

DRAWMER

DS404

QUAD NOISE GATE

OPERATORS MANUAL

CONTENTS

SAFETY CONSIDERATIONS	page 1
INSTALLATION	page 1
INTRODUCTION	page 2
CONTROL DESCRIPTIONS	page 4
OPERATION	page 6
IF A FAULT DEVELOPS	page 10
CONTACTING DRAWMER	page 10
TECHNICAL SPECIFICATION	page 11
BLOCK DIAGRAM	page 12

COPYRIGHT

This manual is copyrighted © 1997 by Drawmer Electronics, Ltd. With all rights reserved. Under copyright laws, this manual may not be duplicated in whole or in part without the written consent of Drawmer.

ONE YEAR LIMITED WARRANTY

Drawmer Electronics Ltd., warrants the Drawmer DS404 audio processor 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.

THIS WARRANTY IS IN LIEU OF ALL WARRANTIES, WHETHER ORAL OR WRITTEN, EXPRESSED, IMPLIED OR STATUTORY. DRAWMER MAKES NO OTHER WARRANTY EITHER EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NON-INFRINGEMENT. PURCHASER'S SOLE AND EXCLUSIVE REMEDY UNDER THIS WARRANTY SHALL BE REPAIR OR REPLACEMENT AS SPECIFIED HEREIN.

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.

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 DS404

Quad Noise Gate



SAFETY CONSIDERATIONS



CAUTION - MAINS FUSE

TO REDUCE THE RISK OF FIRE REPLACE THE MAINS FUSE ONLY WITH THE SAME TYPE, WHICH MUST BE A CLASS 3, 230 VOLT, TIME DELAY TYPE, RATED AT 125mA WHERE THE MAINS INPUT VOLTAGE SWITCH IS SET TO 230 VOLTS AC. AND 250mA WHERE THE MAINS INPUT VOLTAGE IS 115 VOLTS AC. **ALL FUSES MUST COMPLY WITH IEC127-2.** THE FUSE BODY SIZE IS 20mm x 5mm.

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



INSTALLATION

This product is designed for standard 19" rack mounting and occupies 1U of rack space. Use four M6 pan head screws to secure the unit into the rack. Fibre or plastic washers may be used to prevent the front panel becoming marked by the mounting bolts.

- Care should be taken in the choice of positioning. The unit should not be mounted where other equipment obstructs the normal air flow. The unit should not be situated near any heat source, such as a radiator, stove or a high power amplifier that would generate heat.
- The DS404 should not be operated near any water or in a location where moisture might be present.

INTRODUCTION

The DS404 Quad Noise Gate has been designed to the highest specification to complement the DS201 Dual Noise Gate, acknowledged as the 'industry standard' gate throughout the world.

Recognizing that there are many general gating applications which require equipment that is simple to operate, Drawmer have designed the DS404 Quad Noise Gate utilizing unique 'Programme Adaptive' circuitry. This makes the DS404 ideally suited for use over a wide range of input signals, ranging from drums and other percussive instruments through to vocals, pianos and even complete mixes.

Facilities include:

Frequency Sensitive.

The provision of variable Low-Pass and High-Pass Filters allows 'without compromise' frequency selective gating. The unit can be switched for either Internal or External Key source and the KEY LISTEN facility enables monitoring of the filter setting.

Hard/Soft Gating.

Each channel can be operated as a HARD or SOFT gate, providing quite different characteristics. Two coloured LEDs clearly indicate mode status. In the HARD mode the DS404 offers ultra-fast response time, stable triggering with complete freedom from chatter around threshold and a specialized release contour which is ideally suited to drums and other percussive material.

In the SOFT mode the DS404 becomes a versatile Expander capable of handling vocals and sub mixes. Drawmer's unique 'Programme Adaptive' circuitry is used to optimise the attack time and ratio as well as having some effect on the manual release setting. A more gentle release characteristic is utilized to complement the SOFT gate

Fully variable threshold.

Range from +20dB to -70dB.

Fully variable release control.

From 10 ms to 5 sec to ensure maximum envelope control.

Chain Linking.

Operating the LINK control switches the channel on the right to SLAVE operation, where its gating mode, threshold and envelope characteristics are controlled by the MASTER (left) channel. Any adjacent three channels or two stereo pairs can be linked in this way for use in any conceivable situation where linking may be required.

LED Displays.

Drawmer's familiar "traffic light" LED display gives a clear indication of gate status.

Balanced inputs and outputs on XLR connections.

AUDIO CONNECTIONS

Both the input and output XLRs may be used either balanced or unbalanced, the wiring convention being: pin 1 ground, pin 2 hot and pin 3 cold. For unbalanced operation, connect pin 3 to ground for both inputs and outputs, (best achieved inside the actual XLR connector). The key inputs are unbalanced ¼" jack sockets.

If earth loop problems are encountered, disconnecting the mains earth is **not** recommended, but instead, try disconnecting some or all of the signal screens on the cables connecting the DS404 to the patchbay. If such measures are necessary, balanced operation is advised.

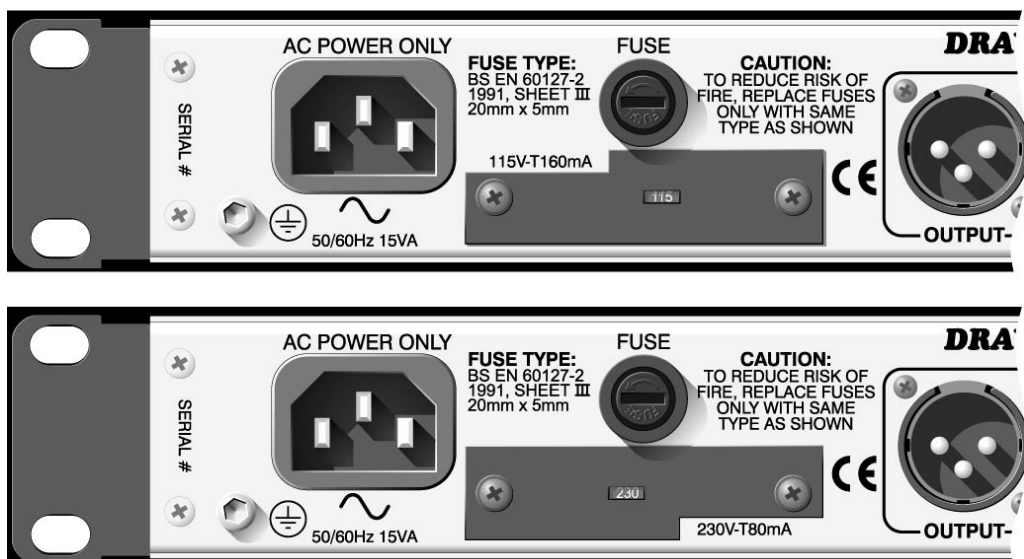
POWER CONNECTION

The unit will have been 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. The unit should **always** be connected to the mains supply earth using this cable, and no other.

If for some reason the unit is to be used at a mains input operating voltage which is different to that as supplied, the following procedure must be carried out.

- 1: Disconnect the unit from the mains.
- 2: Remove the two self-tapping screws that hold the voltage selection switch cover-plate onto the rear panel.
- 3: Remove the cover plate and slide the switch fully to its opposite end.
- 4: Rotate the cover plate one half turn, (180°) and refit the two screws.
- 5: Replace with a correctly rated fuse for the selected operation voltage.
- 6: Re-connect to mains power source.


Never disconnect the earth from the mains supply




CONTROL DESCRIPTION




All four channels of the DS404 are identical and may be used completely independently or linked for multi-channel operation. In the linked mode, only the left most channel's controls are functional and serve as master controls, though the channel bypass switches remain independent. When linked, the control signal is derived only from the programme material present at the input of the master channel.


Threshold  Sets the level below which gating starts to take place and may be set in the range -70dB to +20dB.

Display The famous Drawmer "traffic light" display shows gate status



Gate Closed Hold Time Gate Open

Release  10mS to 5S.
Additionally, some envelope hold time is built into the system which varies with the release time. This prevents chatter when processing material with inconsistent decay characteristics and is quite invisible to the user.

Range  Determines how much gain reduction is applied when the gate is fully closed. A setting of -90dB effectively silences the signal completely, while the -20dB setting will still allow an attenuated version of the signal to pass through. We recommend this switch is left in the -90dB (out) position.

For signals with a high levels of background noise, the very fact of closing down to -90dB can be disconcertingly noticeable. In such cases the -20dB switch setting can achieve better results.

Note: This control is active on both channels, even in stereo linked operation.

Key Listen/ **Gate**/ **Bypass**

When this switch is set to **Key Listen**, the effect of the key filters on the programme material is heard at the output. In normal operation, the **Gate** position is selected; the filters only affect the way the DS404 responds to the incoming programme material - they do not have any direct effect on the output signal. The **Bypass** position routes the input signal to the output with no processing.

Note: It is possible to leave the switch in the Key Listen position in order to use the DS404 simply as a filter rather than a gate.

L.F.

25Hz - 10kHz

The Low Frequency filter works by severely attenuating frequencies below the cut-off frequency selected.

H.F.

200Hz - 35kHz

The High Frequency filter attenuates frequencies above the selected cut-off value.

In other words, when both filters are set, it is the range between the two settings that is allowed to pass.

Key/Int

In the **Int** position, this switch causes the gate to respond to the dynamics of the signal being processed.

In the **Key** position, an external audio signal fed to the key input is used to control the gate, making it possible to gate one sound using another, independent signal.

Hard/Soft

This button selects between the Hard and Soft modes of operation. In the Hard mode, the DS404 behaves as a fast, conventional gate while in Soft mode, it performs as a programme adaptive expander. Hard mode is signified by a red status LED while the Soft mode is identified by a yellow LED. If two or more channels are linked, the mode is determined by the master (left most) channel and the Hard/Soft LEDs on the slave channel(s) will extinguish.

Slave Link

The Link buttons are located between channels, and when depressed, cause the channel on the right to be controlled by the left hand channel. Two, three or four channels may be linked, (or two pairs), the left most channel always being the master. In linked mode, the red status LED beneath the Slave Link switch will be illuminated, and both the yellow and red HARD/SOFT LEDs of the slave channel will be extinguished. This assists to show that the only controls of the slave channel that still function are the Key Listen / Gate / Bypass switch and the Range switch

OPERATION

Use the following diagrams as a guide to using the DS404.

Typical Setup



Key	
	Set the knob to the position shown.
	Not Used
	Switch is Out
	Switch is In
	Set to User Preference

Operation: Gating a Snare Drum

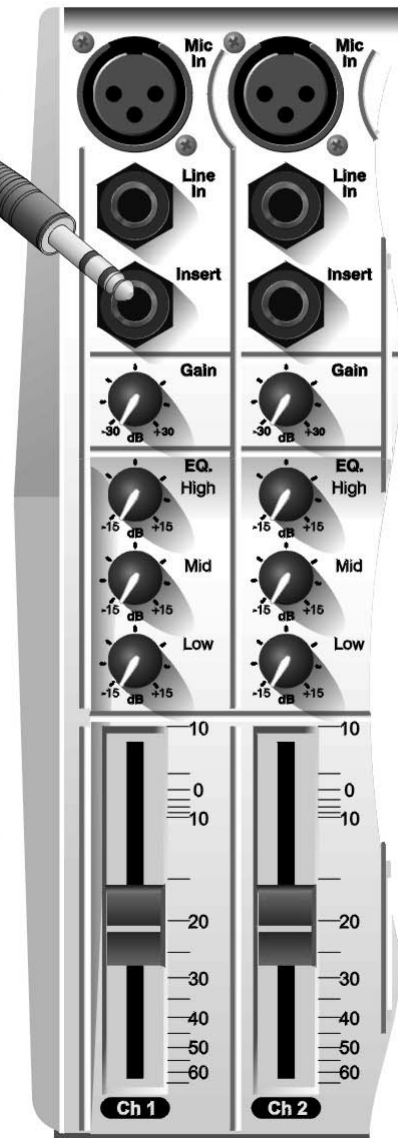
1 kHz 2 kHz Input Level Dependant 50 ms

Operation: Gating Toms

200 Hz 500 Hz Input Level Dependant 0.1 S

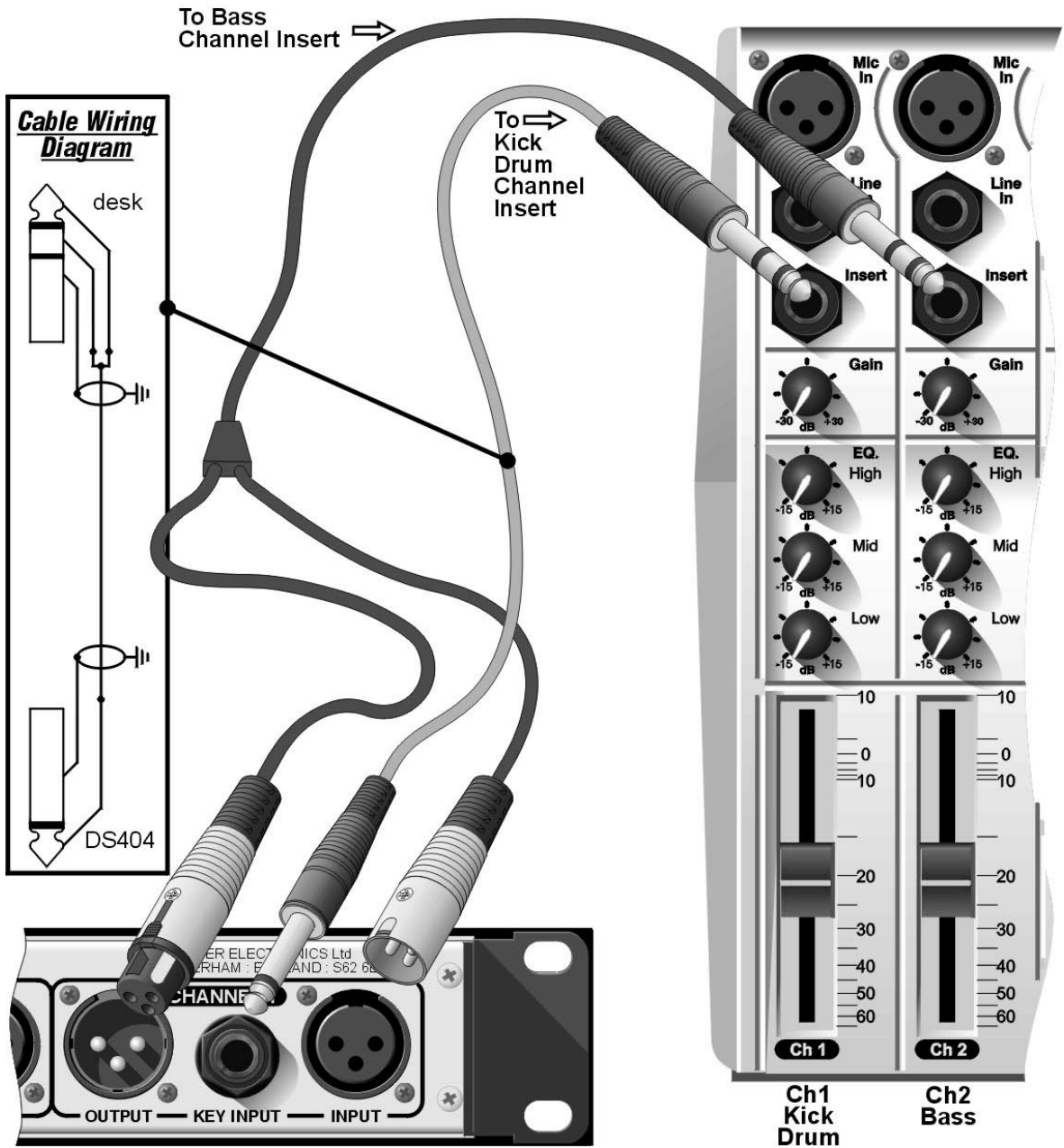
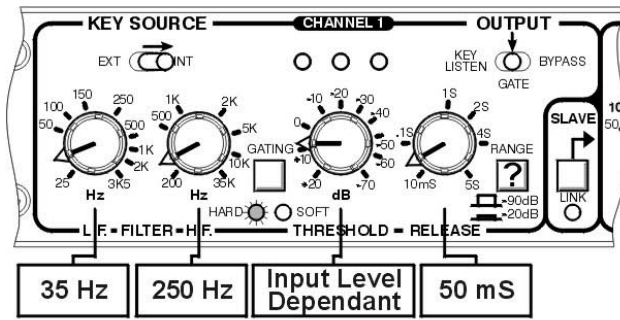
Operation: Gating Vocals

25 Hz 35 kHz Input Level Dependant 0.5 S

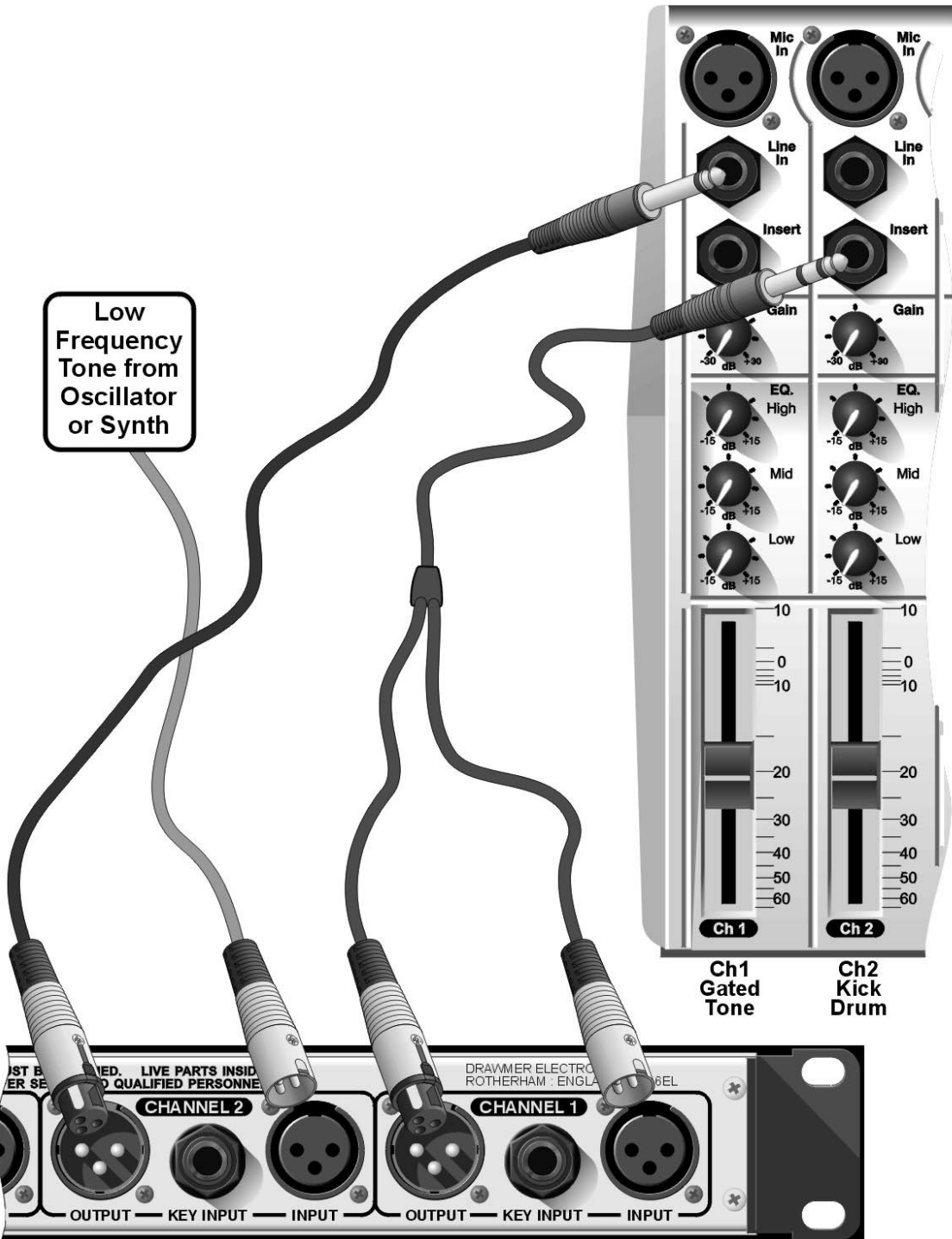
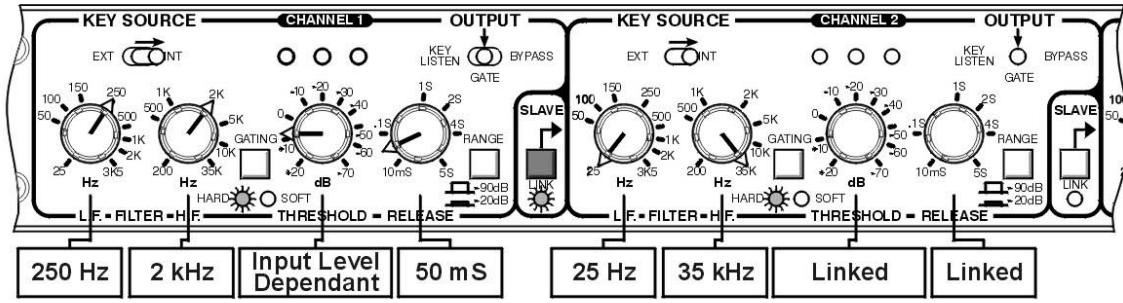


Ch1 Signal

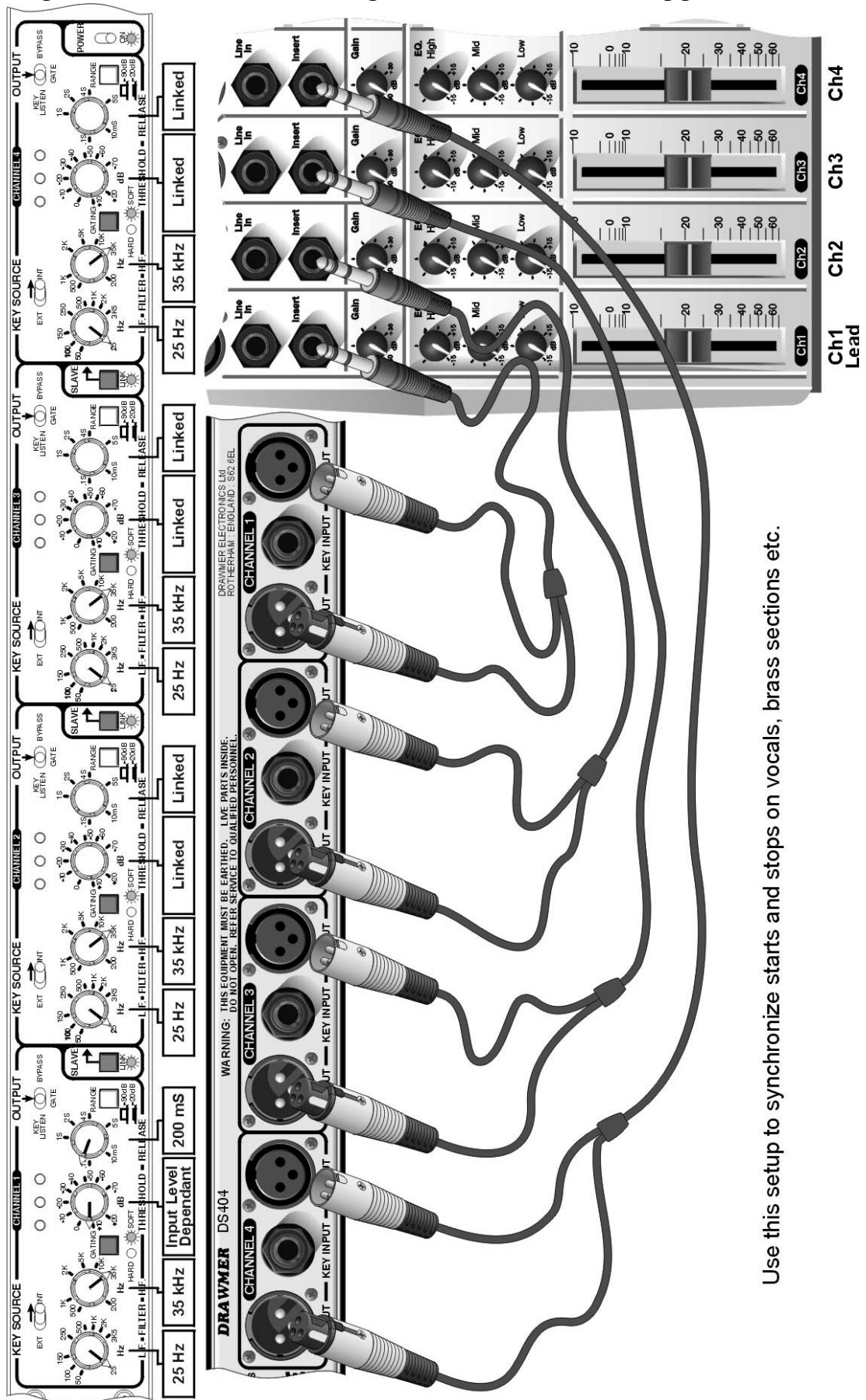
Triggering a Bass Guitar from a Kick Drum



Adding Depth to a Kick Drum



Gating all Four Channels using Channel 1 as the Trigger



Use this setup to synchronize starts and stops on vocals, brass sections etc.

IF A FAULT DEVELOPS

For warranty service please call Drawmer Electronics Ltd. Or their nearest authorised service facility, giving full details of the difficulty. 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 given. 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 St.: Parkgate : Rotherham : S62 6EL : UK

or, E-mail us on :

tech@drawmer.com

Drawmer dealers, Authorised service departments and other contact information can be obtained from our web pages on <http://www.drawmer.com>

TECHNICAL SPECIFICATIONS

(All measurements reference +4dBu operating level)

INPUT IMPEDANCE	20K Ω (Balanced)
KEY INPUT IMPEDANCE	20K Ω (Unbalanced)
MAXIMUM INPUT LEVEL	+21dBu
MAXIMUM KEY INPUT LEVEL	+21dBu
OUTPUT IMPEDANCE	50 Ω (Balanced)
MAXIMUM OUTPUT LEVEL	+21dBu
BANDWIDTH	<10Hz to 22KHz -1dB
FLOOR LEVEL	-90dB, (or -20dB)

ATTACK TIME	Minimum	Maximum
Hard	< 10 μ S	
Soft	100 mS	1 mS

RELEASE TIME	Minimum	Maximum
Hard	10 mS	> 5 Sec
Soft	100 mS	5 Sec

NOISE	Wideband	22Hz - 22KHz	CCIR ARM	IEC A	Q-Pk CCIR
AV	-91dB	-97dB	-97dB	-100dB	-86dB
RMS	-89dB	-96dB		-99dB	

DISTORTION	100Hz	1KHz	10KHz
Gate Open with +4dBu input	< 0.04%	< 0.04%	< 0.04%

POWER REQUIREMENTS	115Volt or 230Volt at 50-60Hz,	15 Watts
FUSE RATING	125mA for 230Volt,	250mA for 115Volt
	CONFORMING TO IEC127-2	
FUSE TYPE	20mm x 5mm, Class 3 Slo-Blo, 250Volt working	
CASE SIZE	482mm (w) x 44mm (h) x 175mm (d)	
WEIGHT (incl packaging)	3.7 Kgs	

BLOCK DIAGRAM

