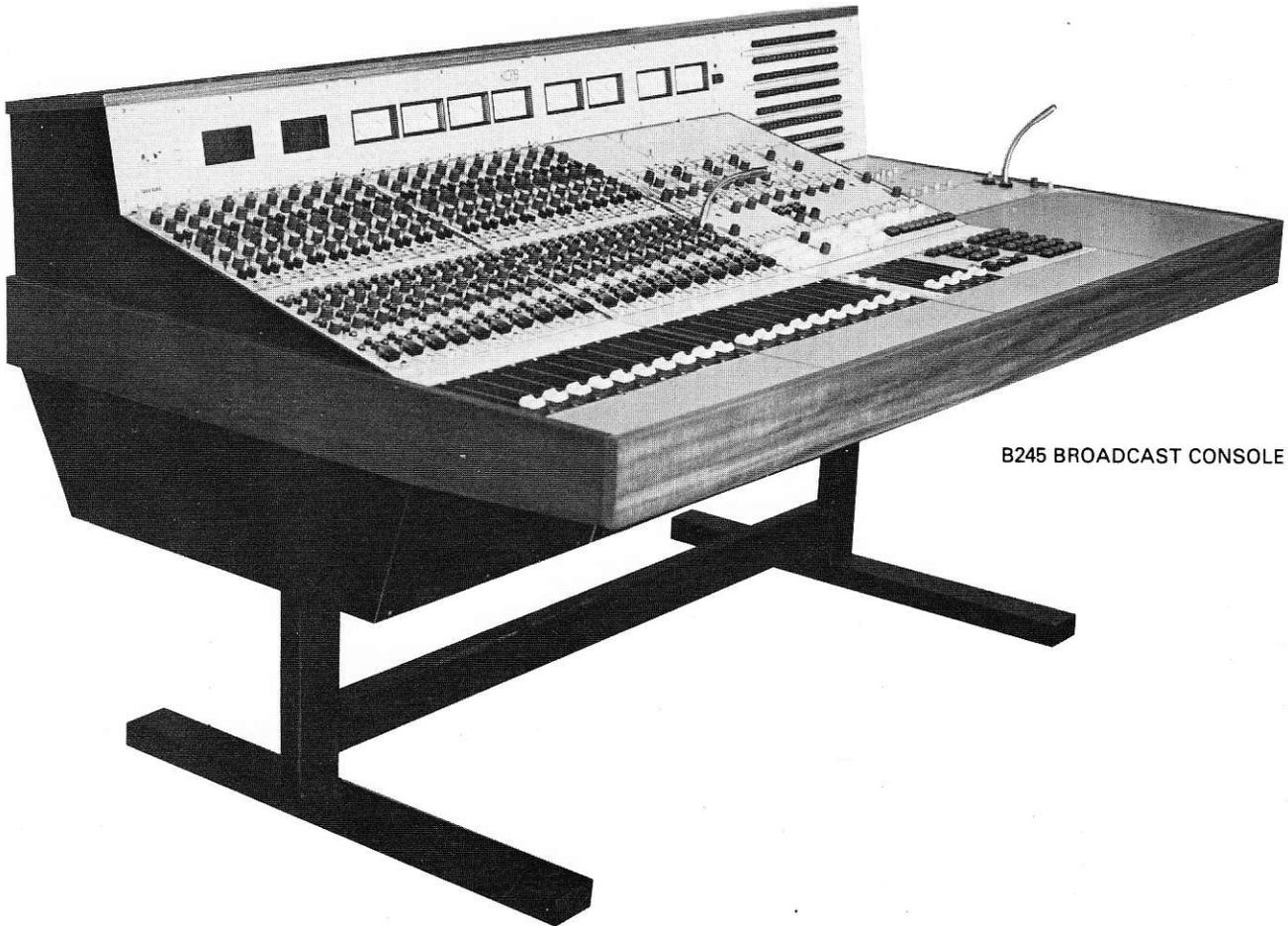


- AUDIO mixing -



# TWEED AUDIO



B245 BROADCAST CONSOLE

**Specialists in Audio Control  
Equipment for the Broadcast and  
Sound Recording Industries**

**TWEED AUDIO** specialise in the design and manufacture of professional audio control and distribution equipment for multi-track recording, broadcast and mobile application.

**TWEED AUDIO** offer quality, performance and reliability at a competitive price. Five years development has produced unprecedented all-round electronic circuitry which is not only reliable but very easy to service. The mechanical construction is very strong and a special detachable stand is provided with most consoles. All inputs and outputs are provided as balanced, on screw terminals on hinged back panels which are easily accessible. The XLRs are available as optional at extra cost. A comprehensive jackfield is a standard facility with all Tweed consoles.

**TWEED AUDIO** design and manufacture equipment to customer's specification if required. Alternatively a complete range of standard equipment is available as below: —

**A. PORTABLE**

**BC82** — A small portable console in flight case operating on 220/240v or 120v AC or on rechargeable batteries. This offers 8 input channels with equalisation, two auxiliary and stereo master outputs.

**12/2-4 Portable** — 12 Channels with a choice of 2 or 4 track configuration specially designed for mobile use being compact and rugged with wide range of facilities.

**M124** — This is a completely new design offering very comprehensive facilities. The standard design is available with 12 input channels (16 channels to special order) with 2 Foldback, 2 Echo Send and 4 group outputs. Solo/PFL/Cue outputs are also available. The routing unit offers most advanced and comprehensive switching system. All the channels can be operated remotely. All inputs and outputs are on XLRs fully balanced.

**B. MULTITRACK STUDIO CONSOLES**

A number of multitrack recording systems are available for customers looking for highest performance without gimmicks. The facilities provided are very comprehensive, meeting all the needs of modern multitrack studios. Following systems are available as standard configuration.

(i) **M16**

16 input channels with choice of two equalisers, 16 track output, 16 auxiliary outputs, PFL, and solo outputs. A comprehensive jackfield is standard facility. Monitoring on every channel with separate mix down system. The number of input channels can be expanded to 24 if required.

(ii) **M24**

24 input channels with choice of equalisers, 24 track output, 8 auxiliary outputs, PFL and Solo outputs. Monitoring on all channels with separate mix down system. The number of input channels can be expanded to 44 if required.

**C. BROADCAST CONSOLES**

The **TWEED B243/244/163/164** consoles have been specially designed to meet the requirements and specification of Radio programme production.

**B243/B244**

22 Channels are wired up for Stereo and mono operation on the above consoles. Any channel can be plugged into any position giving complete choice to the customer. **B243** console has a script space useful for On Air operation, with central facilities panel whereas **B244** offers a conventional mixer design with end table. Both consoles offer jackfield as standard facility. There is a choice of nine input modules, three for microphone input, three for mono line input and three for Stereo line input. Large illuminated switches are used for Start/Stop facility. The choice of fader start is available on all channels with separate switch. All channels can be operated remotely in any combination. Overload indicators are fitted on all channels as standard facility.

**B163/B164**

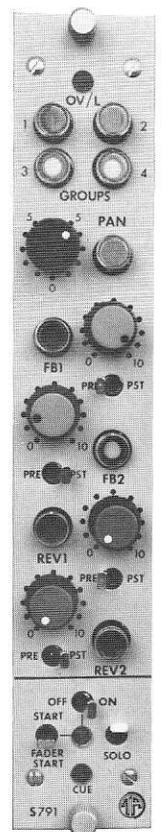
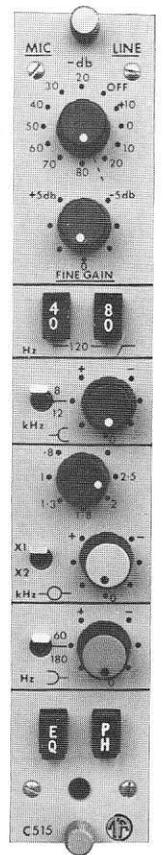
The above consoles have the same specifications as **B243/244** except that the number of input channels are limited to 14 instead of 22 and patch panel is not provided.  
smaller studio.

**B245/B165**

The above consoles offer very comprehensive facilities for production studio. There is a choice of two equalisers with microphone/Line input and a number of routing units are available to suit customer requirements. 24 input channels can be fitted in these frames with 4 track output and remix facilities. Ample space is available for ancillary modules and future expansion. Please note Stereo channels cannot be fitted in these frames.

A comprehensive range of ancillary modules are available for audio processing providing various functions. These include equalisers, compressor/limiters, Notch filters, Tele-Distort unit, Telephone Hook-up (Simplex). **TWEED AUDIO** also manufacture standard distribution amplifiers and special switching matrix designed to customer's requirements.

Due to such extensive range available it is not possible to produce one brochure which outlines all the systems. For detailed information on a particular system, contact **TWEED** office or your nearest distributor for latest price list and up to date literature.



The TWEED M124 console has been specially designed for the broadcast production as well as the small recording studios. In spite of the compact size, the quality, reliability and performance is typical of TWEED equipment, now well known all over the world.

# DESCRIPTION

## MECHANICAL CONSTRUCTION

The console frame is built with a special aluminium extrusion and end cheeks. A steel frame runs through the console which is bolted to detachable steel stand provided. All the panels are stove enamelled with silk finish. All the functions are clearly marked on the front panels. Special consideration has been given to the layout of controls on the modules as well as facility panel for ease of operation. Suitable plastic guide rails are provided for the module plug-in system. The captive screws on the modules provide positive locking of all modules.

## ELECTRONICS

All the electronics in the console is provided in plug-in modules and printed circuit boards. Most of the active amplifiers are also plug-in type within the modules. Five years development has produced unprecedented all round circuitry which is very reliable and easy to service. C/MOS switches are used for channel muting function. This enables the operator to have remote start/stop facility on all channels making the whole system very flexible. All the locking push button switches have built in indicators. Several functions are provided on illuminated switches for ease of operation.

## SUMMARY OF FACILITIES

- 12 Input channels with MIC/LINE Input using C507 or C515 Channel Amplifiers.
- 12 Routing Unit Type S790 or S791 offering 4 group output with pan facility, 2 Echo Send/Rev Send, 2 Foldback with choice of pre-fade or post fade signal, SOLO/PFL output from every channel, cue output from every channel. Start/Stop function with remote facility on all channels as well as choice of fader start with logic output for timer and machine start.
- 4 Master group outputs with remix facility.
- 1 Master Mono output with push button selection.
- 2 Master Echo Send/Rev output.
- 2 Master Foldback outputs.
- 2 Echo Return/Rev input selectable to 4 output groups with pan facility.
- 1 Cue Amplifier with console speaker.
- 1 Solo Amplifier switchable to cue amplifier as well as automatic operation to Left monitor and meter 3.

## METERING

Four VU meters are provided as standard although PPM's are available as optional extras. The meters 1 and 2 are selectable by locking push button switches on the facilities panel to console output or tape return. The meters 3 and 4 are selectable to group output 3 and 4, tape return 3 and 4 Echo Send/Rev 1 and 2, Foldback 1 and 2, Echo/Rev Return 1 and 2 and Mono.

## CONTROL ROOM MONITOR

A free selection matrix to mix the 4 outputs/tape returns to stereo monitor with level control is provided on the monitor selector. The stereo selector can also select two stereo tape returns Echo/Rev Send 1 and 2, Foldback 1 and 2, Echo/Rev return 1 and 2, Mono and Cue outputs.

## STUDIO MONITOR

A separate studio monitor is provided which follows control room monitor or monitors foldback outputs.

## TALKBACK

A comprehensive talkback system is provided with microphone amplifier and talkback microphone on the console. The talkback is switchable with illuminated switches to all group output, Foldbacks and two stations. The return talkback from two stations appear on Cue speaker when operator has selected the respective station.

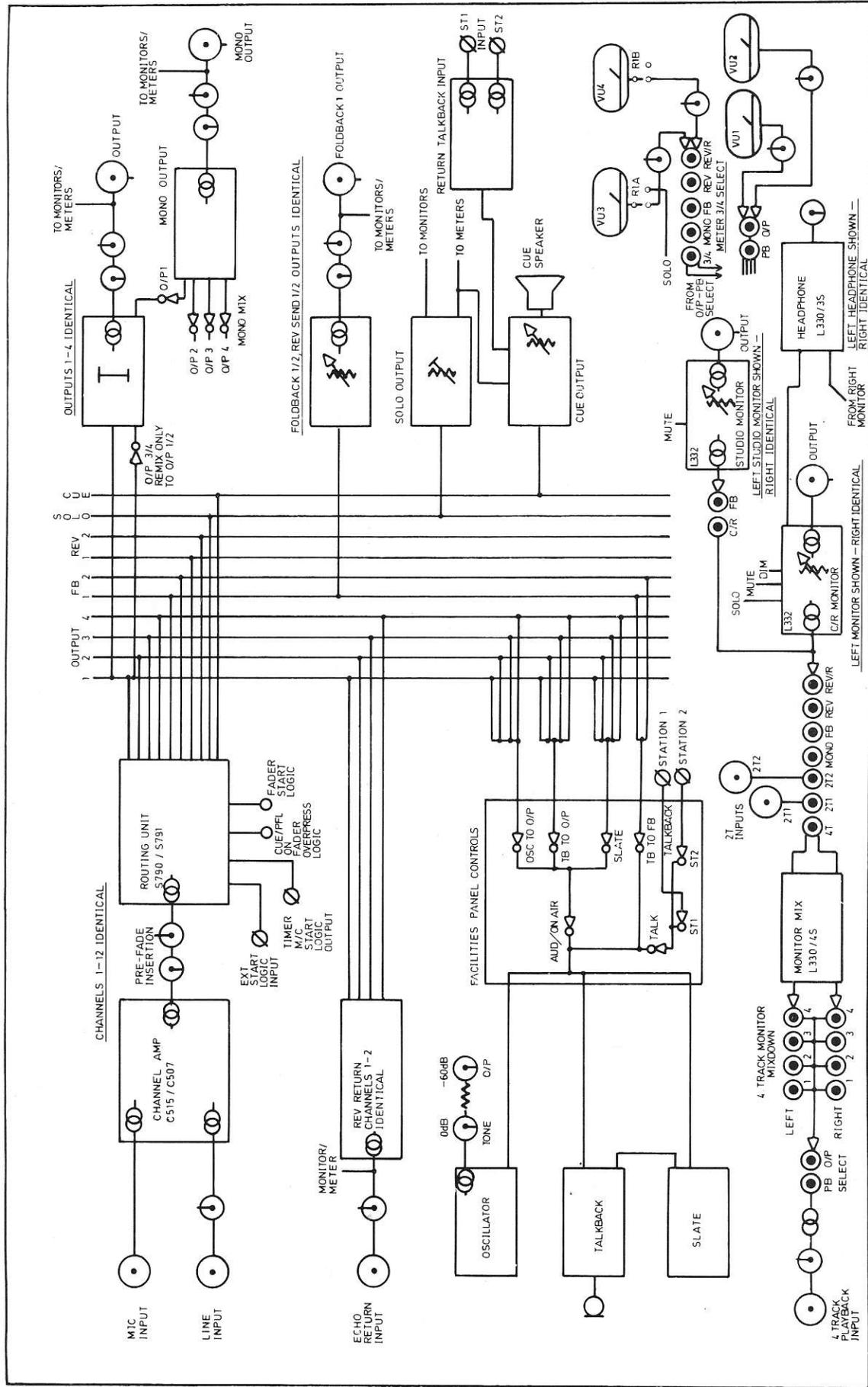
A comprehensive jackfield provides access to all inputs, outputs, pre-fade and post fade insertion points which are balanced at 0dBm level. This enables ancilliary modules such as Limiters, Compressors, Noise Gates, etc., to be used with any insertion points on the console.

A sine wave oscillator switchable to 9 frequencies from 30Hz to 15kHz is provided on the console. Slate facility is also available.

All the switches for Talkback, oscillator and slate are illuminated and placed on the facilities panel, with an Audition/On Air select switch muting talkback, oscillator and slate in On Air condition.

A comprehensive spares kit containing all active amplifiers together with extender lead and handbook is provided free of charge with every console.

SIZE	WIDTH 40" (1.016m)	HEIGHT WITH STAND 38½" (.978m)
	DEPTH 35" (.889m)	HEIGHT WITHOUT STAND 20" (.508m)



**M124**  
**FUNCTION DIAGRAM**

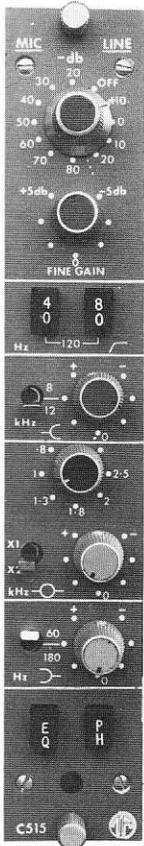
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# TWEED 12/2-4 PORTABLE MIXER



Specially designed as a compact and rugged portable, this versatile TWEED 12 Channel 2 or 4 group mixer is ideal for outside broadcast work or concert hall live recording as well as local radio installations and the small recording studios. All the modular features of the larger TWEED consoles are retained, together with comprehensive equalisation and facilities.

# 12/2-4 General Specification



The console has 12 full mixing input channels using the TWEED C515 Channel Amplifier with its original design integrated circuitry, each having the following facilities: —

- Balanced MIC Input with sensitivity switched in 10dBm steps from  $-80$  to  $-20$ dBm and  $-20$ dBm to  $+10$ dBm for balanced LINE Input.
- High Pass Filter with roll off frequencies at 40, 80 or 120Hz selected by push buttons.
- High Frequency cut and boost control with switchable roll over frequencies of 8kHz with up to  $\pm 15$ dBm control.
- Presence Control with fully variable frequency selection between 800Hz and 5kHz in two ranges with cut or boost variable up to  $\pm 15$ dB.
- Low Frequency cut or boost at 60 and 180Hz variable up to  $\pm 15$ dBm.
- Equalisation is selected by means of the EQ push button with LED indication with instant return to flat frequency response by deselection. An additional Phase push button enables instant reversal at the amplifier output.

Each channel has an associated Switching Unit with 2 or 4 output groups, according to model, selected by push buttons, plus switchable Pan selection between groups 1-2 and 3-4, 2 auxiliary outputs each with pre-post facility and separate level controls are also standard. The switching unit also contains the channel 'MUTE' button with indicator. Solo output is routed from each channel to Monitors.

Plastic conductive faders are fitted on all channels and Group outputs.

The console's comprehensive facilities include 2 AUX/Echo Return inputs, a TX/REHEARSE master control with safety interlocks on the Talkback and Slate system. Talkback MUTE and Line-up oscillator with seven switchable frequencies from 40Hz to 15kHz. The talkback microphone and loudspeaker are built into the console.

The monitoring system provides a comprehensive push button matrix for two monitor outputs enabling the engineer to monitor Group outputs, Playbacks or AUX inputs with individual level controls.

Metering is via 2 or 4 meters according to model for complete monitoring of all signal levels. In the 2 track version the meters are normally connected to the main outputs but meter 2 may be switched to the AUX inputs, outputs, or Playbacks 1 and 2. Alternatively the 2 track model may be equipped with a third optional meter to allow simultaneous monitoring of both Groups and AUX levels.

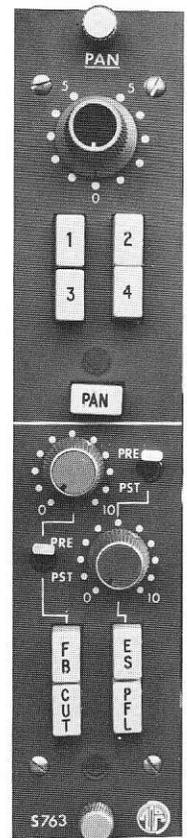
The output control is switchable to either Stereo or Mono on the two track version and has an additional 4T position on the 12/4.

The rear mounted jackfield contains balanced jackpoints for all inputs and outputs plus balanced insertions between the channel amplifiers and switching units.

A separate Regulated Power Supply Unit is provided for operation from AC Power 110/240v, 50-60Hz the DC output being connected to the desk by mating cable.

SIZE WIDTH 91 cms, 36 ins.  
DEPTH 72.3 cms, 28.5 ins.

WEIGHT 120 lbs., 54.4 Kg.  
HEIGHT 43.1 cms, 17 ins.



# BC82 PORTABLE MIXER



## GENERAL DESCRIPTION

This mixer has been specially designed for portable application where larger equipment cannot easily be used. The mixer offers the same reliable mechanical and electrical design you expect from Tweed. In spite of such a small size it offers versatile facilities one would only expect from larger units.

In line with other Tweed equipment all the electronics are manufactured in plug-in modules and most of the amplifiers are also plug-in type, making servicing simple.

The mixer is fitted in sturdy flight case with locks. The power supply and the batteries are fitted in the lid which is removeable. The chargeable batteries can easily be fitted by the customer. There is some room available for extra equipment to be carried such as microphone, etc.

## SPECIFICATION

### 1. Frequency Response

With equalisation control in neutral position, the overall response between any input and output is within  $\pm 1$ dB (20Hz to 20kHz referred to 1kHz).

### 2. Noise

The input noise of any microphone input at  $-80$ dBm sensitivity is better than  $-126$ dBm with reference to 600 ohm input. With one channel fader up at 0dB sensitivity the output noise shall be better than  $-80$ dB. All the figures taken within 20Hz to 20kHz band.

### 3. Distortion

The THD at  $+10$ dBm into 600 ohm output shall be better than 0.075% at 1kHz.

### 4. Maximum Output

With all outputs loaded 600 ohms a maximum of 20dB can be obtained before clipping.

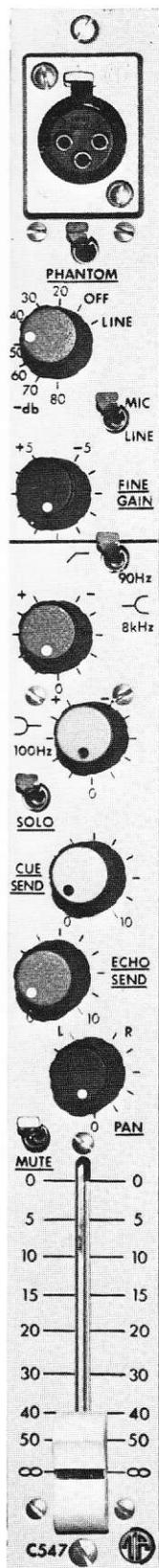
### 5. Crosstalk

The crosstalk between all outputs shall be better than  $-70$  at 1kHz.

### 6. Limiters are standard on BC82.

### 7. 8 channels fitted as standard—additional channel or customised module can be added at extra cost.

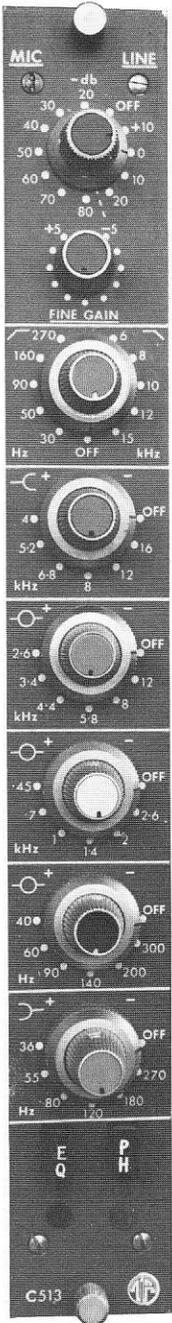
# General Specification BC82



1. **Input Channel**
  - (a) The balanced microphone input has variable sensitivity in 10dBm steps from  $-80$  to  $-20$ dBm. The input impedance being 1000 ohms. The line input is provided at 0dBm sensitivity balanced with input impedance of 10K ohms. Both MIC and Line inputs have fine gain control  $\pm 5$ dB on selected sensitivity.
  - (b) Phantom power is available on every channel switchable with toggle switch.
2. **EQUALISATION**
  - (a) High pass filter with roll over frequency of 90Hz selected by toggle switch.
  - (b) High frequency cut and boost at 8kHz with up to  $\pm 14$ dB control.
  - (c) Low frequency cut and boost at 100Hz with up to  $\pm 14$ dB control.
3. Solo output from the channel operated by toggle switch which appears on monitor left and right.
4. Echo send output is post fade signal with level control.
5. Cue send output is pre-fade signal with level control.
6. Two main outputs with pan facilities.
7. Mute switch can be used to switch the channel off.
8. A good quality horizontal fader with plastic conductive track manufactured by P & G (type 900) is fitted for long life.
9. **Echo Return**  
Two unbalanced echo return inputs are provided with level and pan control mixing into mains outputs.
10. **Playback**  
Two unbalanced playback inputs are available for selection on monitor left and right.
11. **Outputs**
  - (a) Stereo mains outputs with horizontal fader, balanced floating output impedance 75 ohm.
  - (b) Echo send output with rotary level control unbalanced.
  - (c) Cue send output with rotary level control unbalanced.
  - (d) Stereo monitor output with level control switchable between outputs and playback.
  - (e) Stereo headphone output on jack socket with individual level control.
12. The stabilised power supply is built into the lid along with battery box. The mixer has approximately six hours of life on fully charged batteries. If the mixer is operated on mains it will automatically charge the batteries. A small meter is fitted in battery compartment, to indicate the state of the batteries.
13. **Size**  
Height:  $6\frac{7}{8}$ " , 175 mm with lid closed.  
Height: 4" , 100 mm with lid removed.  
Length:  $19\frac{5}{8}$ " , 510 mm.  
Width: 14 inches, 356 mm.  
Weight: The total weight of BC82 without batteries is approx. 45 lbs or 21 kg.



# C513 CHANNEL AMPLIFIER



The C513 contains the most comprehensive equalisation in the current range of Tweed Audio Channel Amplifiers. The performance curves below show the impressive range of LF, MF and HF 'bell' frequencies, ranging from 40Hz to 12kHz with cut or boost up to  $\pm 15$ dB, a near graphic equaliser capability with true natural resonances being an important factor in the design philosophy. In the 'presence' area from 1.4 to 5.8 kHz the curves are designed into a closer group and the 2.6kHz frequency is duplicated on the MF and HF controls for greater flexibility. Together with the well chosen LF and HF shelving frequencies and the useful High Pass and Low Pass filters, this amplifier represents a unique design, capable of performance to exacting standards.

**INPUTS:** Separate earth free balanced inputs are selected by the sensitivity switch for MIC and LINE. The MIC input impedance is matched to 600 ohms with switched sensitivity in 10dB steps from  $-20$  to  $-80$ dBm. The LINE input impedance is 10Kohm bridging from a 600 ohm source, switchable from  $+10$  to  $-20$ dBm.

**FINE GAIN CONTROL:** Variable  $\pm 5$ dB fine gain control is available on MIC as well as LINE input.

**FACILITIES:** In addition to the EQ selection push button with LED INDICATOR the C513 includes a phase button with LED INDICATOR to provide instant phase reversal of the output if required.

**EQUALISATION:** Comprehensive equalisation is available as standard using dual concentric controls, the outer knob controlling frequency selection and the inner potentiometer control selecting variable cut or boost. Selection of EQ is by push button with warning LED. De-selection allows immediate reversion to flat response without the need to adjust the rotary controls.

Five separate dual concentric controls are available for HF and LF shelving and LF, MF and HF 'bell' peaking as follows:—

HF shelving at 4, 5.2, 6.8, 9, 12 and 16kHz with variable cut or boost control up to  $\pm 15$ dB.

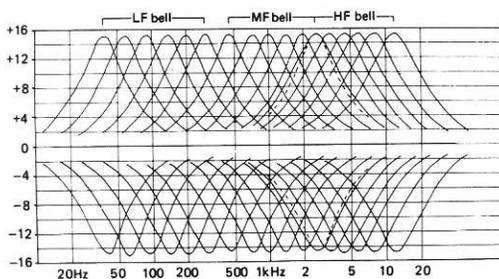
HF Bell peaking at 2.6, 3.4, 4.4, 5.8, 8 and 12kHz with variable cut or boost up to  $\pm 15$ dB. Max slope approx 9dB/octave.

MF Bell peaking at 450 and 750 Hz, 1, 1.4, 2 and 2.6kHz with variable cut or boost up to  $\pm 15$ dB Max slope approx 11dB/octave.

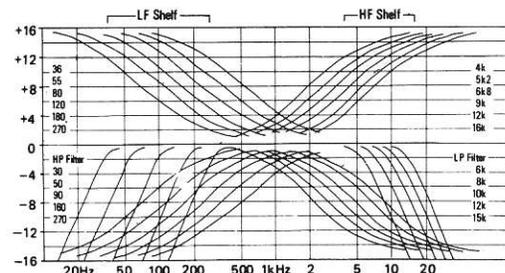
LF Bell peaking at 40, 60, 90, 140, 200 and 300 Hz with variable cut or boost up to  $\pm 15$ dB. Max slope approx 13dB/octave.

LF Shelving at 36, 55, 80, 120, 180 and 270 Hz with variable cut or boost up to  $\pm 15$ dB.

In addition a sixth dual concentric control selects High Pass and Low Pass Filter frequencies being 30, 50, 90, 160 and 270 Hz (HPF) and 6, 8, 10, 12 and 15kHz (LPF) with slopes of 12dB/octave.

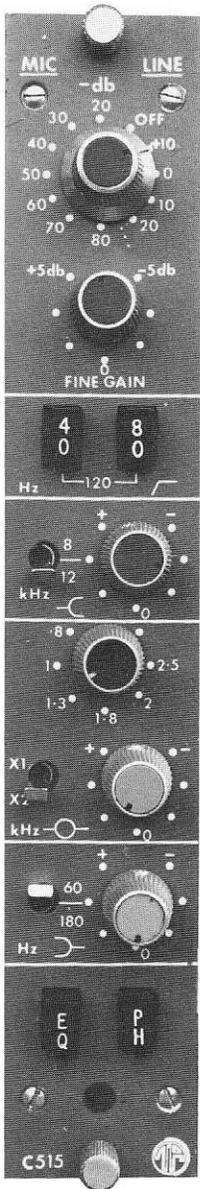


LF, MF AND HF Bell Curves



Shelf and Filter Curves

# C515 CHANNEL AMPLIFIER



The versatile C515 represents a new approach in channel amplifier design, featuring a fully variable presence frequency control, in addition to the normal range of equalisation and filters.

Continuous presence frequency selection from 800Hz to 5kHz is achieved by a rotary control in combination with a x1/x2 switch, with a third control giving variable cut or boost of the selected frequency up to  $\pm 15$ dB.

The high and low frequency controls feature switched shelving points with fully variable cut or boost and together with the useful three-frequency High Pass Filter this amplifier is capable of performance to the highest professional standards.

**INPUTS.** Balanced MIC input sensitivity switched in 10dBm steps from  $-80$  to  $-20$ dBm, matched to 600 ohms impedance. LINE input impedance is 10Kohm bridging from a 600 ohm source switchable from  $-20$  to  $+10$ dBm.

**High Pass Filter.** Switchable from 40, 80 or 120Hz with roll off at 12dB/Octave.

**HF Control.** Switchable roll over frequencies of either 8kHz or 12kHz with cut or boost variable up to  $\pm 15$ dB.

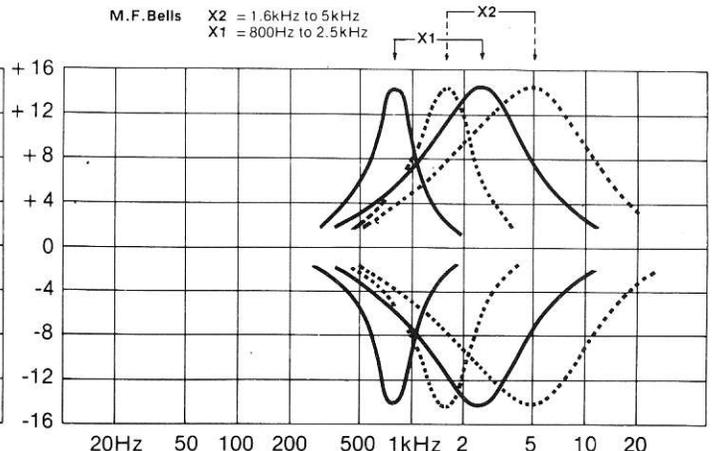
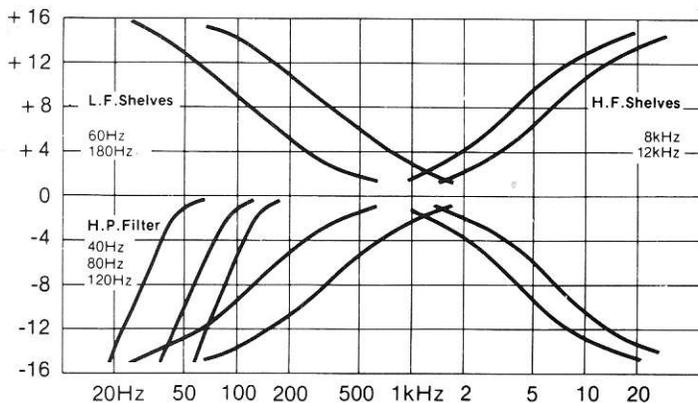
**Presence Control.** Fully variable frequency selection between 800Hz and 5kHz in two ranges controlled by a x1/x2 switch with cut or boost variable up to  $\pm 15$ dB.

**LF Control.** Switchable roll over frequencies of either 60 or 180Hz with cut or boost variable up to  $\pm 15$ dB.

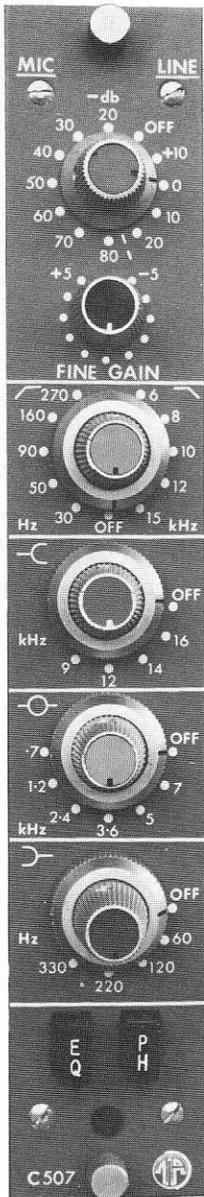
**Equalisation.** Selection of EQ is by push button with warning LED. De-selection allows immediate reversion to flat response without the need to adjust rotary control or switches.

**Facilities.** In addition to the EQ selection push button with LED indicator the C515 includes a phase button to provide instant phase reversal of the output if required.

**Fine Gain Control.** Variable  $\pm 5$ dB fine gain control is available on MIC as well as LINE input.



# C507 CHANNEL AMPLIFIER



**INPUTS.** Separate earth free balanced inputs are selected by the sensitivity switch for MIC or LINE. MIC input impedance matched to 600 ohms with switched sensitivity steps of 10dB from -20 to -80 dBm. LINE input 10Kohm bridging from 600 ohms source with switched sensitivity from +10 to -20dBm.

**FINE GAIN CONTROL:** Variable  $\pm 5$ dB fine gain control is available on MIC, as well as LINE INPUT:

**EQUALISATION:** Comprehensive equalisation is available as standard using dual concentric controls, the outer knobs controlling frequency selection and the inner potentiometer control selecting variable cut or boost. Selection of "EQ" is by push button, with warning LED, and de-selection allows immediate reversion to flat response without the need to adjust the rotary controls.

**H.F. Control.** Shelving frequencies of 9, 12, 14 or 16kHz may be selected with variable boost or cut up to  $\pm 15$ dB.

**M.F. Control.** 6 'presence' frequencies may be selected between 700Hz and 7kHz, with cut or boost available at these frequencies up to  $\pm 18$ dB.

**L.F. Control.** Shelving frequencies of 60, 120, 220 or 330 Hz may be selected with cut or boost up to  $\pm 15$ dB.

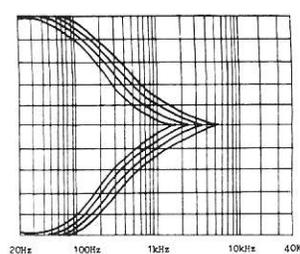
**FILTERS.** High Pass Filters (HPF) and Low Pass Filters (LPF) are provided within one dual concentric control.

**HPF.** Frequencies switchable to 30, 50, 90, 160 or 270Hz with attenuation at 12dB/octave.

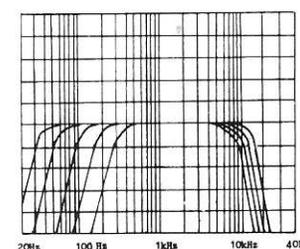
**LPF.** Frequencies may be selected in 3kHz steps from 6 to 15kHz with attenuation at 12dB/octave.

A PHASE push button is provided to give instant phase reversal if required.

**Low Frequency Shelf**  
Boost and cut continuously variable up to 15dB.  
Frequency 60, 120, 220 and 330Hz.



**High Pass Filter**  
Frequency 15, 12, 10, 8, 6K.

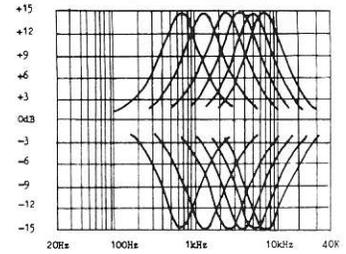


**Low Pass Filter**  
Frequency 30, 50, 90, 160, 270Hz.

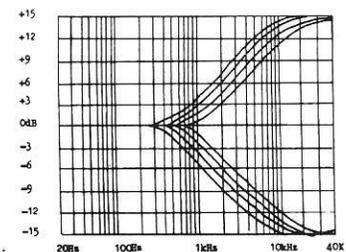
## C507 EQUALISER Frequency Response Curves

### Presence Control

Boost or cut continuously variable.  
Frequency: 700Hz, 1.2K, 2.4K, 3.6K, 5K, and 7K.



**High Frequency Shelf**  
Boost or cut continuously variable.  
Frequency: 16K, 14K, 12K, and 9K.



# CL603 HIGH SPEED LIMITER



This limiter is designed primarily to protect subsequent equipment against overload. To achieve this, very fast attack times and a high control ratio are essential. For dynamic range control and a general gain riding duties, slower attack times are more appropriate and a wide range of release times are useful. Advanced circuit techniques are used in this new limiter which operates well inside its system capability to provide the required performance.

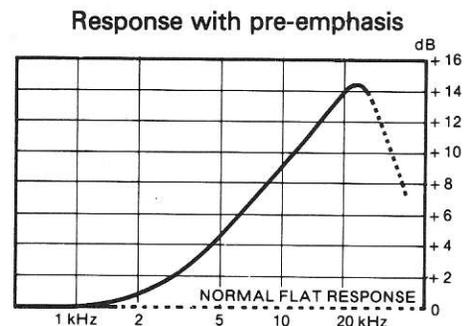
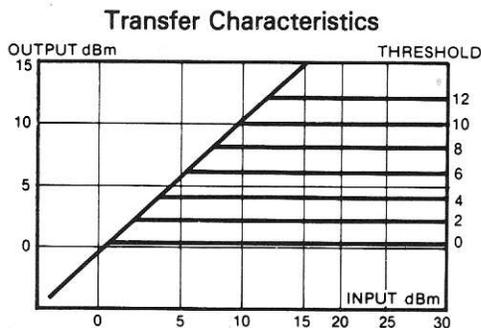
As with any limiter the controlled attenuator is one of the key elements. This design employs a full bridge modulator whose output is directly coupled to a low noise make up amplifier. The modulator is driven by a complimentary pair of precision current mirrors arranged to accept a single common control signal in voltage rather than current form. The combination provides a type of Voltage Controlled Attenuator entirely free of presets and well suited to limiter application.

The side chain design is quite different from that of the compressor and employs a fast full wave peak responding rectifier system feeding a threshold gate whose output simply states whether or not control action is needed. This information drives a pulse amplifier which can charge the main timing "tank" very rapidly. Release timing is fairly conventional and the tank voltage suitably buffered, controls the mirrors, drives the meter and switches the LED. Ample gain within the closed loop provides the very high control ratio and the very short loop propagation delays allow all three attack times to be determined by charge rate buffers.

This new limiter system is the result of considerable development work and achieves 'state of the art' performance without an excess of complexity. It can provide complete peak level control for any programme material in the audio band and a side chain pre-emphasis option is available to match FM transmission characteristics if required. Attack timing is rate controlled and this, when combined with the automatic dual release time makes the instrument highly suitable for unattended operation. For studio use a wide range of release times are available and limiters may be ganged for stereo working. Two CL603 are available in 19" rack complete with power unit for stereo operation.

## GENERAL SPECIFICATION FOR CL603

<b>ATTACK</b>	20us, 200us or 2ms (3 position switch).	<b>METER</b>	Three position meter switch selectable to input/output level and 14dB of control.
<b>RECOVERY</b>	Variable from 70ms to 2 seconds or automatic self adjusting 70ms/5 sec.	<b>NOISE</b>	78dB measured within 20Hz to 20kHz band.
<b>THRESHOLD</b>	0, 2, 4, 6, 8, 10, or 12 dB above reference level.	<b>DISTORTION</b>	The THD at +20 dBm limiting into 600 oHm load is better than 0.3% - residual distortion is typically 0.05%.
<b>RATIO</b>	Greater than 100:1.	<b>MAXIMUM OUTPUT</b>	+24 dBm into 600 oHm load.
<b>INDICATOR</b>	Red LED on during gain reduction.		
<b>FREQUENCY RESPONSE</b>	$\pm 0.5$ dB 20Hz to 20kHz referred to 1kHz.		



# CL604 STUDIO COMPRESSOR



The circuit techniques used are the result of many years involvement in Audio processing. The low noise, low distortion and smooth performance curves are all made possible by a custom built attenuator.

The controls of the modules are self explanatory and permit the operation over a wide range of programme type levels. The attack time measures around 5ms by C.C.I.T.T. method but in practice is self adjusting. The release time is variable over a range of some 30:1 providing syllabic compression of speech at the fast end and maintaining music phrasing at slow. Most programmes will sound comfortable in the middle ranges. A fully automatic composite release is also available providing rapid recovery from isolated peaks and very gradual release after prolonged high levels — this is particularly useful when using the unit to ride gain in one of the higher ratio settings.

Modules may be linked to track for Stereo (or Quad) by providing externally a switch from each units tandem point to a common link-wire. Any compressors so linked should be operated in the same ratio setting unless the facility is being used for voice-over or ducking.

This Compressor is intended primarily for studio use and is compatible with equipment of the highest quality. It may also be employed to maintain high average modulation levels on broadcast transmission.

Two CL604 modules together with power supply are available in 19 inch rack for stereo operation.

## SPECIFICATION

INPUT 0dBm 10K Balanced and floating.

Gain Variable 0 to 10dBm for make-up.

MAXIMUM OUTPUT +24 dBm into 600 ohms.

NOISE —87 dBm or better at 0dBm gain.

DISTORTION Typically less than 0.03% residual and 0.01% operating.

RATIOS 1.5, 2, 3, 4, 6, 9, and limit (20:1).

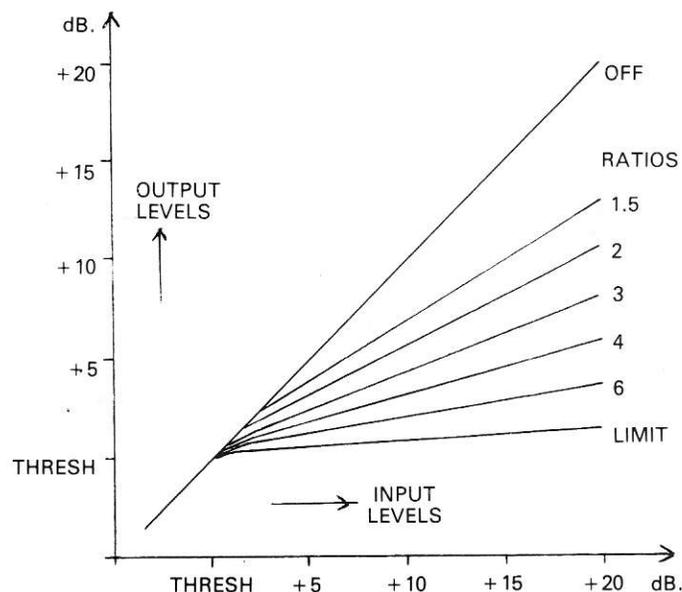
THRESHOLD —20 to +10 dBm by 5 dBm steps.

ATTACK 5ms (C.C.I.T.T.) Self adjusting on programmes.

RELEASE Variable from 100ms to 3 secs or automatic SELF ADJUSTING:

METER Switched to read input/output and reduction.

INDICATOR Red LED on during any gain reduction:  
Power supply  $\pm 15v$  rails 15 — 30mA.



Typical performance curves.

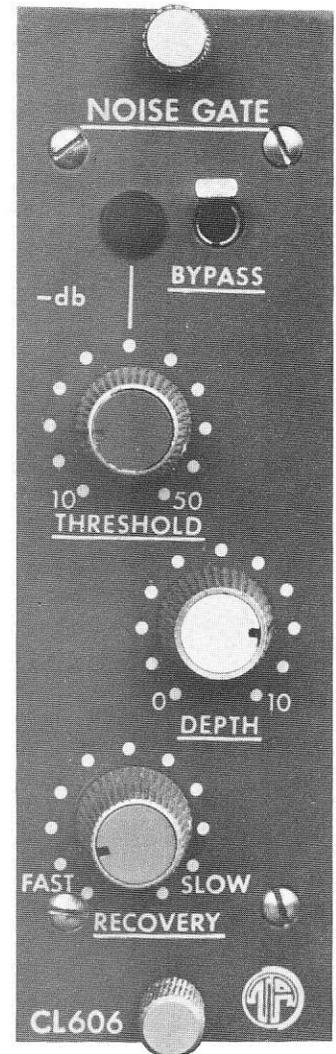
# CL606 NOISE GATE

The noise gate has been specially developed to overcome noise problems associated with tape recording machines. The threshold is adjustable between  $-10\text{dBm}$  to  $-50\text{dBm}$ . As soon as the audio levels fall below the selected threshold the noise gate comes into operation and reduces the noise level. The noise level reduction depends on the setting of depth control which is variable from  $-3\text{dB}$  to  $-80\text{dB}$ . A very fast attack time of  $50\mu\text{s}$  is achieved with special technique. The recovery is variable from  $70\text{ms}$  to  $3\text{s}$  and is continuously variable. The noise gate can be wired in permanently or can be plugged in on the patch panel in the mixing console. The By-pass switch routes the signal to the output avoiding the noise gate side chain. During the noise reduction the LED is illuminated. The CL606 has electronically balanced input and transformer balanced output.

Although the unit was originally designed to fit our mixing consoles a number of these can be fitted in standard 19" rack with power unit.

## SPECIFICATION

- Input Impedance 20k ohm electronically balanced.
- Output Impedance 75 ohm transformer coupled for 600 ohm loading.
- Frequency Response  $\pm\text{dB}$  for 20Hz to 20kHz referred to 0dBm at 1kHz.
- Noise  $-84\text{dB}$  (20Hz to 20kHz).
- Maximum Output  $+24\text{dBm}$ .
- THD  $-.075\%$  at 1kHz at  $+10\text{dBm}$ .
- Power required 40mA  $\pm$  15 volt supply.



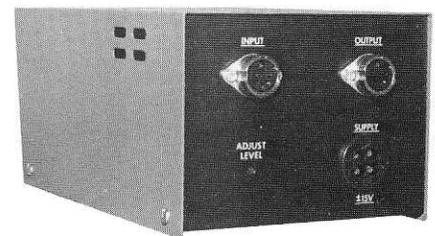
## SPH - 2B - STEREO PHONOGRAPH PREAMPLIFIER

This preamplifier has been designed to meet the specifications required by the Broadcasters. The low noise and distortion level together with excellent overload margin make this amplifier an outstanding design. The preamplifier will track the theoretical RIAA curve within  $\pm .5\text{dB}$ .

There is variable preset gain control on the front panel to adjust the sensitivity from 1-6mv. The signal inputs and outputs are provided on separate shielded sockets. A separate socket is provided for power supply. An external power supply at  $\pm 15\text{v}$  (35mA) is required to operate the preamplifier. The output level is 0dBm (.778 V) balanced floating earth free.

## SPECIFICATIONS:

- |                           |  |
|---------------------------|--|
| Sensitivity               | Variable from 1 mv to 6 mv.  |
| Frequency Response        | Follows RIAA curve within $\pm .5\text{dB}$ from 30Hz to 20kHz.  |
| Maximum Output            | $+24\text{dBm}$ (clipping level).  |
| Noise                     | With input loaded the noise is better than $115\text{dB}$ (relative to sensitivity selected) in the band width 20Hz to 20 kHz. |
| Cross Talk                | Better than $55\text{dB}$ .  |
| Total Harmonic Distortion | Better than $.075\%$ at $+20\text{dBm}$ .  |
| Power Supply Requirements | $\pm 15\text{volts}$ at 35 mA (external unit required).  |



# 6—2T DISTRIBUTION AMPLIFIER

This distribution amplifier has been designed to meet growing demands from Radio and Television Stations to distribute the signal to 6 separate sources. The input is electronically balanced but the outputs are balanced with transformers providing earth free signal. The unit provides facility for two independent inputs and 6 outputs for each input. All inputs and outputs are terminated on X.L.R.s. The whole system is supplied in 19" rack 5¼ inches high to international standard. The power supply is suitable for operation from 100/240 volt AC.

All the electronics are manufactured in plug-in modules which can easily be removed for servicing.

## SPECIFICATION

1. INPUT IMPEDANCE 10K ohm balanced.
2. OUTPUT IMPEDANCE 75 ohm for 600 ohm load (Balanced and floating).
3. FREQUENCY RESPONSE 20Hz to 20kHz  $\pm$  1dB with reference to 0dBm at 1kHz.
4. MAXIMUM OUTPUT +24dBm before clipping.
5. NOISE measured with 20Hz to 20kHz band filter better than -80dB.
6. CROSSTALK Between outputs related to separate inputs better than -70dB at 1kHz.
7. THD The total harmonic distortion at 1kHz is better than .075% at +8dBm output.
8. NORMAL INPUT level 0dBm (.778 volt).
9. OUTPUT LEVEL adjustable from 0dBm to +20dBm.
10. THE power supply  $\pm$ 15 volt self protecting.

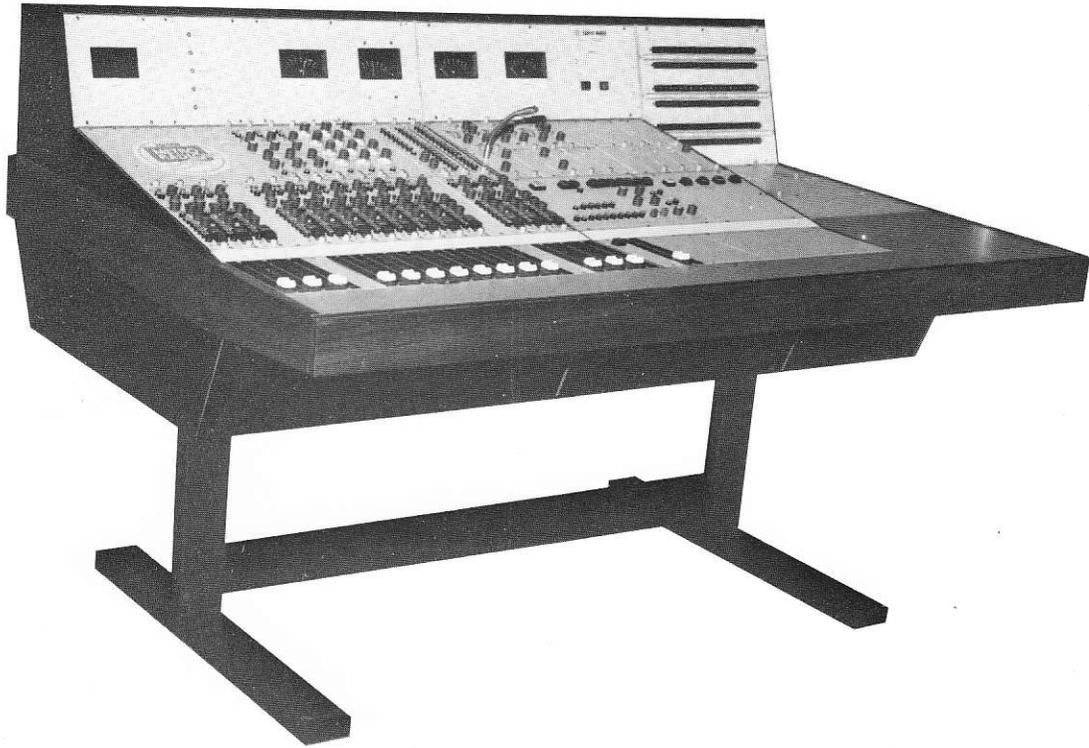
# DISTRIBUTION AMPLIFIER 10—4EB

This distribution amplifier has been designed to meet the growing demand to distribute the signal to 10 separate sources such as Studios, Tape recorders, etc., The input and outputs are electronically balanced and the unit provides facility for 4 independent inputs and 40 outputs. All inputs and outputs are terminated on terminal strips for quick and easy wiring.

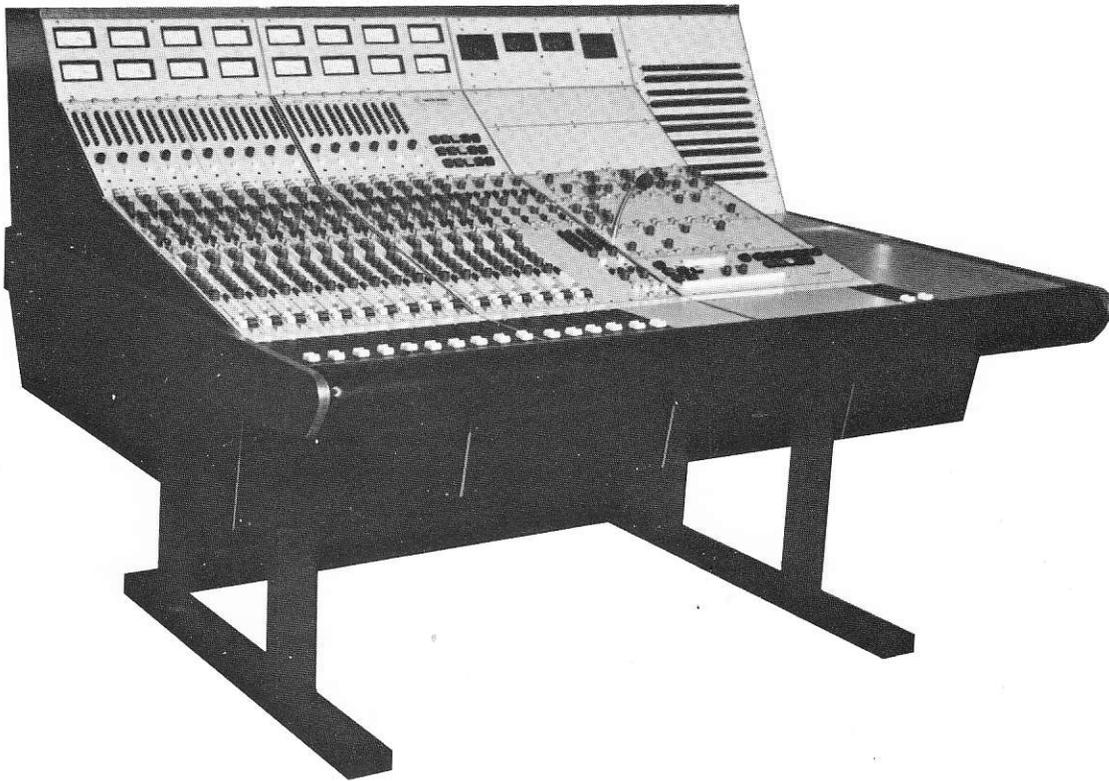
The whole system is supplied in standard 19" rack 5¼ inches high to international standard. The power supply is suitable for operation from 100 volt/240 volt AC. All electronics are manufactured in plug in modules which can easily be removed for servicing.

## SPECIFICATION

1. INPUT IMPEDANCE 10K ohm balanced.
2. OUTPUT IMPEDANCE 600 ohm balanced (Electronic).
3. FREQUENCY RESPONSE 20Hz to 20kHz  $\pm$  1dB with reference to 0dB at 1kHz.
4. MAXIMUM OUTPUT + 20dBm before clipping.
5. NOISE measured with 20Hz to 20kHz band filter better than -80dBm.
6. CROSSTALK Between outputs related to separate inputs better than -70dB at 1kHz.
7. THD The total harmonic distortion at 1kHz is better than .1% at 20 ohm. output.
8. NORMAL INPUT LEVEL 0dBm (.778 volt).
9. OUTPUT LEVEL adjustable from 0dBm to +20dBm.
10. THE power supply  $\pm$  15 volt self protecting.



*B.164 Stereo Broadcast Console*



*16 Track custom designed console for Tyne Tees Television.*



*Radio Birmingham*



*Yorkshire TV*

# GENERAL SPECIFICATION

## 1. Microphone Unit

Input Impedance	1000 ohm balanced floating.
Sensitivity	Variable in 10dBm steps from -80dB to -20dBm plus fine grain control variable $\pm 5$ dBm.
Headroom	24dB for all sensitivity positions.

## 2. Line Input

(Mono or Stereo)

Input Impedance	24,000 ohm electronically balanced or option 10,000 ohm balanced and floating (transformer).
Sensitivity	-20 dBm to 10dBm in 10dB steps plus fine grain control variable $\pm 5$ dBm.
Headroom	24 dBm for all sensitivity positions.

## 3. All Outputs

Output Impedance	75 ohm balanced.
Load Impedance	600 ohm balanced.
Out Level	0dBm nominal + 20dBm maximum.

## 4. Maximum Output

(Clipping Level) +24dBm.

## 5. Frequency Response

$\pm 1$ dBm to 20kHz.

## 5. Frequency Response

$\pm 1$ dB 20Hz to 20kHz.

## 6. Noise

Microphone Output	With input terminated with 600 ohm load better than -126dB. (20Hz to 20kHz bandwidth).
Line Input	Better than -80dB signal to noise rates - (20Hz to 20kHz bandwidth).

## 7. Total Harmonic Distortion

Less than .075% at 1 kHz.  
.25% at 15kHz.  
output level + 10dBm.

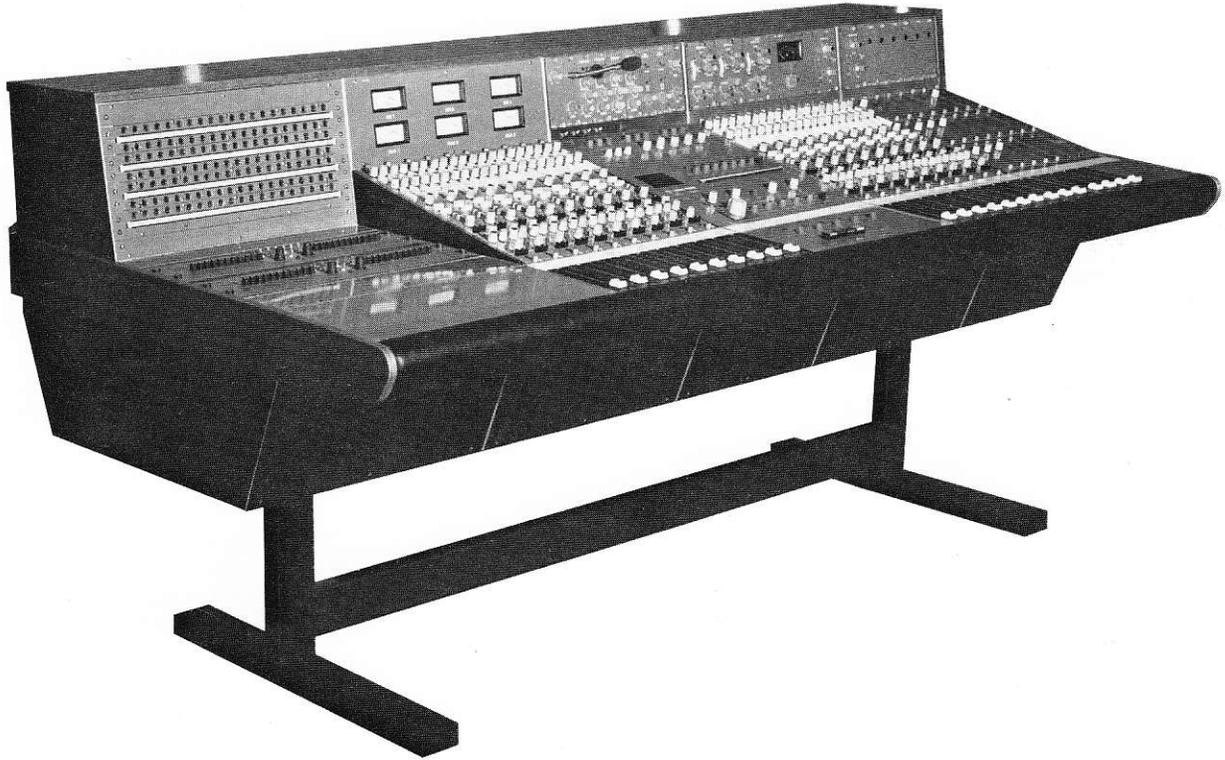
## 8. Inter Channel Cross Talk

Signal to crosstalk ratio is greater than -80dB between channel at 1kHz.

## 9. Output - Crosstalk

Crosstalk between all outputs stereo or mono is better than -70db at 1kHz.

**ALL TWEED AUDIO consoles and associated equipment are covered by a one-year Warranty, from the date of dispatch, together with a speedy and efficient after-sales service. Tweed Audio reserves the right to incorporate design changes or amend specifications without notice.**



*Custom designed film dubbing console.*



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