

# QUAD 520

## Twin Channel Professional Power Amplifier

instruction book

# QUAD 520 instruction book

## description

The Quad 520 is a two channel power amplifier designed for Broadcast, Recording and other applications in the audio industry, providing 100 watts per channel into 8 ohms and 150 watts per channel into 4 ohms.

The Quad 520 uses a development of the Current Dumping (feed forward error correction) circuit technique, a Quad invention first used in the Quad 405 and for which Quad was granted a Queen's Award for Technological Innovation. Current dumping eliminates many of the problems associated with transistor amplifiers, and is covered by patents in several countries. In a current dumping amplifier there is in effect both a low powered very high quality amplifier and a high powered heavy duty amplifier. The low power amplifier controls the loudspeakers at all times, calling upon the high power section to provide most of the muscle. The small amplifier is so arranged – it carries an error signal – that provided the larger power transistors (the dumpers) get within the target area of the required output current it will fill in the remainder accurately and completely. The reproduced quality is solely dependent on the small amplifier which because of its low power can be made very good indeed.

Problems of crossover, crossover distortion, quiescent current adjustment, thermal tracking, transistor matching, all disappear. There are no internal adjustments or alignments and the choice of power transistor types is less restrictive.

Field service normally requires nothing more than a screwdriver and a replacement module.

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## installation

### PACKING

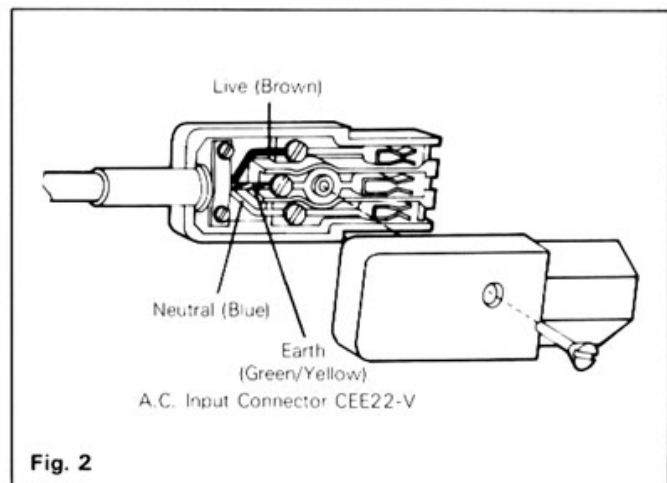
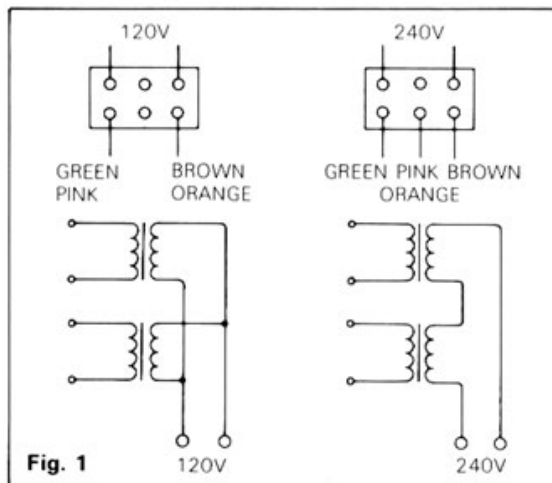
Keep the packing in case the amplifier has to be sent back to Quad or to the local Quad distributor for service.

### MOUNTING

The Quad 520 is designed for standard 19 inch rack mounting, but can of course be used free standing. Adequate ventilation should be provided and where a number of amplifiers are mounted in a rack it may be necessary to use a cooling fan.

### A.C. INPUT

The Quad 520 is supplied for use on either 200-240 or 100-120V A.C. supplies and the A.C. voltage is clearly marked on the rear panel. A.C. voltage changes of 6% above or below the indicated range do not affect performance. To change from 220 to 110V operation, the connections at the junction terminal in the amplifier must be changed as shown in Fig. 1.



A.C. input is via a standard CEE22-V plug and socket. The amplifier chassis must be connected to ground via the A.C. supply cord. A simple retaining clip ensures that the A.C. connectors cannot be removed by accident.

### FUSE

The A.C. supply fuse is located next to the A.C. connector. Correct rating for 220V operation is T6.3A and for 110V operation T10A. The A.C. connector must be removed to gain access to the fuse holder.

### CONNECTORS

The Quad 520 is normally fitted with XLR type connectors. These are wired either to I.E.C. or N.A.B. standards and clearly marked on the back panel.

<b>Input –</b>	<b>via 'XLR' type chassis mounted socket</b>	<b>Output –</b>	<b>via 'XLR' type chassis mounted plug</b>
I.E.C.	Pin 1 – Blank	I.E.C.	Pin 1 – Blank
	Pin 2 – Line A – Hot		Pin 2 – Line A – Hot
	Pin 3 – Line B – Cold		Pin 3 – Line B – Cold
N.A.B.	Pin 1) – Line B – Cold	N.A.B.	Pin 1) – Line B – Cold
	Pin 2)		Pin 2)
	Pin 3 – Line A – Hot		Pin 3 – Line A – Hot

### PHASE

Input and output are in phase.

### HUM

Optimum performance will only be achieved if the amplifier is correctly grounded.

The cold side of the input (unbalanced) must be at or close to chassis potential. The load must not be grounded separately.

Each channel of the amplifier is a four terminal device and care must be taken to ensure that there is no connection between the cold sides of the input and output.

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## operating instructions

### **OPERATION**

The amplifier is switched on by the Power switch on the front panel. Both green channel indicators will light.

Gain can be adjusted with the independent gain controls each of which is fitted with a simple locking device. Gain is at maximum with the controls rotated fully clockwise. The 0dBm positions are accurately calibrated before the amplifier leaves the factory.

### **PROTECTION**

The Quad 520 is fully protected against short circuits, input overload, inadequate ventilation etc. Each channel of the Quad 520 is fitted with a thermal sensor. If either channel overheats for any reason, the input signal to that channel is attenuated until the amplifier has cooled sufficiently. When the thermal protection is operating the channel indicator LED is extinguished. The amplifier will cycle until the cause of overheating is corrected or the input signal is reduced.

The load is protected from damage due to failure of a component in the amplifier by fuses in the power supply circuit of each channel.

Replacement values are: FS3A/FS3B – T2A  
FS1A/FS1B – T6.3A

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## service

### SERVICE

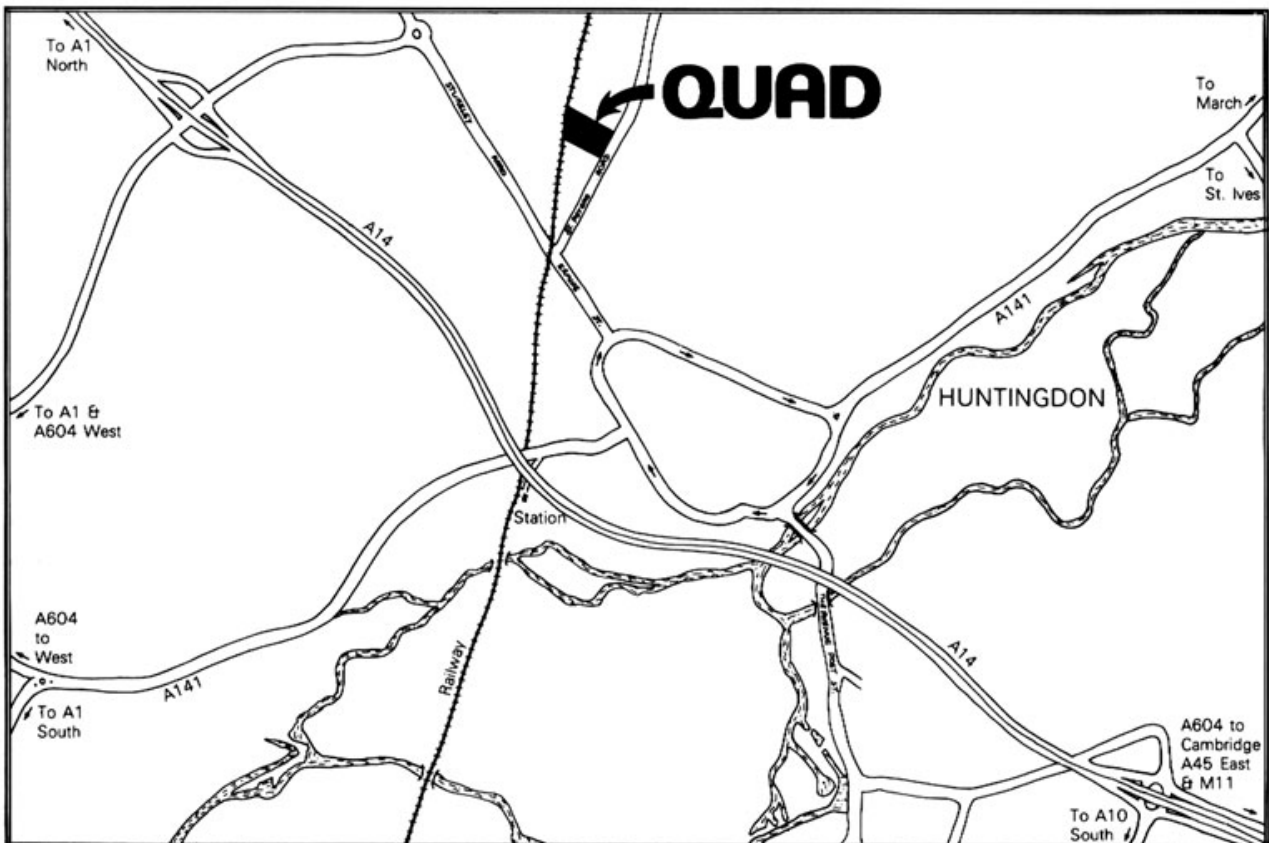
This Quad amplifier has been carefully tested and inspected during manufacture and before packing and delivery to ensure that it will provide many years of reliable service. It has been designed to be reliable and also easy to service if a component should fail.

The Quad 520 can be serviced in the field by replacing a complete amplifier module. This requires a posidrive screwdriver only. No adjustment or setting up is required.

Amplifier modules should be ordered as such, quoting the amplifier serial number. Individual components should be ordered by their circuit diagram reference.

If the amplifier has to be returned to the factory or distributor, the original packing should be used.

Quad offers same-day service from Monday to Friday except for bank holidays. The map below shows where to find us. Please call 0480 52561 to tell us that you are coming.



### GUARANTEE

This power amplifier is guaranteed against any defect in material and workmanship for a period of twelve months from the date of purchase.

Within this period we undertake to supply replacement parts free of charge provided that failure was not occasioned by misuse, accident or negligence. Freight costs are not covered unless by local agreement.

Within the U.K. the guarantee offered with this equipment does not limit the customer's existing statutory rights. A separate guarantee card is not supplied with your Quad unit. The guarantee begins on the day on which the unit is delivered.

# QUAD 520 instruction book

## circuitry

### QUAD 502 SPECIFICATION

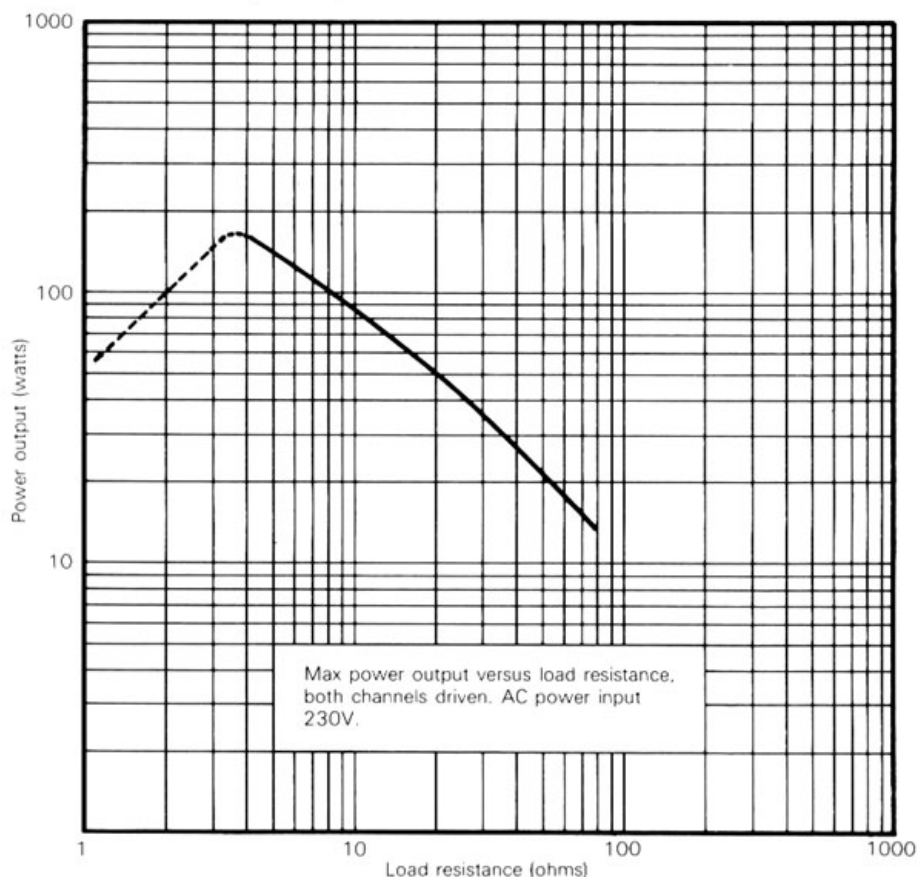
Measurements apply to either channel with or without the other channel operating.

Frequency Response: Ref 1kHz  $-0.5\text{dB}$  at 20Hz and 20kHz

Power Response: Ref 1kHz  $-3\text{dB}$  at 10Hz and 30kHz at 100 watts into 8 ohms

Power Output: Power and distortion for various frequencies with continuous sine wave into  $8\Omega$  resistance load.

40Hz any level up to 100 watts 0.03% Dtot  
 1kHz any level up to 100 watts 0.01% Dtot  
 20kHz any level up to 100 watts 0.1% Dtot



Output Internal Impedance and Offset:  $.03\Omega$  in series with  $1.5\mu\text{H}$  7mV maximum

Signal Input Level: 0.5Vrms at maximum gain for 100 watts into 8 ohms

Input Impedance:  $20\text{k}\Omega$

Crosstalk: Input loaded:  $-90\text{dB}$  at 20kHz

Hum and Noise:  $-115\text{dB}$  unweighted ref. full power (15.7kHz measurement bandwidth)

Stability: Unconditionally stable with any load

A.C. Input: 110-120V, 220-240V, 50-60Hz 20-480 watts

Weight: 11Kg

Dimensions: Width 482.6mm (19"). Height (2U) 88mm (3½"). Depth 320mm (12½")

