turnover frequency of 20Hz to 320Hz, 15dB of boost or cut is available.

INS places the Insert patch point into the same path as the Equaliser. This point is post both the High Pass filter and the Equaliser but pre-fade.

Six Auxiliaries are available for use as foldback or Effects sends which may be fed from either the Mix path, or the Channel path by selecting CH. This useful facility allows the headphone mix to be derived from the individual inputs or the recorded signal, which may include external effects. The engineer may also choose whether the Auxiliary is derived from after the appropriate fader or before, by selecting PRE.

The signal in the channel path may be routed to any or all of the 24 groups or the stereo mix, panning left for odd numbered groups and right for even numbered groups. Selecting DIR routes the signal from only that channel to its corresponding output thus extending the number of outputs available on the console.

The CHANNEL FADER is a rotary control calibrated in dBs, with an additional 10dBs of gain available to cope with any variation of input signal level.

The signal in the channel path can be soloed onto monitors by pressing the PFL button.





# I/O MODULE

Since some engineers occasionally prefer to use the long throw faders for controlling mic levels Soundcraft have provided the facility to reverse the roles of the faders only. This is achieved by pressing the button marked REV. (Located below the Mix Pan Pot).

With the facilities available on the TS24 I/O module, track-laying and over-dubbing is an extremely straightforward and simple task.

The SRC button allows the source for the input to the mix path to be changed locally. Thus the input to individual modules can be either Group Output or Tape Return. An associated LED provides a visual reference so you always know exactly what you are monitoring.

In addition to individual selection of the input to the Mix path the T & G, (tape and group), facility provides a mix of both the Group Output and the Tape Return. This means that both the live sound and the existing track can be heard, thus assisting both the performer AND the operator to time the drop-in point. When the tape machine drops into record the output will normally revert to line input thus ensuring that any difference in level is minimal.

The bounce (BCE) function enables instant track bouncing to be performed. When BCE is selected output from the Mix fader and its associated Pan Pot are disconnected from the main Left and Right buses and sent to the routing matrix, overriding the Channel Input. Thus, a sub-mix may be balanced on the long throw Mix faders and can be transferred, including any Equalisation, to any group or selected pairs of Groups.

The MIX path signal may be sent to the CHANNEL path by pressing FDR. This overrides the normal channel input and enables unused Group outputs to be used as additional Auxiliary sends.

By pressing the associated PRE button the signal

is taken from before the Mix fader.

The Mix path SOLO is dependent on selection at the Command Module, which may be either Solo-In-Place, Pre-Fade Listen or After-Fade Listen.

If SIP, (solo-in-place), is selected the soloed signal will appear in its normal stereo position, with its associated Effects Returns, since all other mix paths, which do NOT have their SAFE button pressed, will be CUT. As this could be potentially dangerous during a Mix or Broadcast the SIP LED on the Command Module flashes and the solo button on the I/O module will illuminate, also this mode is disabled when RED LIGHT is selected.

When PFL or AFL is selected a mono feed will be heard on the Control Room Monitors without affecting the main outputs of the console. Of particular importance is that if a PFL on a CHANNEL path is pressed, any Solo-In-Place on the MIX path will be overridden. This enables the engineer to listen to a group of instruments through the group outputs, and then each one individually.

The electronic muting system is designed to allow the engineer to perform fast mutes without clicks. Mutes may be effected locally or pre-programmed; this is done by selecting either A or B on individual modules. If A has been selected then pressing Master Mute A on the Command Module will cut that Mix path, similarly for B.

The PEAK LED inspects both signal paths in the module at the following points:- Post channel input amplifier, Post tape/group amplifier, and Post Equaliser. Should any of these points exceed +15dBu, (6dB below clipping), the LED will illuminate, both positive and negative peaks are detected so that asymmetrical waveforms are correctly monitored. Even short duration transients will register since the PEAK LED circuits have a fast reaction time but slow decay.





# MASTER STATUS SWITCHING

The Master Status switches, located on the Command Module, automatically configure the whole console for a specific mode of working with the touch of just one button.

## STATUS

To prevent the accidental resetting of the console during a busy session the STATUS button must be pressed before MIX or RECORD can be selected. Having pressed the STATUS button the engineer has 8 seconds to select the appropriate mode of operation after which time the status of the console is locked and can only be changed by repeating the procedure.

## MIX

When the console is first powered up the initial status will be MIX and MASTER TAPE.

Selecting MIX mode automatically makes the equaliser, filter and insert point available to the Mix path on every module, regardless of any previous local changes. However, it does not place them in the signal path until the circuits are enabled locally, on a per module basis, by pressing EQ.

The long throw faders, previously your monitor faders now become your main faders for mix-down. Since a rough mix is already present precious time is saved and you are ensured a logical transition from recording to mix-down.

Of particular importance is that in this mode, all cut operations, including soloing, will CUT both pre and post fader sends ensuring that when a channel is cut any Effects will not appear on tape.

## RECORD

Selecting RECORD mode automatically makes the equaliser, filter and insert point available to the CHANNEL path on every module, regardless of any previous local changes. However, it does not place them in the signal path until the circuits are enabled locally, on a per module basis, by pressing EQ.

In this mode cut operations will only CUT post fader sends, allowing headphone mixes to be immune to cuts or in-place solos.

## MASTER TAPE

On selecting MASTER TAPE, the input to the Mix path on each module becomes Tape Return, regardless of previous status. This is automatically selected when MIX is pressed, although MASTER TAPE and MASTER GROUP may be changed at any time when RED LIGHT is not selected. (Local control of source for each MIX path is also available through the SRC button on each module.)

## MASTER GROUP

On selecting MASTER GROUP, the input to the Mix path on each module becomes GROUP OUTPUT, regardless of previous status. This is automatically selected when RECORD is pressed, although MASTER TAPE and MASTER GROUP may be changed at any time when RED LIGHT is not selected. (Local control of source for each MIX path is also available through the SRC button on each module.)

## RED LIGHT

The RED LIGHT is an electronically latching switch that has been incorporated as a further safety feature into the TS24 console. By pressing RED LIGHT an opto-isolated output is activated to illuminate the Studio's Red Light.

When RED LIGHT is selected the oscillator is disabled, ensuring that if the oscillator ON button is accidentally pressed no signal from the oscillator will go to tape. The Listen Mic to Tape facility is also disabled, and Talkback is prevented from appearing anywhere other than in the headphones, thus ensuring that a valuable take is not ruined through accidentally sending unwanted signals to tape.

RED LIGHT also locks the current console status, including Master Group and Master Tape.



# INTERFACE

## EASY INSTALLATION

The TS24 is easy to install and the interface to the studio can be tailored to suit individual needs. The console is normally supplied fitted with Molex connectors, located beneath the Patchbay, to carry lines to and from the studio.

Soundcraft can supply the console fitted with an XLR panel for 2-track returns, mix and auxiliary outputs and outputs to Monitor speakers. Also, interface to the studio can be via either Varelco or Tuchel connectors.

## POWER SUPPLY

The PSU is a 3U19" rack mounting unit providing the following regulated supplies  $\pm 17$  volt audio rails,  $\pm 24$  volt rail for the LED meters,  $\pm 7.5$  volt logic and +48 volt for phantom powering. The PSU is capable of operating on mains voltages within the range of 100-240 volts.

## PATCHBAY

The Patchbay installed on the Soundcraft TS24 greatly enhances the console's versatility and ease of use. Convenient, standardised connection points, using high quality Bantam jacks, are available for many sections of the console circuitry and to numerous pieces of peripheral equipment. This allows rapid insertion of external signal processing equipment into the system, by means of patchcords, and is also useful for faultfinding.

Each I/O Module has comprehensive studio patching, channel inserts, group inserts and access to tape machine sends and returns. Among the facilities available on the Command Module patchcard is access to stereo sends and returns, talkback, monitors, aux sends and the internal oscillator.

The Patchbay is clearly divided into sections relating to the Input/Output modules, the Command Module and numerous Tie-lines rescuing the engineer from that jungle of patchcords when a hasty re-patch is needed!

## CUSTOMISED LAY OUTS

The TS24 Console is available in frame sizes to accommodate 24,32,40,48 and 56 inputs and each frame may be supplied part filled. Module blanking panels are available in 1,2 and 4 module widths.

With all consoles the Command Module is located after the first 24 I/O modules with the Patchbay on the extreme right-hand side of the console.

The FRAME is constructed around a rugged aluminium extrusion with precision milled aluminium profiles and black hardwood end panels. Inside, an electroplated steel sub-chassis provides a high degree of mechanical stability and excellent electromagnetic screening. For extra reliability, hand wiring has been replaced with a rigid motherboard system and a well proven wiring system.

The TS24 looks as good as it sounds, with a smart, modern console design, raven-grey in colour. Rugged, hi-tech and stylish, appropriate for the most sophisticated of studios.

## SERVICING

Every console that leaves Soundcraft undergoes thorough testing at all stages of manufacture. In this way we try to ensure that any defects caused by faulty components show up long before the console reaches the customer, ensuring a long and trouble-free life.

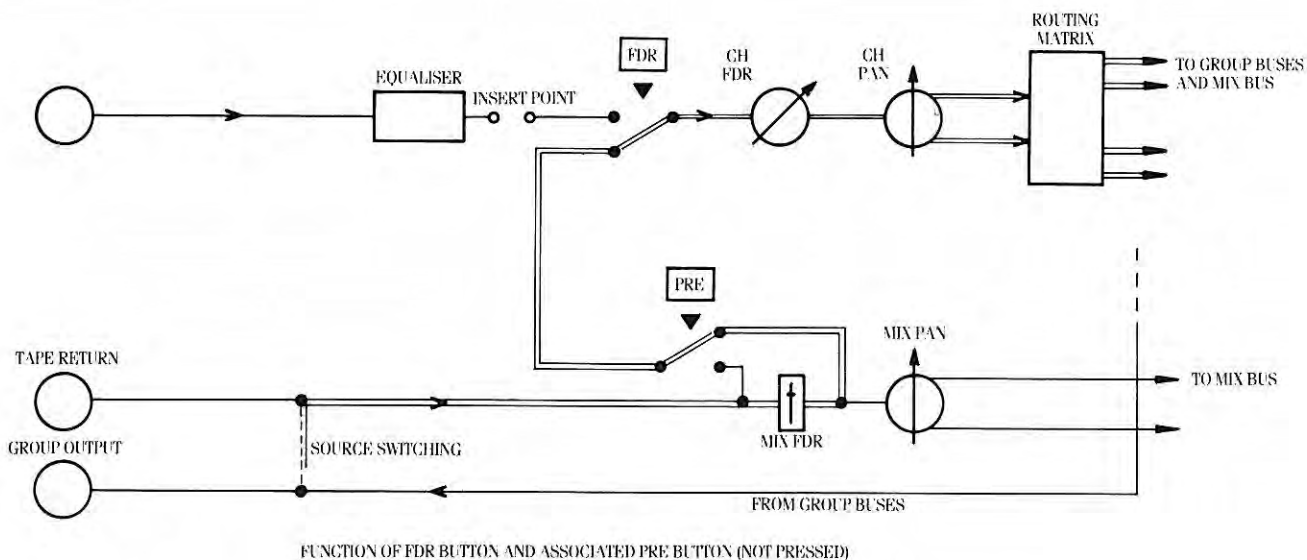
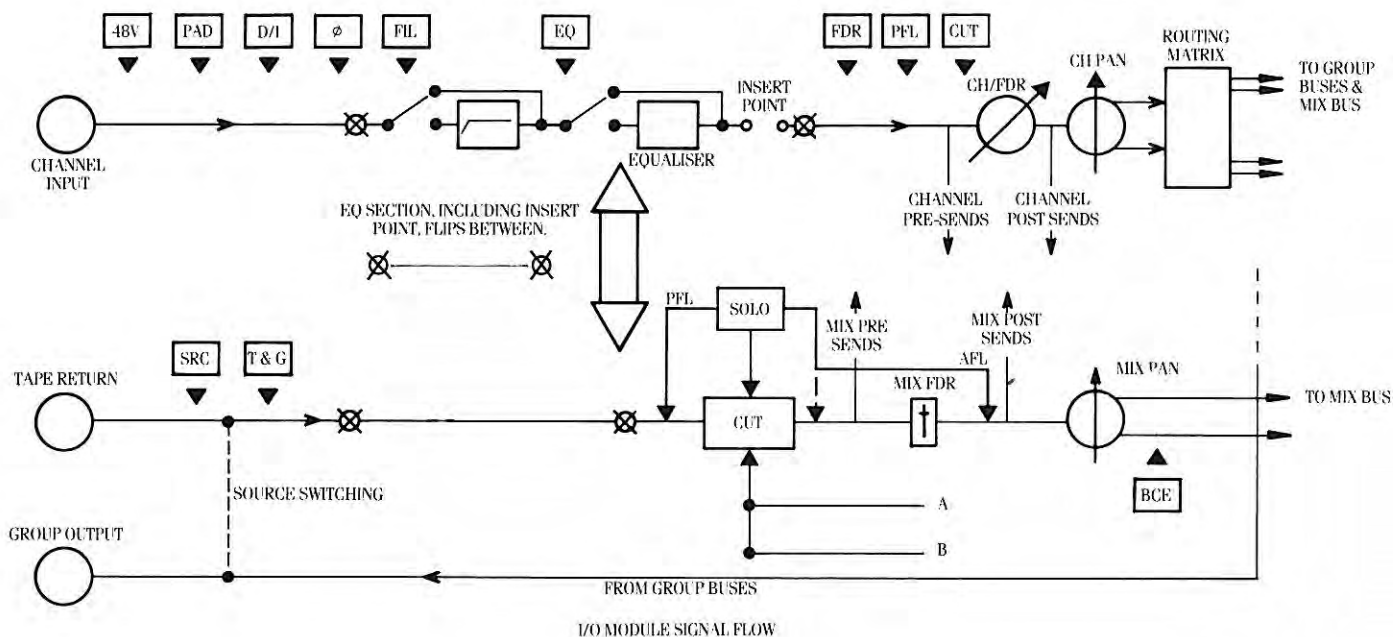
Each console is provided with a comprehensive operation and service manual, including relevant diagrams and technical descriptions.

All Soundcraft consoles are covered by a Warranty which is in addition to and does not affect statutory rights.

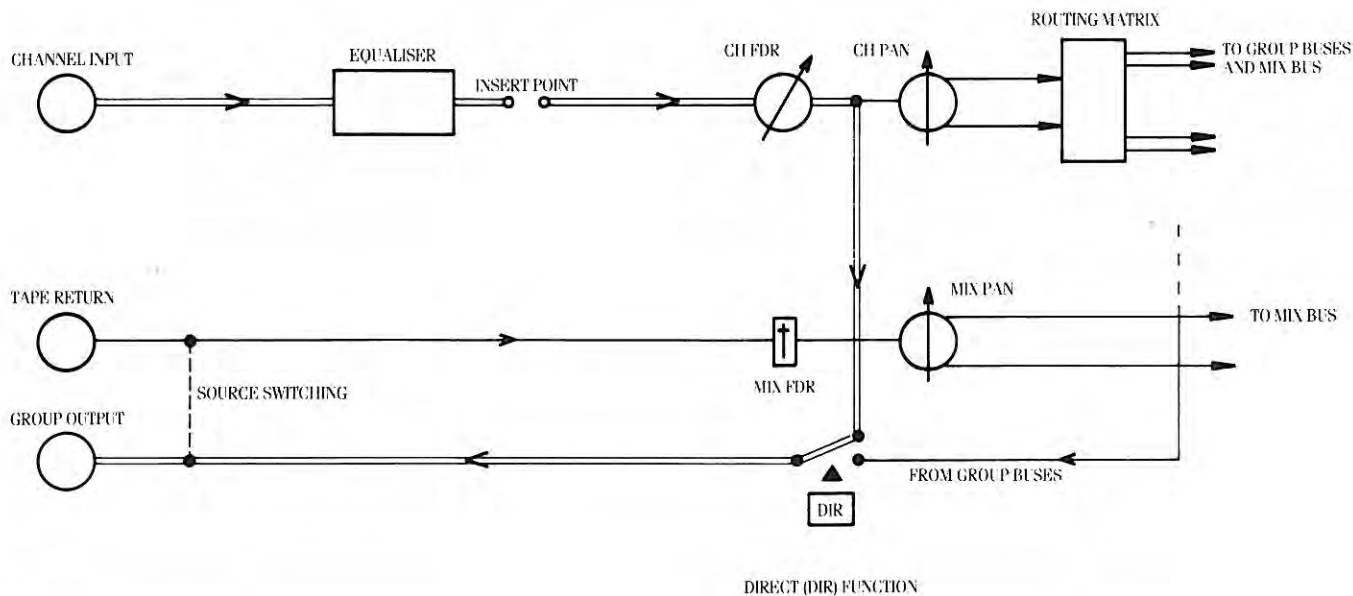
(This Warranty applies to sales within the UK and should form the basis of the Warranty offered by the overseas vendor of Soundcraft products.)



# SIGNAL FLOW



FUNCTION OF FDR BUTTON AND ASSOCIATED PRE BUTTON (NOT PRESSED)



DIRECT (DIR) FUNCTION



