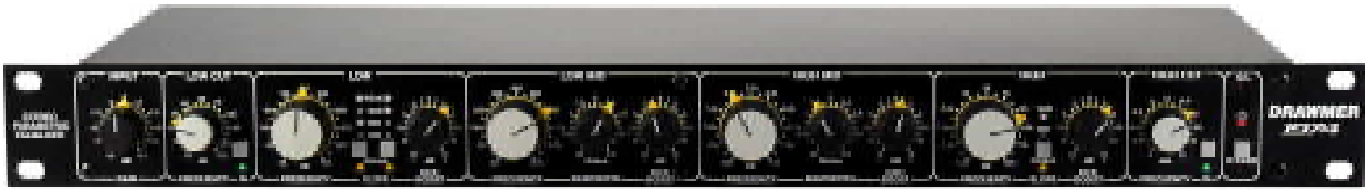
DRAWMER



1974

STEREO PARAMETRIC EQUALISER

OPERATOR'S MANUAL

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ONE YEAR LIMITED WARRANTY

Drawmer Electronics Ltd., warrants the Drawmer 1974 Stereo Parametric Equaliser to conform substantially to the specifications of this manual for a period of one year from the original date of purchase when used in accordance with the specifications detailed in this manual. In the case of a valid warranty claim, your sole and exclusive remedy and Drawmer's entire liability under any theory of liability will be to, at Drawmer's discretion, repair or replace the product without charge, or, if not possible, to refund the purchase price to you. This warranty is not transferable. It applies only to the original purchaser of the product.

For warranty service please call your local Drawmer dealer. Alternatively call Drawmer Electronics Ltd. at +44 (0)1709 527574. Then ship the defective product, with transportation and insurance charges pre-paid, to Drawmer Electronics Ltd., Coleman Street, Parkgate, Rotherham, S62 6EL UK. Write the RA number in large letters in a prominent position on the shipping box. Enclose your name, address, telephone number, copy of the original sales invoice and a detailed description of the problem. Drawmer will not accept responsibility for loss or damage during transit.

This warranty is void if the product has been damaged by misuse, modification or unauthorised repair.

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IN NO EVENT WILL DRAWMER ELECTRONICS LTD. BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM ANY DEFECT IN THE PRODUCT, INCLUDING LOST PROFITS, DAMAGE TO PROPERTY, AND, TO THE EXTENT PERMITTED BY LAW, DAMAGE FOR PERSONAL INJURY, EVEN IF DRAWMER HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Some states and specific countries do not allow the exclusion of implied warranties or limitations on how long an implied warranty may last, so the above limitations may not apply to you. This warranty gives you specific legal rights. You may have additional rights that vary from state to state, and country to country.

DRAWMER

1974

Stereo Parametric Equaliser

SAFETY CONSIDERATIONS

CAUTION - MAINS FUSE

TO REDUCE THE RISK OF FIRE
REPLACE THE MAINS FUSE ONLY WITH
A FUSE THAT **CONFORMS TO IEC127-2.**
250 VOLT WORKING, TIME DELAY TYPE
AND BODY SIZE OF 20mm x 5mm.
THE MAINS INPUT FUSE MUST BE
RATED AT 230V=T160mA and 115V=T315mA.

CAUTION - MAINS CABLE

DO NOT ATTEMPT TO CHANGE
OR TAMPER WITH THE
SUPPLIED MAINS CABLE.

CAUTION - SERVICING

DO NOT PERFORM ANY SERVICING.
REFER ALL SERVICING TO QUALIFIED
SERVICE PERSONNEL.

WARNING

TO REDUCE THE RISK OF FIRE OR
ELECTRIC SHOCK DO NOT EXPOSE
THIS EQUIPMENT TO RAIN OR MOISTURE.



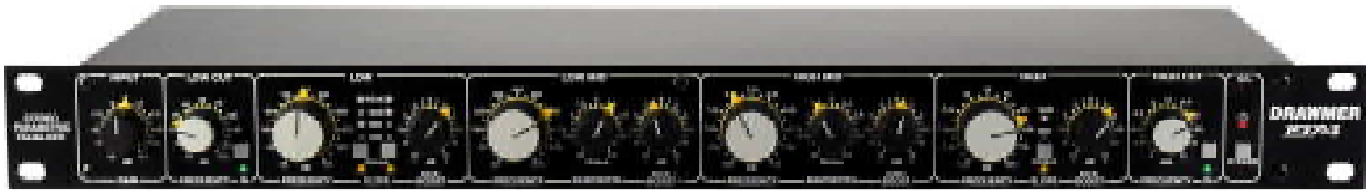
CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN



In the interests of product development, Drawmer reserve the right to modify or improve specifications of this product at any time, without prior notice.

DRAWMER
1974
STEREO PARAMETRIC EQUALISER



INTRODUCTION

The vintage-style fully stereo 1974 four band Parametric Equaliser provides exceptional analogue musicality and sonic clarity, taking it's inspiration from 1970's-era gear. It has the ability to perform subtle shaping for mastering purposes that require a delicate touch and easy recall, but is just as capable of tonal sculpting, adding the analogue warmth and character that is near impossible to emulate in the digital domain.

Get immersive with the stereo operation, with one set of controls for both channels. The versatile design features dual channel precision stepped potentiometers, providing exceptional accuracy for fast and simple recall. The fully variable bandwidth allows you to control the parametric mid bands, making adjustments as surgically precise or as broad and natural sounding as you could ever require. Fully adjustable low and high cut filters are also included, ideal for tuning out undesirable signals at the frequency extremes. It also features a switchable slope allowing you to alter the focus at the high and low frequencies plus a low peak setting that magnifies the bottom end. The 1974 is perfect for tonal shaping, staying true to the sound of the 70s and ideal for any musician.

Genuine Stereo Operation with Indented and Accurate Potentiometers. The genuine stereo linked operation of the 1974 makes adjustment quick and extremely simple using just one set of controls to alter both channels. Gone is the wasted time spent fiddling about on every control trying to match the settings of the left and right channels with each other. The 1974 uses precision potentiometers, each one being matched for left/right accuracy to within fine tolerances by our trained technicians, so that both channels operate identically, and also have indented operation, providing exceptional accuracy for fast and simple recall.

Fully Parametric with Totally Variable Bandwidth. The 1974 is a true 'parametric' equaliser, with the four bands having fully variable frequency controls and offer cut and boost of +/-12dB's. However, unlike EQ's with a no bandwidth adjustment, or a simple switch, the two mid bands have completely variable filter bandwidth controls enabling the user to focus in on very narrow sections of the audio spectrum or apply a broad natural sounding filter, or, of course, anything in between the two. This makes the 1974 incredibly versatile and capable of modifying everything from subtly fine tuning mixes to tone sculpting problematic recordings.





Variable Low and High Cut Filters. The 1974 also includes fully variable low and high cut filters, ideal for tuning out undesirable signals. The low cut (otherwise known as High Pass Filter) having a range of 10Hz-225Hz and the high cut (otherwise known as Low Pass Filter) 4kHz-32kHz. The beauty of being fully variable is that, unlike fixed frequency filters, it is easy to sweep both controls to find the perfect setting and remove sounds with pinpoint accuracy. This is especially useful when bracketing individual tracks where it will be necessary to cut the bass to remove rumble and top to remove hiss, as these undesirable signals will just add up as the tracks are layered. For instance, cut everything instrument below 100Hz except those within that spectrum, such as the kick, bass or synths etc to provide extra headroom to work and also tighten up the bass making it sound less muddy. And likewise for the high frequencies.

Switchable Slope Setting. Very few analogue parametric equalisers have an adjustable slope on the low and high cut filters, and is yet another feature of the 1974 that allows you to take control of your audio. The filter slopes of the 1974 have been chosen for their musicality - allowing you to adjust the focus of the audio at the bottom and top ends of your recording but not so harsh as to be a very noticeable brick wall filter. At the bottom end filter slopes of 6, 9 and 12dB per octave plus a Peak setting are available, and at the high end 6 and 12dB's per octave.

The Peak setting is quite a unique feature in that it adds a narrow bell shape to the 12dB per octave low cut filter at the knee frequency just before it rolls off. Especially useful on kick drums, it magnifies and gives extra weight to the hit whilst still filtering out any subsonic junk and without muddying the lower mid. It'll give your kick an added sense of power and precision.

The key features are as follows:

Vintage-style four band Parametric Equalisation which takes it's inspiration from 1970's-era analogue gear.

Delivers classic sonic clarity and control at an affordable price.

Genuine stereo operation with one set of controls for both channels.

Indented and accurate potentiometers, providing precision for quick and simple recall.

Variable low and high cut filters allow you to perfectly tune out any undesirable signals.

Fully variable bandwidth provides absolute control for the parametric mid bands.

Switchable slope plus low peak settings allows you to adjust the focus and magnify the bottom end.

True hardware bypass for accurate A/B comparisons.

Internal Low Hum Toroidal Linear Power Supply with Voltage Selector Switch.

Classic Drawmer Build Quality with Rugged Steel Chassis and Aluminium Front Panel.

Designed and manufactured by Drawmer in the UK.

INSTALLATION

The 1974 is designed for standard 19" rack mounting and occupies 1U of rack space. Avoid mounting the unit directly above power amplifiers or power supplies that radiate significant amounts of heat and always connect the mains earth to the unit. Fibre or plastic washers may be used to prevent the front panel becoming marked by the mounting bolts. It is also advisable to leave space above the unit to allow the heat to dissipate.

POWER CONNECTION

The 1974 unit will be supplied with a power cable suitable for domestic power outlets in your country. For your own safety, it is important that you use this cable to connect to the mains supply earth. The cable must not be tampered with or modified.

The power supply socket has an integral fuse drawer containing the power fuse of the same value, to suit the mains voltage for which the unit has been supplied. Removal of the drawer is only possible with the power cord removed. The fuse should never blow under normal operation. If the fuse is suspected of having blown, then a fault will have occurred and this fault condition should be inspected by a qualified service engineer. When replacing the fuse, always comply with the Safety Instructions.

If the unit is to be used with a mains input operating voltage different to that for which the unit is supplied, the following procedure must be carried out by a technically competent person, *(see following diagrams)*

1: Disconnect the unit from the mains.

2: Using a number 1 size pozidrive screwdriver, remove the seven self -tapping screws that retain the top cover. Two screws are found along each side; two along the top edge at the rear; and the upper central screw on the front facia panel.

3: Slide the voltage change-over switch **(S11)** until the correct (or nearest) mains input voltage is visible on the switch actuator.
(see fig.2)



fig.2 **The Voltage Selector Switch**

For conversion to 115Volt AC (previously set to 230Volt AC).....

4a: Exchange the 160mA fuse below the mains socket for a similar type rated at 315mA

For conversion to 230Volt AC (previously set to 115Volt AC).....

4b: Exchange the 315mA fuse below the mains socket for a similar type rated at 160mA

In all cases:

5: Replace the top cover using the seven screws.

6: Re-connect to mains power source.

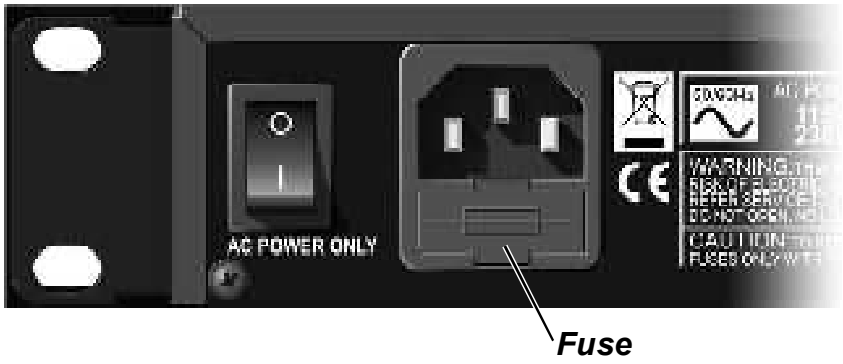


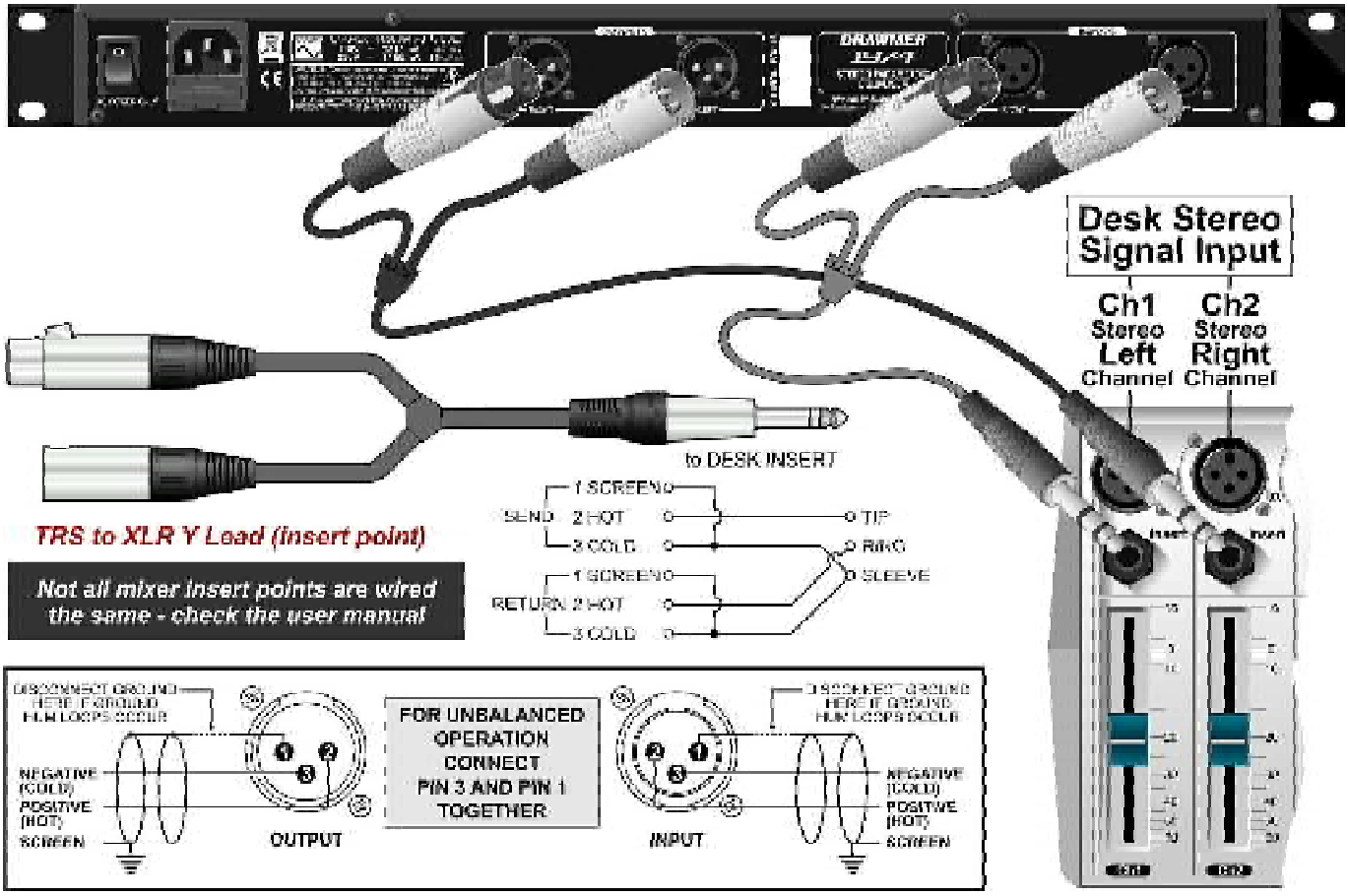
fig.3 **The Location of the Fuse**

AUDIO CONNECTIONS

A typical setup for connecting the 1974 would be by the use of a Y-lead between the two input and output xlr's on the rear of the 1974 and insert point for the respective channel of the desk or interface for the digital workstation - this would be repeated for both channels. The wiring of the Y-lead can be seen below.

The inputs and outputs are electronically balanced on conventionally wired XLRs (pin 1 screen, pin 2 hot, pin 3 cold and XLR shell is connected to chassis). The operating level is nominally +4dBu. Balanced use is recommended.

For connecting the 1974 to a mixing desk use the insert points as shown in the following diagram:



Alternatively, if you are using a digital workstation and have an audio interface that does not have insert points, connect it to the analogue send (out) and return (in) of the relevant channels via four XLR to XLR/ jack cables. See your interface and software user manuals for the best procedure.

• Ground Loops:

If ground loop problems are encountered, never disconnect the mains earth, but instead, try disconnecting the signal screen on one end of each of the cables connecting the outputs of the 1974 to the patchbay. If such measures are necessary, balanced operation is recommended.

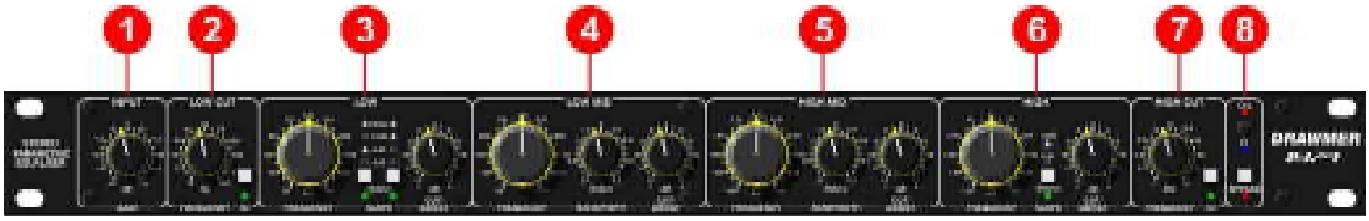
• Interference:

If the 1974 is to be used where it maybe exposed to high levels of disturbance such as found close to a TV or radio transmitter, we advise that it is operated in a balanced configuration. The screens of the signal cables should be connected to the chassis connection on the XLR connector as opposed to connecting to pin1.

The 1974 conforms to the EMC standards.

CONTROL DESCRIPTION

The genuine stereo linked operation of the 1974 makes adjustment quick and extremely simple using just one set of controls to alter both channels. The 1974 uses precision potentiometers, each one being matched for left/right accuracy to within fine tolerances by our trained technicians, so that both channels operate identically, and also have 21 position indented operation, providing exceptional accuracy for fast and simple recall.



1 INPUT



INPUT GAIN: ***-15dB - +15dB***

Typically, the Input Gain control is used to match the output of the preceding device to the input needs of the four e.q. bands that the signal will pass through.

If the input is too low the signal of every e.q. band will need to be boosted just to reach the optimum output level. If the input is too high every band will have less headroom to boost the signal before clipping occurs.

2 LOW CUT



FREQUENCY: ***10Hz - 225Hz***

This continually variable control attenuates the signal below the frequency set. The rate at which the attentuation occurs is set by the 'Slope' control (see bellow). Use it to remove extraneous content at the lower end of the audio range such as mechanical rumble or to tighten the mix.

IN:

This Bypass switch, when pushed in will illuminate the LED, indicating that the Low Cut Filter is in circuit.

3 LOW



FREQUENCY: ***35Hz - 700Hz***

This continually variable control sets the centre frequency where the signal is boost/cut. As it's completely variable it allows you to sweep the signal to pin point problematic frequencies providing greater flexibility and accuracy than lesser equalisers.

SLOPE: ***6dB / 9dB / 12dB / PEAK***

Sets by how much or 'fast' the signal is attenuated in dB's per octave at the Low frequencies. For example, a 6dB per octave Low Cut located at 100Hz would accomplish 6dB of attenuation at 50Hz, and 12dB at 25Hz and so on until the signal is fully attenuated. 6dB per octave is more gentle and therefore more musical than 12dB, however, at 12dB per octave the signal is 'focused' but attenuation more noticable.

The Peak setting adds a narrow bell shaped boost to the 12dB per octave low cut filter at the knee frequency just before it rolls off. Especially useful on kick drums, it magnifies and gives extra weight to the hit whilst still filtering out any subsonic junk.

CUT/BOOST: ***-12dB - +12dB***

The amount of gain (boost) or reduction (cut) that is applied at the frequencies set within the band. The control is non-linear and so is capable of subtle adjustments for mastering or larger variations for tone shaping.

4 LOW-MID



FREQUENCY: ***55Hz - 2.1kHz***
See 3

BANDWIDTH: ***0.33 - 3.3 Octaves***
Bandwidth is defined as the range of frequencies (width) centred around that set by the frequency knob allowing you to attenuate or boost a very narrow or wide range of frequencies within each EQ band.
On the 1974 the width of the effected signal is measured as Bandwidth (as opposed to 'Q', which it is inversely related to) and on the Low-Mid and High-Mid bands are fully parametric (as opposed to semi, quasi or fixed that you may find on other eq's) meaning that the bandwidths are fully adjustable across their entire range providing greater control.

CUT/BOOST: ***-12dB - +12dB***
See 3

5 HIGH-MID



FREQUENCY: ***400Hz - 14kHz***
See 3

BANDWIDTH: ***0.33 - 3.3 Octaves***
See 4

CUT/BOOST: ***-12dB - +12dB***
See 3

6 HIGH



FREQUENCY: ***1.2kHz - 20kHz***
See 3

SLOPE: ***6dB / 12dB***
Sets by how much or 'fast' the signal is attenuated in dB's per octave at the High frequencies. 6dB per octave is more gentle and therefore more musical than 12dB, however, at 12dB per octave the signal is 'focused' but attenuation more noticeable.

CUT/BOOST: ***-12dB - +12dB***
See 3

7 HIGH CUT



FREQUENCY: ***4kHz - 32kHz***
This continually variable control attenuates the signal above the frequency set. The rate at which the attentuation occurs is set by the 'Slope' control set in the High band (see 6). Use it to remove extraneous content at the higher end of the audio range such as hiss, taming an overly bright instrument or separating bleed when recording drums.

IN:
This Bypass switch, when pushed in will illuminate the LED, indicating that the High Cut Filter is in circuit.

8 POWER



BYPASS ***Off - On***
A hard-wire bypass will bypass the 1974 when active.

POWER LED
Will illuminate when the unit has power and is switched on via the switch on the rear.

O/L LED
Will illuminate when the stereo signal is 6dB bellow the maximum output. If this occurs lower the Input gain control to suit.

1974 PARAMETRIC EQUALISER TIPS

The following are a few handy tips to help get the most out of the 1974:

Narrow Cut / Wide Boost
The classic method for equalisation is to use a narrow bandwidth when removing/cutting problematic sounds and a broad bandwidth is used when tonal shaping.
A narrow bandwidth is used to remove unwanted frequency noise (see 'Sweep it Up' below), in addition, when the 1974 is being used in boost mode, it can also be used to emphasize specific instruments with a narrow frequency range such as the hit of bass drums or hi-hats, for example, but care must be taken not to use so much Boost so as to create an unnatural honky or peaky sound - unless this is the intention!

Medium to wide bandwidth settings, combined with modest degrees of Boost and Cut, produce the most musical results and are best used for tonally shaping the sound. Be careful not to suck out too much of the signal and make it sound hollow. Note that if large amounts of Boost are applied using one or more equaliser sections, there is a possibility that the signal will be amplified to a point where there is a danger of clipping. If this occurs, monitor the output O/L led and adjust the Input gain accordingly.

Sweep it Up
If you are finding it difficult to identify which are problematic frequencies in your recordings the sweeping technique can help to locate them. Setting up is best approached, initially, by switching in one eq band at a time.

1. Start by reducing the bandwidth of one of the bands, creating a narrow peak.
2. Add a high amount of boost to this band.
3. Using the frequency control slowly sweep through the frequencies within that band listening for a sudden increase in volume - this is the problem frequency.
4. Reset the gain and bandwidth and cut (attenuate) the frequency to taste.

You may find it useful to do this technique for all four bands on any given recording.

Cut it Out
A great way to improve your audio so that instruments sit better in the mix is by removing any unnecessary frequencies using the Low Cut and High Cut filters. The 1974 is the perfect tool for this because it has fully variable low and high cut filters and also variable slope, allowing you to tune in to precise frequencies. The low end of your mix will be dominated by instruments such as the kick drum and bass guitar so any other noise at around 100Hz and below only go towards muddying the mix and add unnecessary level, giving you less headroom. To remove any rumble and unwanted low end artifacts on any given track sweep the low cut filter until you notice the sound getting thinner and then back it off a little, you can then set the slope to taste. The same technique can be used for the High Cut, if you back off the filter when the sound becomes bassier it will allow any other instrument with high frequency content to cut through the mix better. The idea is to remove extraneous sound from a track whilst retaining the fundamentals.

The slope switch settings of 6, 9 & 12dB's per octave of the 1974 have been chosen to retain a transparent, musical quality to the audio whilst still attenuating the signal, rather than a steeper, brick wall filter which would be very noticeable. Set your low and high cut filters to the desired frequency and then switch through the slope settings to see which works best for that particular instrument/track.

The Peak setting is quite a unique feature to the 1974, that is especially useful on kick drums. It works by adding a narrow bell shaped boost to the 12dB per octave low cut filter at the knee frequency just before it rolls off. It'll magnify and give extra weight to the hit of the kick drum whilst still filtering out any subsonic junk and without muddying the lower mid, giving your kick an added sense of power and precision.

EQ in the Mix
It's OK to EQ in solo when you are trying to find problematic frequencies when setting up a track, if you are using the low and high cut filters to remove unwanted rubble and hiss for example, however, in general, its better to EQ individual tracks within the contents of the mix. No one else will ever listen to the tracks of your mix in isolation so why eq them in solo. When you EQ within the mix it helps you to make informed decisions about where the mix needs to be improved, how all the instruments find space, whether there is muddyness etc. that will not be heard with individual tracks.
If you struggle to hear the subtle changes on a track when you EQ within the mix, rather than soloing raise the level of the entire track a little so that it stands out. Make the alterations and then return it to the original level.

Deep Space
The 1974 is great for achieving space and depth within a mix. By boosting the mid and high frequencies you bring them forward in the mix and accentuate the stereo width that may be present. Cutting the same frequencies will make them seem more distant and further back in the mix. The effect on the low frequencies is different however, boosting these will give warmth and fullness to the mix, whilst cutting them will make the audio sound thinner and less powerful.

Useful Frequencies

Mains hum in the UK and Europe has a fundamental frequency at 50Hz and harmonics at 50Hz intervals stretching up throughout the audio spectrum. By filtering at 50Hz and 100Hz using the narrowest bandwidth setting, it is often possible to significantly reduce the perceived level of hum without unduly affecting the wanted signal. On signals containing no very low frequencies, the Low Cut filter may also be used. Its frequency should be set by experimentation so that it is tuned as high as possible without affecting the bass end of the wanted signal.

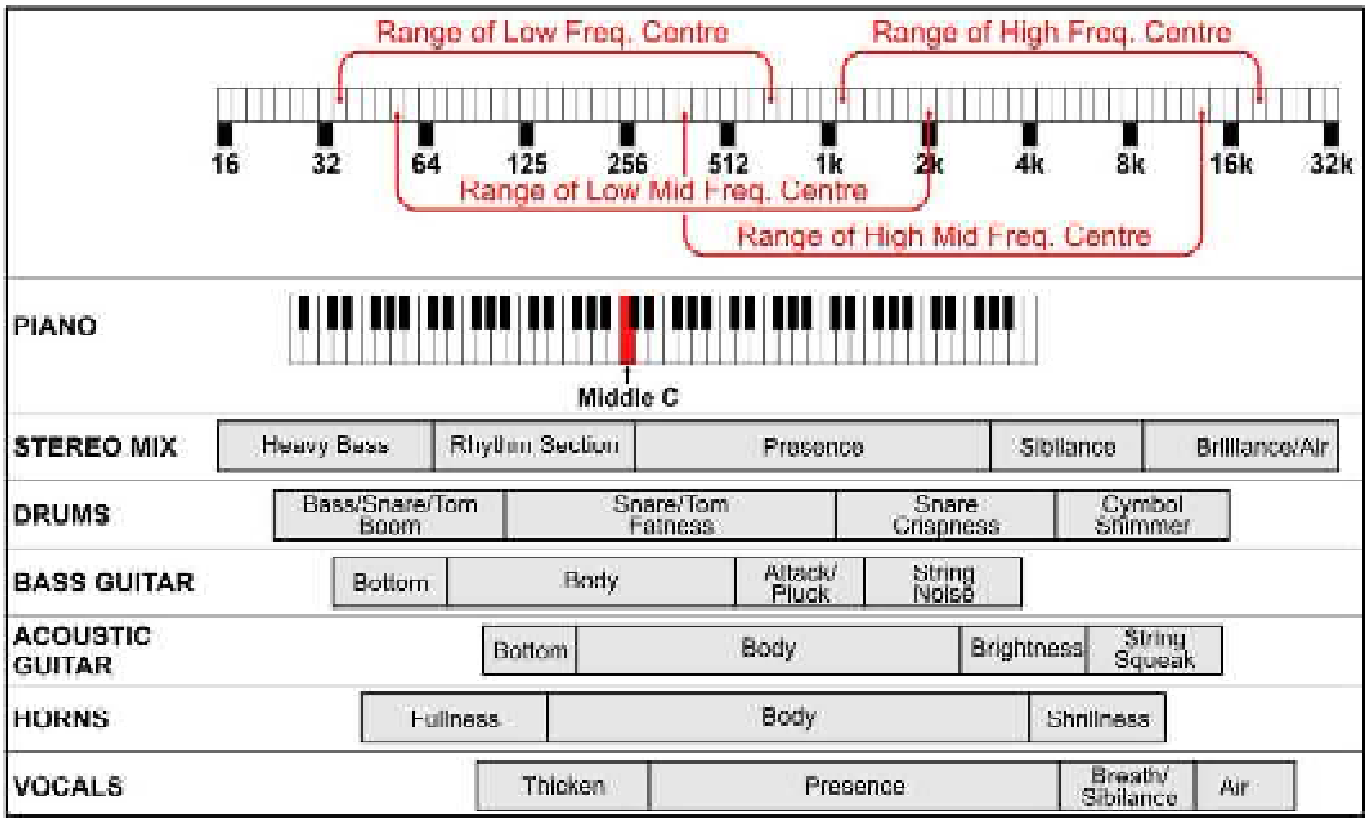
Kick Drums: Cut any frequencies below 20-30Hz as these will be almost inaudible to most listeners. Rock kick drums often benefit from a slight boost at 80Hz which produces a tight, punchy sound - add the Peak slope for added power. However, a deeper sound, more suited to dance music production, can be achieved by boosting the bass at 32Hz or 50Hz using a medium bandwidth setting and simultaneously applying cut at 160Hz to prevent the mid-range from becoming too boxy (or honky). By applying a Hich Cut filter around 10 kHz – 12 kHz, you can get rid of more noise and cymbal bleed that don't belong on a kick drum track.

Electric guitars often need a little EQ to add bite or presence. The High Mid equaliser is ideally suited to this purpose and, depending on the guitar sound sought, the 1.2kHz, 2kHz or 3kHz setting might be most suitable. The degree of boost should be set by ear and the starting bandwidth setting should be 1 Octave, though this may also be fine-tuned. Equalisation at the low end of the spectrum (80 - 125Hz) may also be beneficial in controlling the amount of cabinet resonance added to the sound. Low Cut anything below 80Hz and High Cut above 10kHz will be useful in removing hum and noise from the sound.

Acoustic guitars can sound boxy if miked from too close and a little cut at 100Hz or 160Hz can help to even things out. If the sound is too 'flat', try adding a little boost between 5kHz and 8kHz, and to thin out the sound to make it sit nicely in a busy track, try using the Low Cut filter to shave a bit off the bottom end.

Vocals: different vocalists require different treatment, but it is worth keeping in mind that the human voice is a familiar sound to all of us, and we soon notice if it has been over-treated. In general, use a Low Cut at around 100Hz and High Cut at around 10kHz, both with 12dB/Octave slopes, and sweep to find the perfect settings to remove any unwanted noise and use wide bandwidth settings with gentle amounts of boost to polish the sound.

The following diagram provides a general idea of some useful frequencies that will aid in setting the eq. They are by no means definitive and should be used as a guide only:



GENERAL INFORMATION

IF A FAULT DEVELOPS

For warranty service please call Drawmer Electronics Ltd. or their nearest authorised service facility, giving full details of the difficulty.

A list of all main dealers can be found on the Drawmer webpages.

On receipt of this information, service or shipping instructions will be forwarded to you.

No equipment should be returned under the warranty without prior consent from Drawmer or their authorised representative.

For service claims under the warranty agreement a service Returns Authorisation (RA) number will be issued.
Write this RA number in large letters in a prominent position on the shipping box. Enclose your name, address, telephone number, copy of the original sales invoice and a detailed description of the problem.

Authorised returns should be prepaid and must be insured.

All Drawmer products are packaged in specially designed containers for protection. If the unit is to be returned, the original container must be used. If this container is not available, then the equipment should be packaged in substantial shock-proof material, capable of withstanding the handling for the transit.

CONTACTING DRAWMER

Drawmer Electronics Ltd., will be pleased to answer all application questions to enhance your usage of this equipment. Please address correspondence to:

Drawmer (Technical Help line)
Coleman Street
Parkgate
Rotherham
S62 6EL
UK

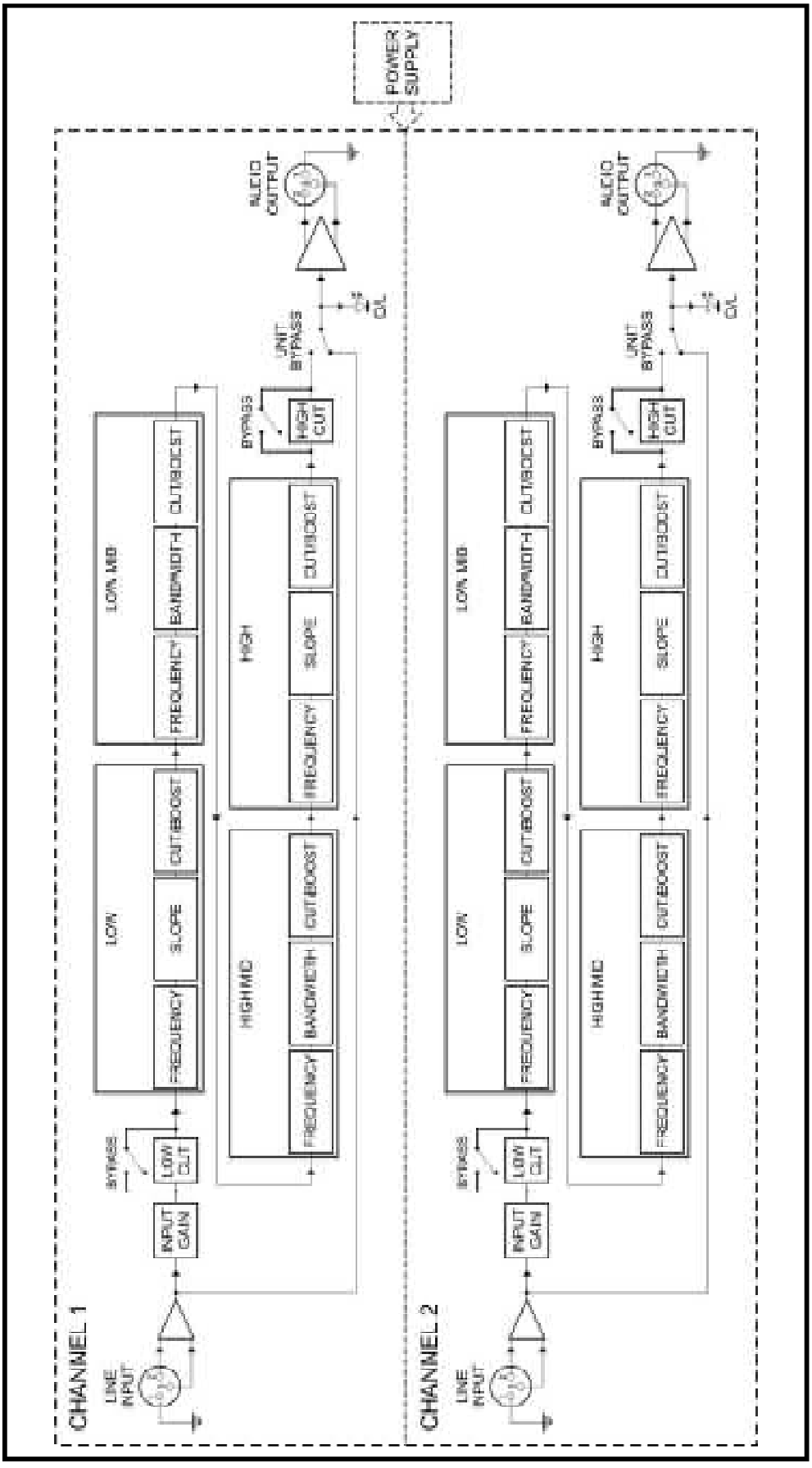
Alternatively contact us by E-mail on :

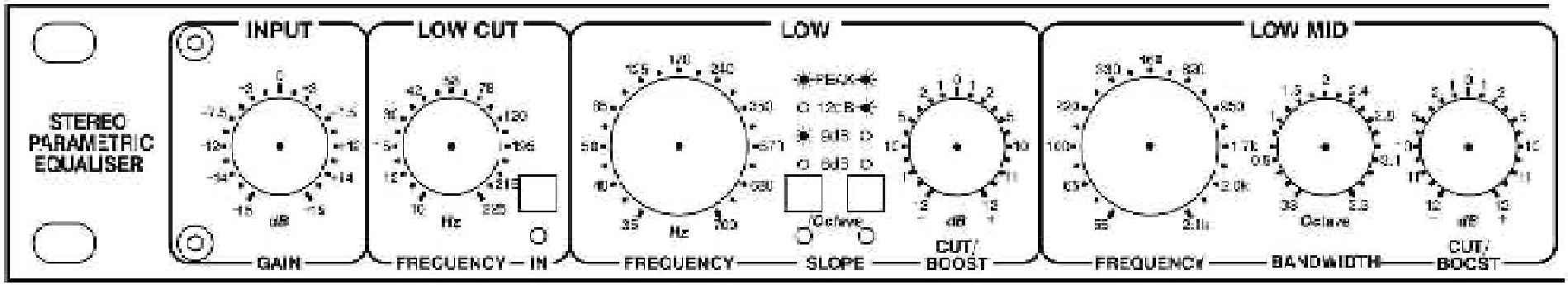
tech@drawmer.com

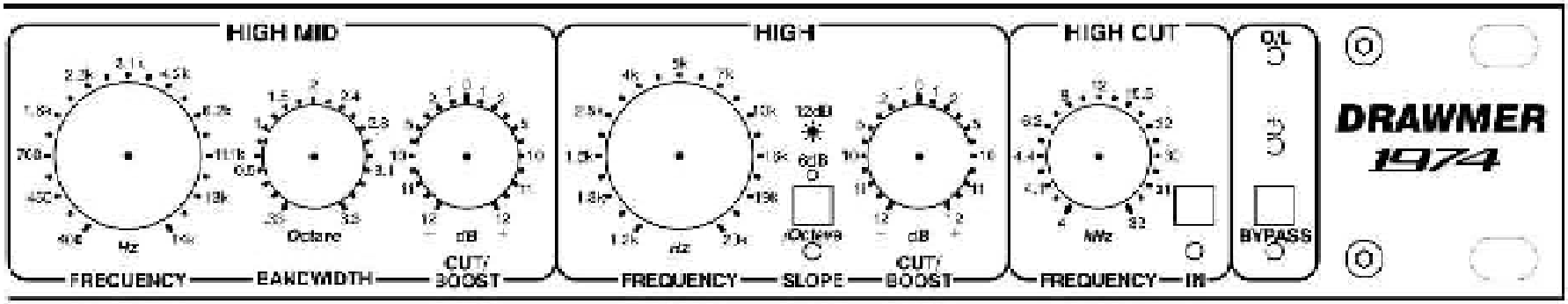
Further information on all Drawmer dealers, Authorised service departments and other contact information can be obtained from our web pages on:

http://www.drawmer.com

BLOCK DIAGRAM







DRAWMER 1974

Session Recall

DRAWMER ELECTRONICS LTD ~ Coleman Street
Rotherham ~ S. Yorkshire ~ UK

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Session No.	
Date	
Artist	
Tape Location	