

**Operating and
Service information**

JADE

ONE

MKII

ACTIVE · MONITORING · SYSTEM

Head Office and Manufacturing

Klark-Teknik Research Limited

Klark Industrial Park, Walter Nash Road, Kidderminster, Worcestershire, DY11 7HJ, England.
Telephone: (0562) 741515 Telex: 339821 KLARTK G Fax No: (0562) 745371

USA Distribution

Klark-Teknik Electronics Inc.

30B Banfi Plaza North, Farmingdale, N.Y. 11735, USA
Telephone: (516) 249-3660 Fax No: (516) 420-1863

Jade products are the result of a joint acoustic development enterprise between Klark Acoustic and Munro Associates — London.

Klark Acoustic is a fully owned subsidiary of Klark-Teknik Research Limited.

IMPORTANT: Product Registration

Please check that the enclosed product registration card is part of this book. If NOT, immediately inform the factory quoting the units serial number.

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Sound System Design and Engineering Seminars

Klark-Teknik undertakes on a regular basis the organisation of technical seminars at locations around the world. If you would like to attend one of these seminars, please tick the box on the enclosed product registration card or write to Klark-Teknik, England, for the attention of the International Marketing Services Department, and we will inform you of planned or forthcoming events, whilst trying our utmost to accommodate your request.

If however, you cannot attend, you can as a user, obtain the complete seminar material for a nominal charge.

Klark-Teknik designs and manufactures a variety of products for the professional audio industry. If you would like us to forward information on these products, simply tick the appropriate box on the "information request" reply card.

Thank you for using Klark-Acoustic Products

To obtain maximum performance from this precision electro-acoustic product, please study these instructions carefully. Installing and operating the monitor system is not complicated, but the flexibility provided by its operating features merits familiarisation with its controls and connections. This product has been prepared to comply with the power supply requirements, that exist in your location.

Precautions

Before connecting this unit to the mains power, ensure that the operating voltage is correct for your local supply.

It is important that you observe the following instructions if another voltage setting is required.

Voltage Selection and Power Connection

Connection is by means of an IEC standard power socket. The rear panel voltage label, indicates the voltage required for the satisfactory operation of the unit.

Before connecting this unit to the mains supply, ensure the fuse fitted is the correct type and rating as indicated on the rear panel.

To change the mains voltage selector, adjust the rotary switch to the appropriate position. Before adjusting the voltage selector switch, the power to the unit **must** be disconnected.

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Safety Warning

This unit is fitted with 3-pin power socket: For safety reasons the earth lead should not be disconnected. If a problem with earth loops is encountered disconnect the screen connection on the signal input cable.

To prevent shock or fire hazard, do not expose the unit to rain or moisture.

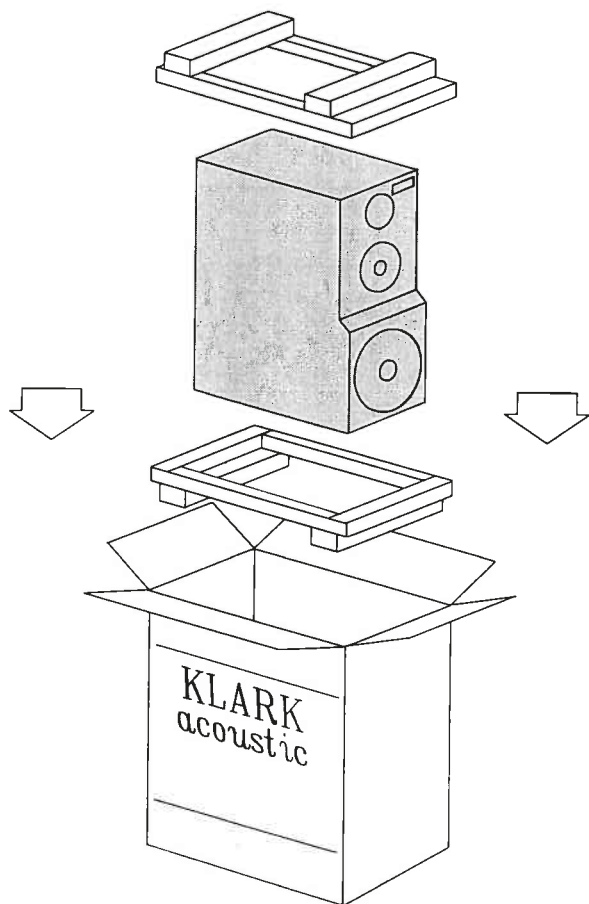
To avoid electrical shock do not remove back panel. Refer servicing to qualified personnel only.

After you have unpacked the unit

Save all the packing materials – they will prove valuable should it become necessary to transport or ship this product.

Please inspect this unit carefully for any signs of damage incurred during transportation. It has undergone stringent quality control inspection and tests prior to packing and left the factory in perfect operating and mechanical condition.

If, however, the unit shows any sign of damage, notify the transportation company without delay. Only you, the consignee, may institute a claim against the carrier for damage during transportation.



Introduction

The Jade One Mk II is a compact, two-way active monitor system suitable for studio, broadcast and quality control applications.

The Jades have a frequency response that is essentially flat from 55Hz to 17kHz, precise imaging and minimal coloration. Also because they are active there are no compatibility problems between amplifiers, crossovers and speakers.

Traditionally, studios have relied on a combination of very high power monitoring and near field monitoring to evaluate the quality of recorded material – but working methods in the recording industry are changing! This has resulted in a real need for additional monitoring that is more compact than the main monitoring system yet still sonically accurate. As most near field monitors have normally been selected because their inherent colorations correspond to those found in domestic systems they are obviously not ideally suited for exacting qualitative monitoring. So where exactly is there a need for these new accurate and yet relatively high powered, compact systems?

One area that has grown considerably over the past few years is pre-production, especially that involving programmable instruments. It is often the case that a session is started in a pre-production suite and then transferred to a larger studio for completion. However, it is necessary to have a monitoring system in the pre-production room that can show up distortion and other unwanted anomalies in the material being worked on. If there are faults in the recorded material that remain hidden until you transfer to the main studio, the mistakes could prove costly. Furthermore, space restrictions often preclude the use of large scale monitoring systems in such applications, and because the driver geometry of the Jades is so compact, they can be used in the near field without degradation of the stereo image.

A parallel growth area exists in home recording, especially where the professional musician is using his or her own home studio as a pre-production facility to cut down on time spent in commercial studios. Here, the Jades provide an excellent full range monitoring facility that won't take up too much valuable space. The same is true of course for broadcast and audio/visual production.

Another feature of the Jade design is that it is engineered to cope with the wide dynamic range of digitally recorded material. It is for this reason that each tweeter is powered by its own 100 watt amplifier when other manufacturers might well have considered 25 watts to be adequate. Even in the smaller studio or home recording facility, this consideration is important. After all, what is the output of a digital drum machine or sampler but a digital recording?

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Reliability

Any professional monitor must be reliable. Not only are the Jades built to the very highest engineering standards from top grade components, they are also self-protecting. If the input signal is driven into clipping, a warning light on the front of the monitor flashes. If extensive clipping is allowed to continue, the protection circuitry comes into play and reduces the power to the drivers, at the same time lighting a protection warning LED. It might seem irritating to have the monitors cut out when you're driving them extra hard for that last ounce of excitement, but it isn't nearly so annoying as losing a driver!

The internal amplification is based on an ultra-low distortion MOSFET design and both the high and low frequency drivers have their own 100 watt amplifier. All components are generously rated for long term reliability and torroidal transformers are used in the power supply to minimise unwanted radiation.

Construction

The Acoustic system comprises a two-way driver system housed in a very solid, ported Medite cabinet. The MOSFET power amplifiers and the active crossover electronics are housed in the back of the cabinet and the whole assembly hinges down for easy servicing. The signal input and power connections are also located on the rear panel along with the environmental equalisation which is used to compensate for changes in frequency characteristics caused by monitor positioning. Power is applied via an IEC mains connector and each cabinet is separately fused and switched. An input level control is also provided and when this is set at its centre position, a +4dBu signal is required for maximum output.

Great attention has been paid to ensure structural rigidity and the main driver baffle is some 1 3/4" thick. Silicon rubber is used to internally seal all the cabinet seams and the cabinet itself is extensively braced. The acoustic and electronic systems are mounted in separate compartments which are totally sealed from each other.

The bass driver utilises an 8" neoflex cone, a material chosen for its low coloration. This is reflex loaded to maximise low frequency efficiency and in order to produce an acceptably high sound pressure level at low frequencies, the driver has a long throw geometry driven by a copper voice coil on a Kapton former.

The high frequency driver is a 1 1/4" soft domed unit which again produces very low coloration and has an excellent transient response. As the system is active, the frequency response characteristics of the crossover can be designed to fully exploit the potential of the drivers, and the mounting planes of the two drivers are slightly staggered to optimise the phase characteristics of the system.

Reliability Control

Even with the advanced technology incorporated in this product, each instrument is given the full backing of Klark Teknik's "reliability control" which proves each product against a specification consistent with the highest professional standards. Only top quality components are used, and every unit is bench tested and aligned before a burn – in period and final performance test.

Options

Security cover
Transformer input *balancing
Recommended stands
Tweeter protection grill

*input transformer balancing is non retrofittable and has to be specified with order.

Options Ordering Information

Parts Number

Security cover	SCJ1
Input balancing transformer	BN37
Tweeter protection grill	TG1
Adjustable stand (free standing)	AS1
Wallmounted stand	WS1

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Instrument Familiarisation

Rear Panel Functions

1. Low frequency and High frequency controls are provided for environmental compensation. **The low frequency filter** allows adjustments of +3dB to -6dB.

2. **The high frequency filter** allows adjustments of +3dB to -3dB.

3. **The input level control** allows the system gain to be up to +6dB when in its fully clockwise position, and offers full attenuation in its anti-clockwise position.

4. **The power switch** is a two pole type isolating both the live and neutral conductors. When the power is on, a green status LED lights on the front of the monitor.

5. **Mains** is supplied via an IEC standard 3 pin connector. A compatible power cord is supplied with the unit.

6. **The mains fuse** is contained within a pull out compartment on the power inlet socket. Always replace with the correct type and rating of fuse.

7. **Voltage selector switch** This unit is designed to be switchable between four nominal supply voltages, 110V, 120V, 220V and 240V. To facilitate this, a rotary switch is fitted, accessible from the rear panel. The power supply must be disconnected before the switch is reset. Note too, that any attempt to operate the unit from a 220V or 240V supply with the switch set to 110V or 120V is liable to result in severe damage to the unit.

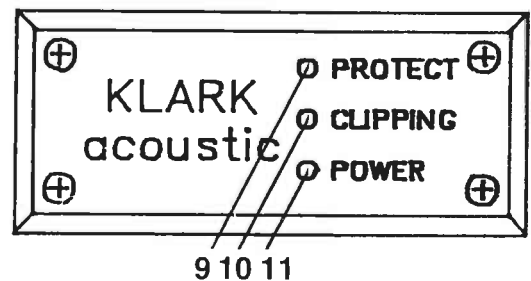
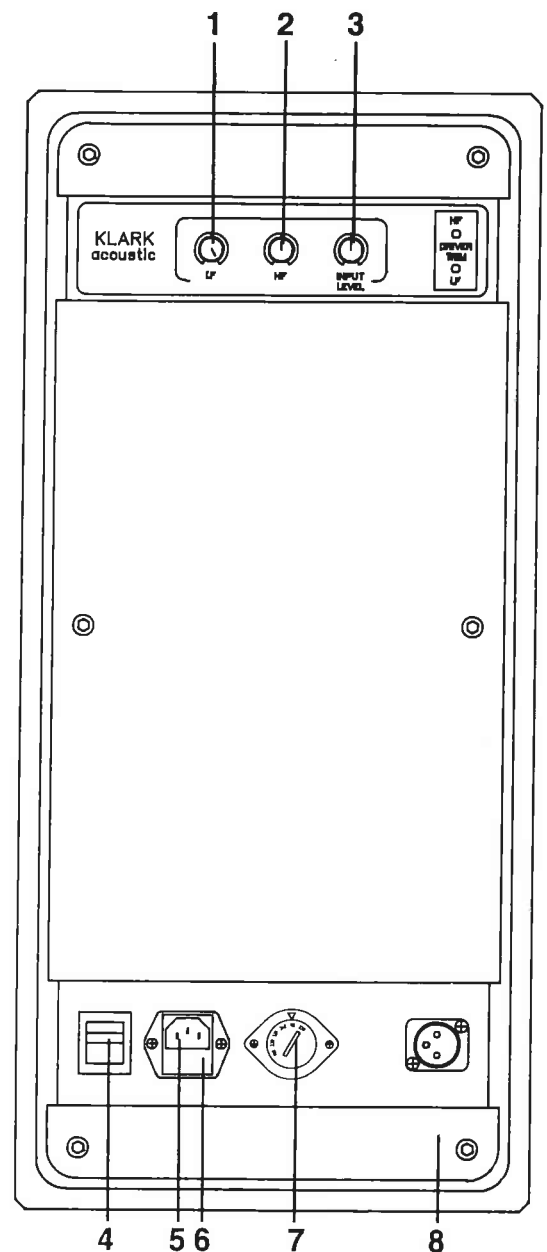
8. **Input** connection is made via an XLR type socket.

Front Logo Panel Functions

9. **Power.** A green status LED lights when the power is on.

10. **Clipping.** A yellow LED lights indicating clipping conditions.

11. **Protection.** A red LED flashes to warn of too high input level. If the input is allowed to continue at the same or greater level the system is attenuated. The protect LED will remain lit until the input level is reduced. The system then resets after a short time. The protect LED also stays permanently on during power up sequence or if a fault occurs in the power amp section.

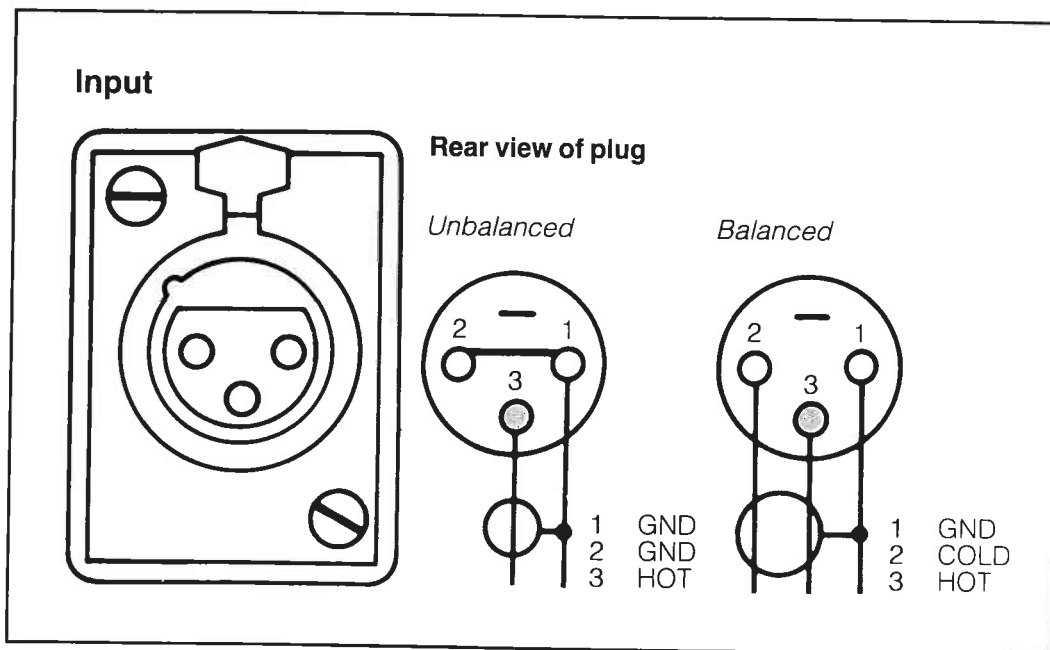


Audio Connections

Input

The input circuitry is a transformerless, electronically balanced design which achieves a symmetry of better than -50dB from 20Hz to 10kHz.

If transformer balancing of the input is required, this must be stipulated at the time of order; it is not retro-fittable.



Balanced Circuits

Transformer or electronically balanced connections have the benefit of "common mode rejection" which eliminates externally induced interference such as mains hum etc. Balancing is especially useful when long cable runs are used between pieces of equipment.

Transformer balanced circuits have the added advantage of being, "fully floating" with the ground (earth) or screen being totally isolated from the signal. In installations where a difference in earth potential is likely to occur this isolation prevents grounding problems which can, in some cases, damage the equipment.

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Specifications

Acoustic System	2 way bass reflex
Acoustic Output (per pair in normally damped control room.)	113dB SPL peak @ 1 metre 107dB SPL continuous @ 1 metre
Frequency Response	55Hz – 17kHz \pm 3dB
Drive Units	L.F. 8" Neoflex cone H.F. 1 1/4" Soft dome
System Input	
Type	Electronically balanced
Impedance (ohm)	20k balanced. 10k unbalanced
Sensitivity	+4dBu for max. output with level control at centre position.
Crossover	
Type	Active
Filters	24dB/octave Butterworth
X-over frequency	2.5kHz
Equalisation	Purpose designed to suit driver correction requirements. High pass filter 12dB/octave @ 35Hz, Butterworth.
Environmental Controls (compensation)	
High frequency	\pm 3dB @ 10kHz
Low frequency	+3dB to -6dB @ 75Hz
Level	-Infinity to +6dB
Power Amplifier	
Type	Mosfet design
Output	>100W rms into 6 ohms
Distortion(THD)	<0.05% (20Hz – 20kHz)
S/N ratio	>105dB below maximum output
Bandwidth	Band limited to suit driver requirements.
Power Requirements	110/120/220/240V 50/60Hz @ 500W maximum.
Dimensions (H.D.W.)	534mm x 390mm x 246mm
Weight (per unit)	Nett 22Kg. Shipping 25Kg
Terminations	Audio 3 pin XLR. Power 3 pin IEC
Cabinet Finish	Black Textured Epoxy

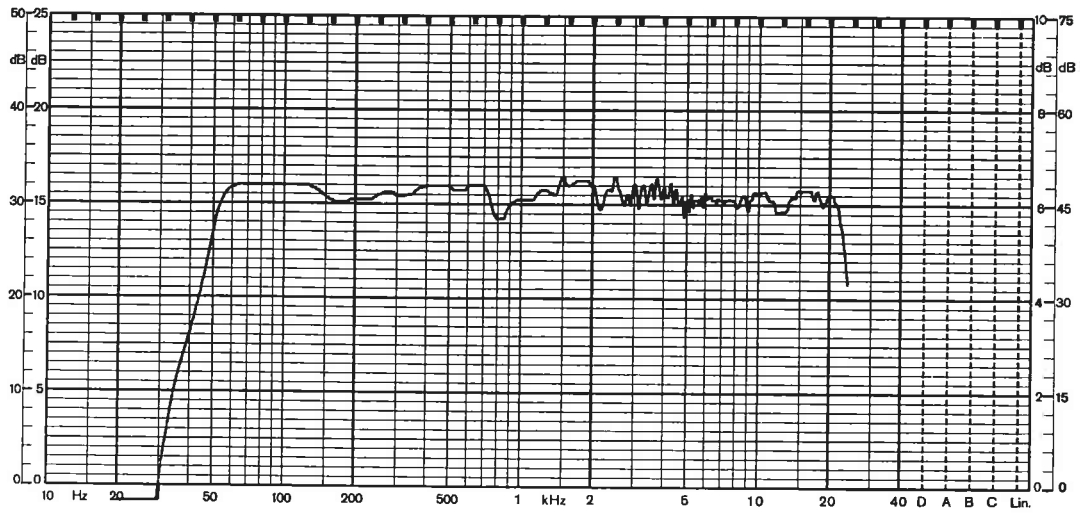


Fig. 1. Frequency response.
Measurement taken on tweeter axis, at 1m distance. In anechoic chamber.

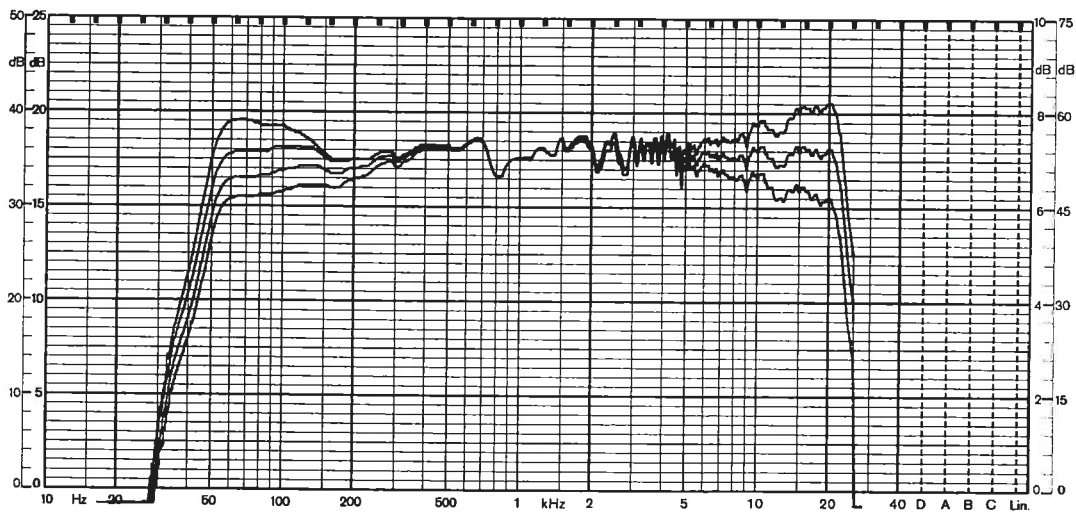


Fig. 2. Environmental compensation.
Plot showing variations to system response using H.F. and L.F. compensation controls. Measurement conditions as in Fig. 1.

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Specifications

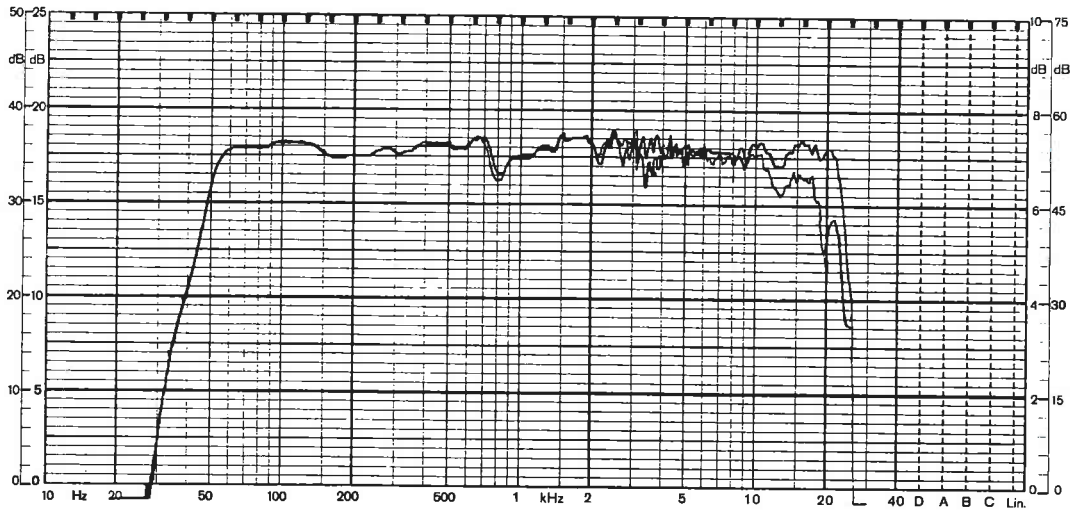


Fig. 3. Horizontal off axis response.

Measurement taken at 15 degrees off axis with conditions as in Fig. 1.



Fig. 4. Distortion.

2nd and 3rd harmonic components at 90dB output level. Measuring conditions as in Fig. 1.

Installation

The Jades are designed to be extremely easy to set up in a variety of locations. Ideally the listener and the two speakers should form an equilateral triangle with the listener at the apex. However, in order to increase the useful listening area to include other persons behind the engineer, it may be advantageous to arrange the geometry such that the apex of the triangle is a couple of feet behind the engineer. This arrangement is shown in **diagram 1**.

In the vertical plane, the monitors should ideally be mounted so that the mid point between the two drivers (ie. measurement point, 60mm below tweeter centre) is at ear level. If this is not possible, then the cabinets may be angled to achieve the same end result as in **diagram 2**. Which ever way the monitors are mounted, they should be rigidly fixed if possible or positioned on a substantial stand. It is unwise to stand the monitors on flimsy furniture which might resonate, thus degrading the perceived sound quality within the listening area.

Environmental Equalisation

It is generally known that the positioning of a speaker affects its frequency characteristics as measured at the listening position within a room, particularly at the low frequency end of the spectrum. As a rule, the closer a speaker is mounted to a wall or corner, the higher the amount of bass produced. To allow for the greatest possible flexibility in positioning, the Jades are fitted with both high and low frequency equalisation controls designed to compensate for this effect.

The low frequency control is calibrated for normal use where monitors are located several feet in front of the nearest wall. To all intents and purposes, this can be considered as free-field operation. As the distance between the monitor and wall is reduced, however, the amount of bass produced increases and so the LF control maybe turned anti-clockwise to attenuate the low frequency end by up to 6dB to compensate. As the effect depends not only on distance but also on the construction of the walls, no hard and fast rule can be applied as to how much attenuation is needed and in exacting situations a spectrum analysis of the listening room may be advantageous, but it is usually quite acceptable to play known material through the system in its intended position and then to adjust the equalisation for the best subjective result.

The high frequency equalisation may be used to tailor the high end to the user's preference and also to compensate to some extent for the way in which the room surfaces reflect high frequency energy. All such evaluations should be made from the listening position.

Diagram 1.

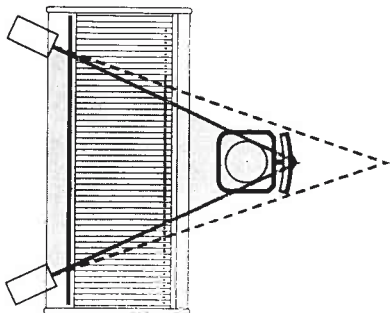
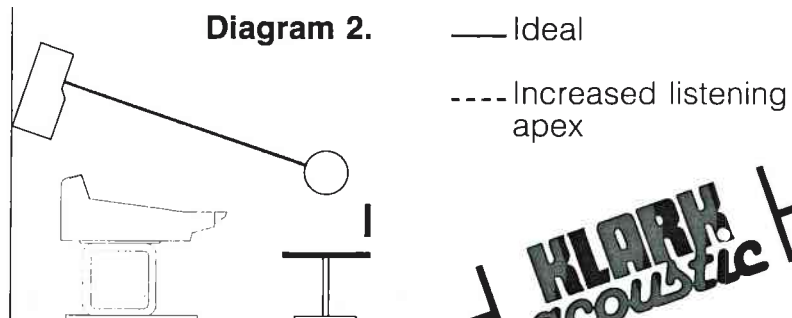


Diagram 2.



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Service Information

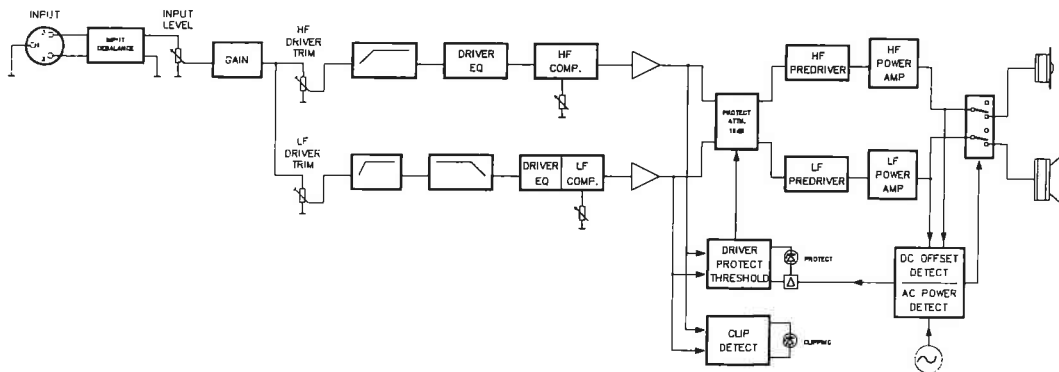
System Overview

Signal from the balanced audio input XLR passes through the input level control, then through low frequency and high frequency driver level trim presets. The signal is then split into low and high frequency components by the crossover section, with additional subsonic filtering applied to the low frequency signal chain. Driver frequency responses are then optimised using fixed equalisation. Additional low frequency and high frequency controls are provided to give the installation engineer adjustment for boundary compensation (L.F.) and preferred "house curve" (H.F.).

Both low frequency and high frequency signals then pass to their respective amplifier pre-driver stage. An attenuator is switched in line with the signal, at this point, should the driver protection circuit detect an overload condition. Each class A pre-driver stage drives its own mosfet power output stage.

The two outputs pass via a relay to the low frequency driver and soft dome tweeter. This output relay is turned off to protect the drivers during power on/off switching and in the event of a DC offset condition existing in either amplifier. Power 'on', amplifier clipping and protection status, are displayed by LEDs on the logo plate.

The power supply provides $\pm 55V$ unregulated DC for the pre-driver and amplifier section, and $\pm 18V$ regulated DC for the remaining signal processing circuitry.



Circuit Description

Input Section

The input signal enters via an XLR type connector, and may be balanced or unbalanced. The signal is then connected via connector ST6 and first order RF filter networks R1, C1 and R8, C3, C4, to the differential input amplifier IC4. Common mode rejection is factory set with P6 to give maximum rejection at 100Hz, typically 85dB. This stage is followed by the input level control P1, non inverting amplifier IC2b which has a gain of 6dB and the low frequency and high frequency driver level trim controls P4 and P5. These two presets allow adjustment for driver sensitivity variations and have been factory set, **they should not require further adjustment.**

Active Crossover Section

From P4 the high frequency signal passes through a fourth order (24dB/octave), high pass filter arranged around IC1d and IC1c. The filter features a Butterworth response with -6dB frequency at 2k5Hz.

From P5 the low frequency signal passes through a second order (12dB/octave) high pass filter IC2a, with a -3dB point at 30Hz and Butterworth response. This is followed by a fourth order (24dB/octave), low pass filter arranged around IC1a and IC1b. This filter produces a Butterworth response with a -6dB point at 2k5Hz.

Equalisation Section

The high frequency signal now has corrective equalisation added with IC5c, forming a -2dB dipping filter at 7kHz and IC5d a $+4\text{dB}$ peaking filter at 22kHz. The signal passes to high frequency control IC3b, which gives a $\pm 3\text{dB}$ shelving response at 8kHz.

The low frequency signal is also equalised, with IC5b forming a 2dB dipping filter at 1.2kHz and IC5a producing a variable amplitude peaking filter at 65Hz, this being the low frequency control.

Each of four active equaliser sections is equivalent to a series LCR network. E.g. for IC5c: R22 is the real resistor, C11 the real capacitor and R28, C13 and IC5c form the synthesised inductor. High frequency stability of the equalisation sections is ensured by capacitors C9, C10, C23 and C24.

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Equalisation Output Section

Low frequency and high frequency signals from the equalisation sections, pass through attenuators R105, R106 and R38, R107 into voltage followers IC3a, IC6b, and then to C30 and C36 via relay RL1. RL1 is normally closed, shorting R101 and R103. When 'overload protection' is implemented, RL1 contacts open, and 15dB attenuators are introduced via R101, R102 and R103, R104. IC3a and IC6b outputs also drive the overload protection circuit via R69, R84 and amplifier clipping indicator circuit via D5 and D6.

Pre-Driver Section

N.B. Since both low frequency and high frequency pre-drivers are identical only one is described.

The pre-driver input is AC coupled by C36, R56, and RF immunity is assured by R55, C37.

Q6 and Q7 form a low noise differential input buffer amplifier stage and Q8 and Q9, a current mirror with a high open loop voltage gain. Q10 is a constant current load. The amplifier gain is 31dB and is set by R61, R58 and decoupled by C38. High frequency stability is assured by C40 and C41.

Quiescent Current

Idle current for the two output stages is set by R67 and R68. These have been factory set and will not normally require further adjustment. The nominal idle current for each amplifier is 45mA making 90mA total (± 20 mA), when measured in series with F1 and F2.

Output Stage

The output stage is a complementary push-pull power mosfet design with Q1, Q2 driven directly from the voltage amplifier (pre-driver) stage, via gate resistors R1, R2. R1 and R2 reduce the effective gate capacitance to ensure high frequency stability. The output zobel network formed by C3 and R5, further improves high frequency stability and is in fact, essential for stable operation.

The output choke usually found in most mosfet power output designs is omitted here, since the low and high frequency drivers are connected directly rather than via reactive crossover elements. Output from the two amplifiers pass through output relay RL1 to connector ST3 and through a cable assembly to the two drivers.

Protection circuit IC1 monitors DC levels on the two outputs via R7 and R8 and AC power status via R15. The output of IC1 (pin 1), is normally low, except in the presence of DC offset or during switch on/off, when it is high. IC1, pin 1, is also connected to the 'protect' LED driver via ST4 pin 4.

Power Supply

The power supply can be operated from 110/120/220/240V AC mains, depending on the position of the rotary switch on the back panel. The power transformer is a low noise toroidal type, with two tapped primaries and two centre tapped secondaries.

$\pm 55V$ DC for the output and pre-driver stages is provided by bridge rectifier BR1 and two 10,000 μF capacitors C19, C20. Fuses F1 and F2 protect this supply and F3, F4 the $\pm 18V$ DC supply. $\pm 18V$ DC for the signal processing circuitry is provided by bridge rectifier D3, D4, D5, D6, smoothing capacitors C15 C16 and positive and negative 18V regulators IC2, IC3. Decoupling capacitors C17 and C18 ensure low noise supply rails. The green power LED is connected between 0V and +18V via R3.

Driver Protection

The output of the low frequency crossover goes through buffer IC6b into rectifier IC6a. R69 determines the gain of the rectifier and the attack time of the rectifier. R72 determines the decay time and the gain of the rectifier. C42 also determines the attack and decay times of the circuit. The rectifier output (pin 1 of IC6), swings more negative for a greater input voltage.

The output from the high frequency crossover passes to the input of the high frequency rectifier IC7d. R84 determines the attack and gain of the rectifier. R84 is smaller than R69 to give a shorter attack time. The rest of the high frequency rectifier is identical to the low frequency rectifier. Diodes D12 and D11, mix the two DC voltages so that only the most negative voltage appears at the input to the comparators. The 'attenuation' comparator works by comparing the voltages at pins 2 and 3 of IC7a. If pin 2 has a lower voltage than pin 3, then the output will be +Vcc, otherwise the voltage at pin 1 of IC7 will be -Vcc. If the output of the comparator 'flips' to +18V, the relay is energised and an attenuator is switched in. This +18V is also fed via D8 to pin 5 of IC7, with +18V at this pin the protect LED stays permanently on.

The output of the diode mixer also goes to the 'comparator'. This compares the voltage at pins 9 and 10 of IC7 and gives an appropriate output on pin 8. If the output is positive, then this voltage is fed through via D10 and R90, to pin 6 of IC7. When pin 8 of IC7 is at +Vcc, the astable is disabled. When the output flips to -Vcc, the astable starts oscillating. The output of the astable is fed to the base of Q11. Q11 acts as a buffer and drives, as its collector load, the protection LED.

The output of the HA12002 goes to the potential divider formed by R96 and R97. The output of the potential divider goes to the input of the transistor Q11. Thus if the HA12002 cuts off the speakers, then the protect LED will light.

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Clipping Detect Circuit

Negative bias on the input of IC6d gives +18V at the output of IC6d, thus the 'clipping' LED is normally off. Signals from low frequency and high frequency crossovers are rectified through diodes D5 and D6. When a high level signal gives a voltage on the non-inverting input of IC6d that exceeds the 0V threshold, the output of IC6d switches to -18V, so turning on the 'clipping' LED. R78 and C44 extend the 'on' time of the circuit to ensure that signal transients are adequately displayed. R83 connects the circuit to the -55DC unregulated supply, giving a threshold that is power supply dependent.

Schematic diagram

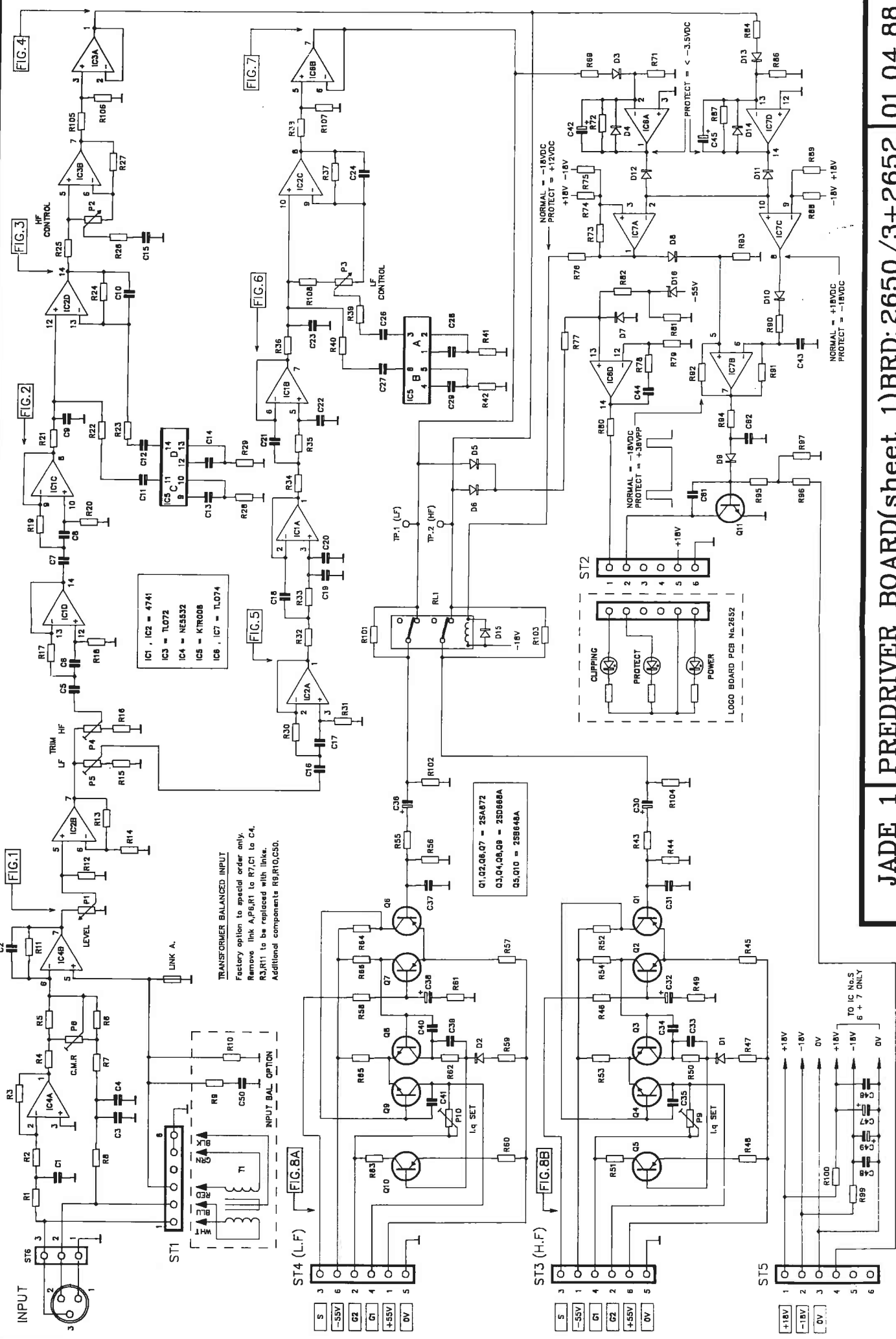
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Predriver Board



Schematic diagram

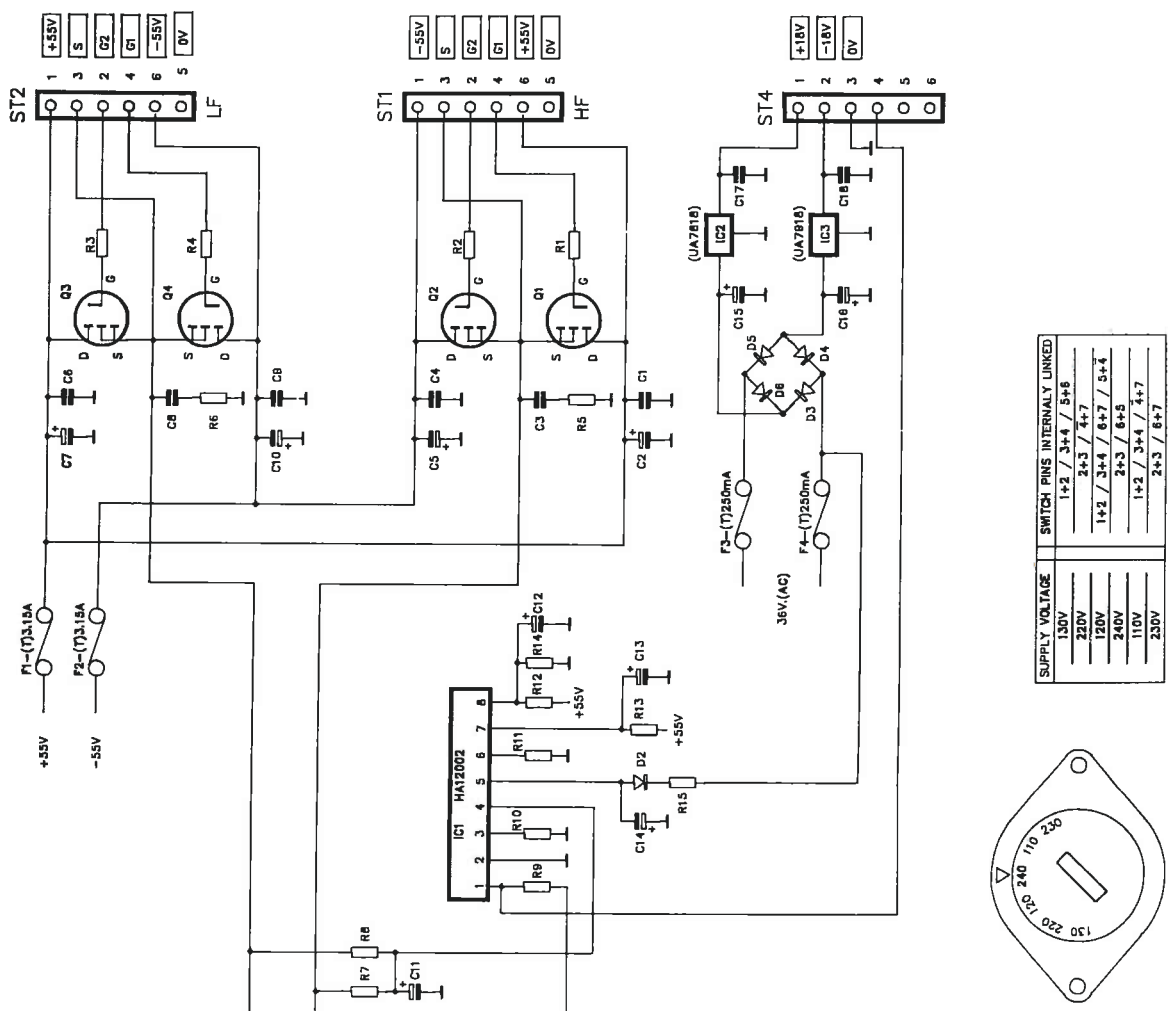
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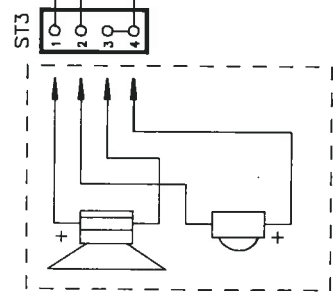
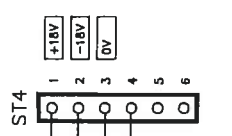
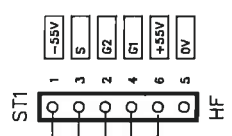
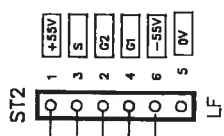
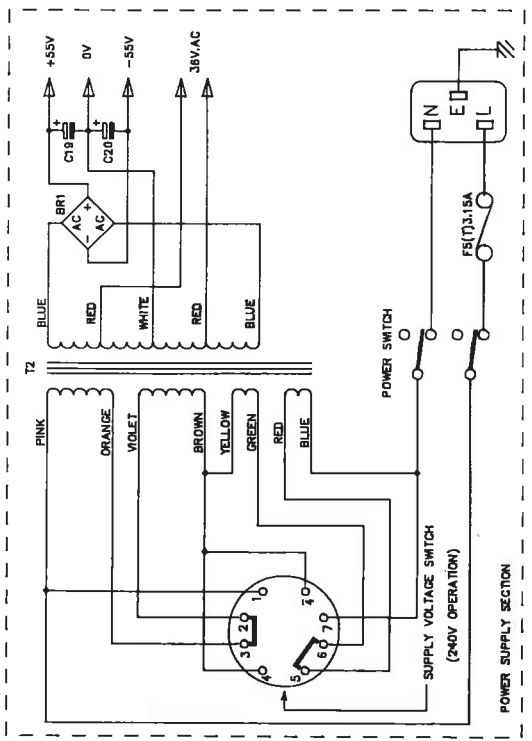
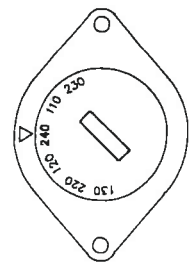
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Power Amp Board



SUPPLY VOLTAGE	SWITCH PINS INTERNALLY LINKED
130V	1+2 / 3+4 / 5+6
220V	2+5 / 4+7
120V	1+2 / 3+4 / 6+7 / 5+4
240V	2+3 / 6+5
110V	1+2 / 3+4 / 4+7
230V	2+3 / 6+7



Test Frequency Response Figs. 1-4

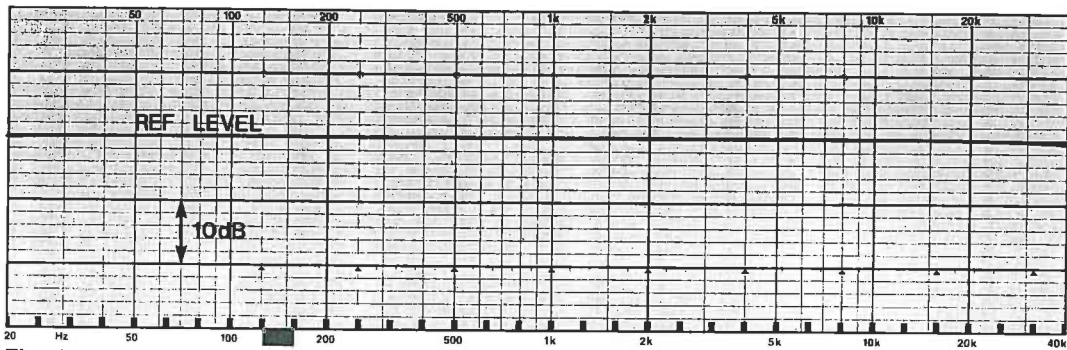


Fig. 1

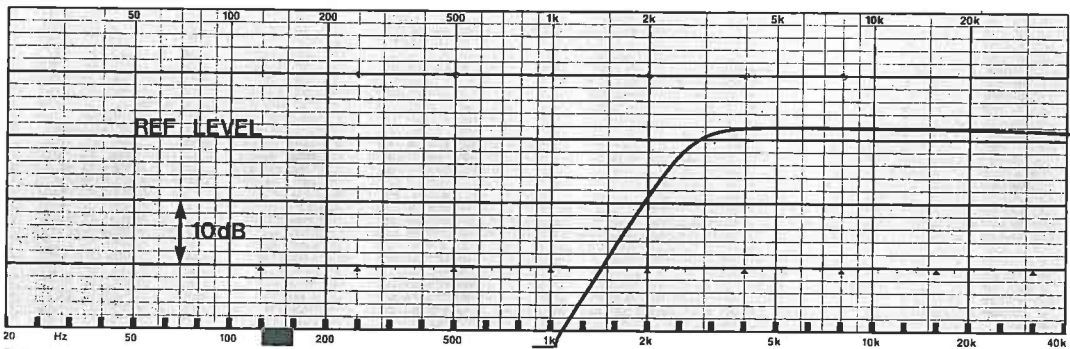


Fig. 2

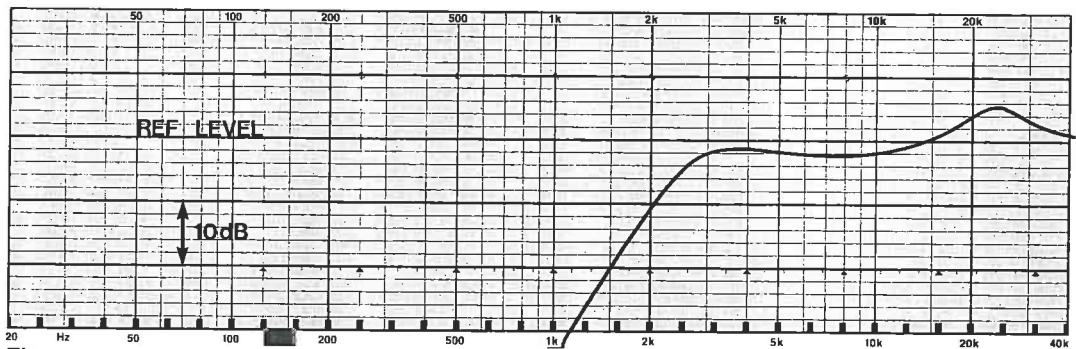


Fig. 3

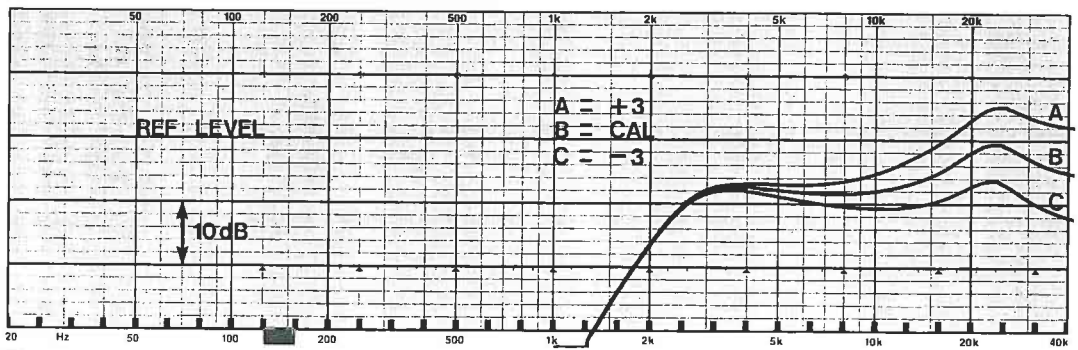


Fig. 4

All figures relate to points on the Pre-Driver schematic.



Test Frequency Response Figs. 5-8

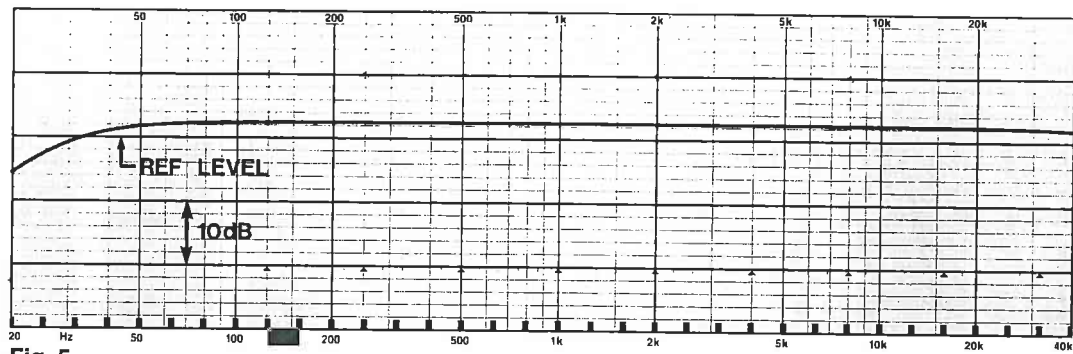


Fig. 5

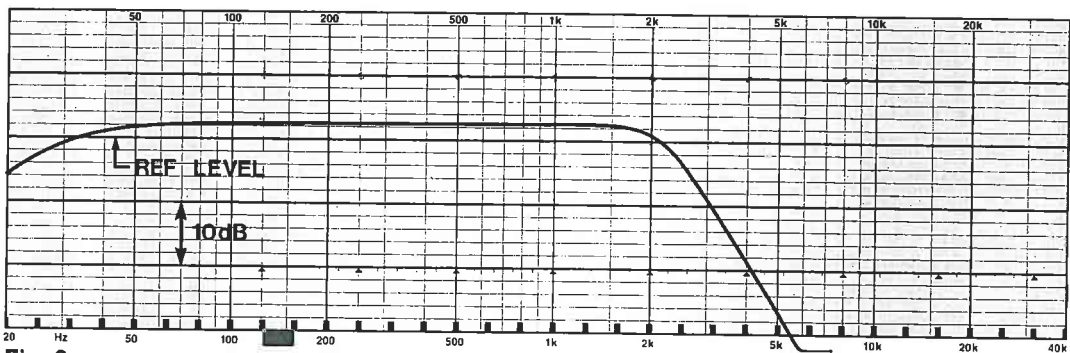


Fig. 6

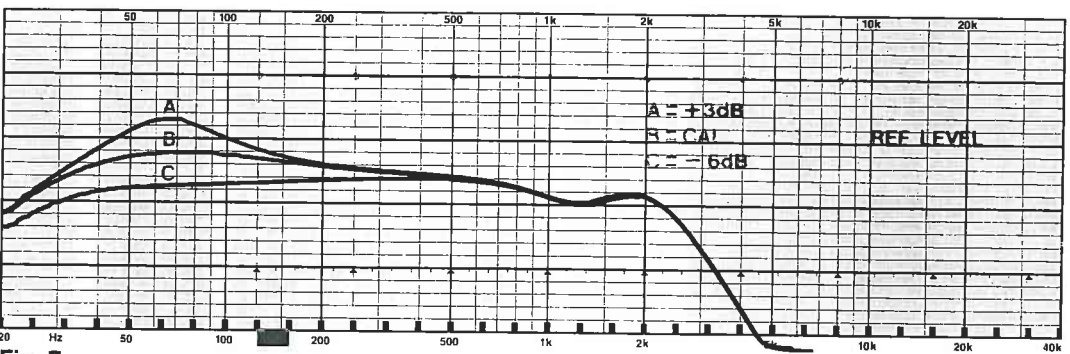


Fig. 7

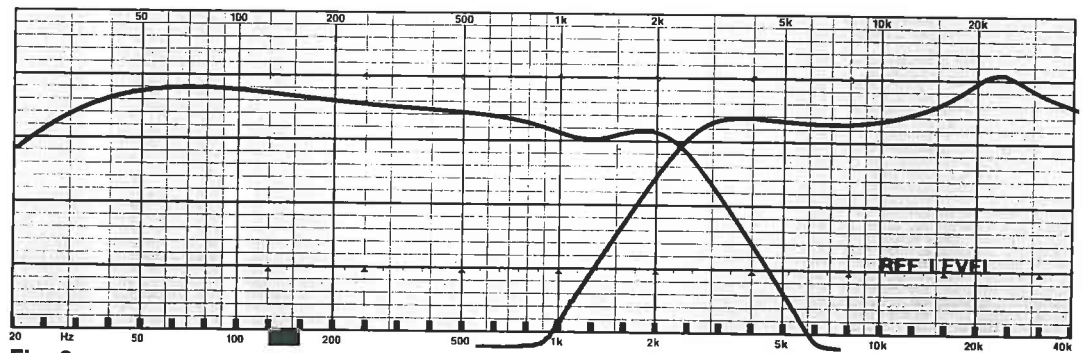
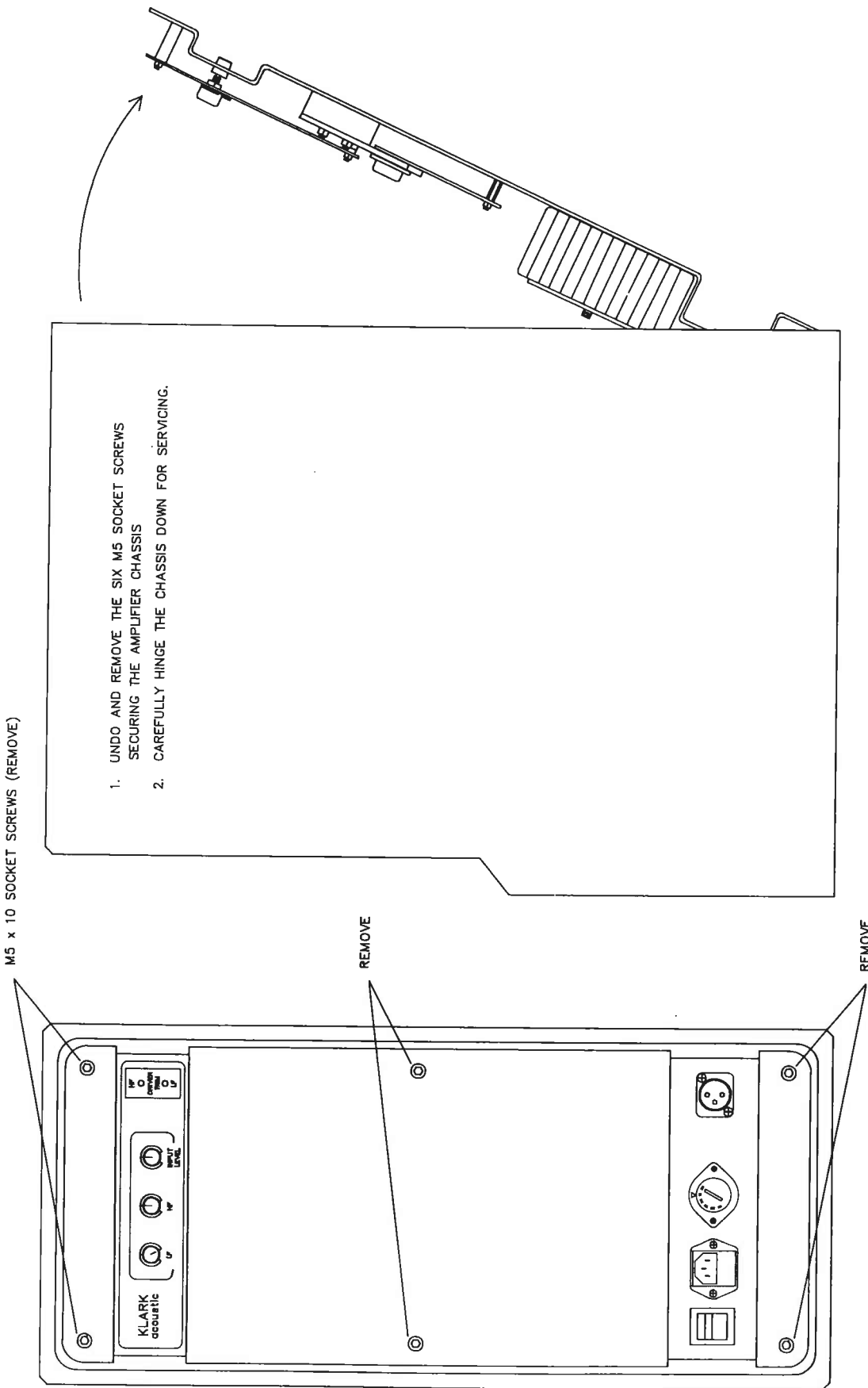


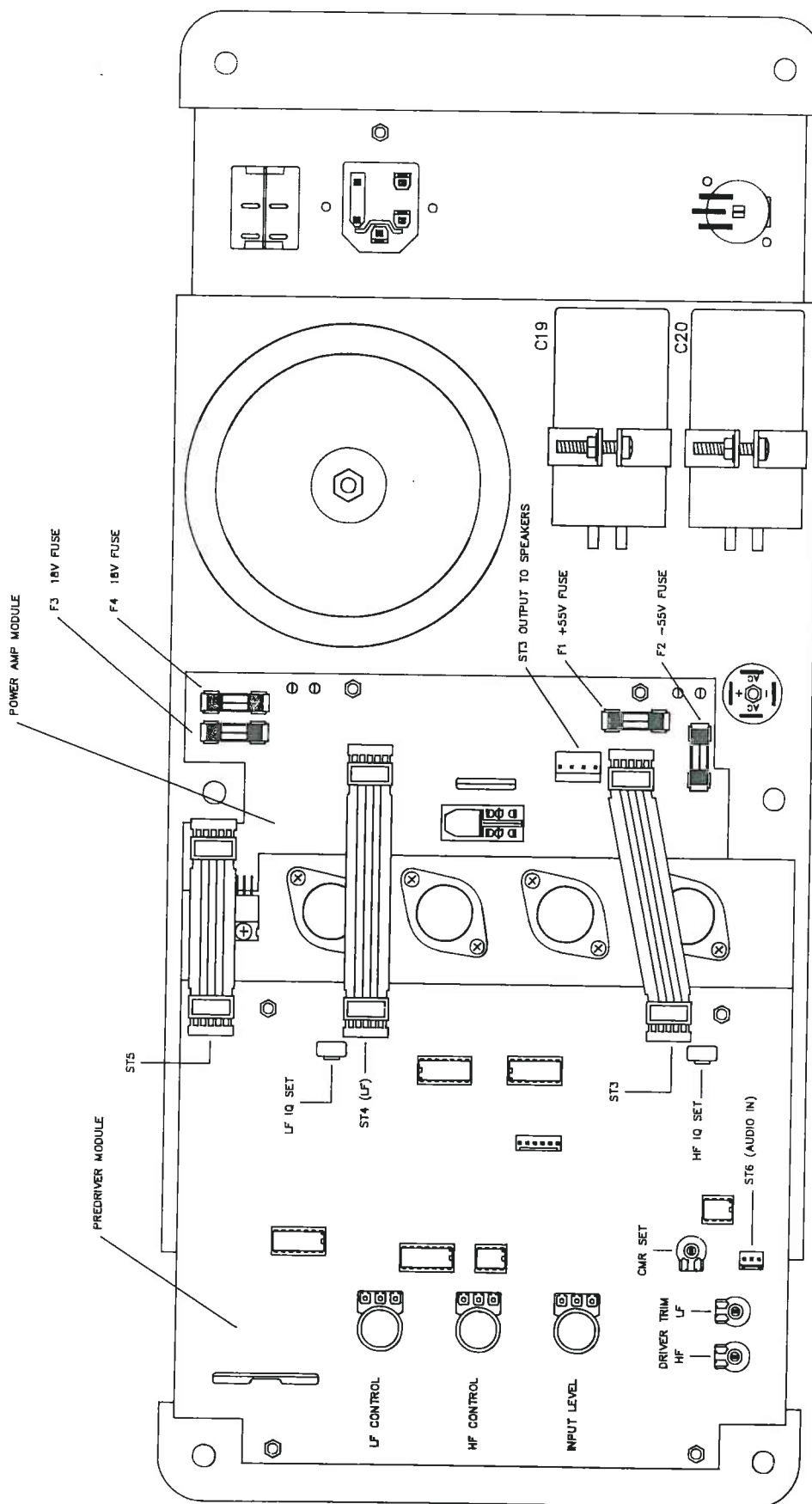
Fig. 8

All figures relate to points on the Pre-Driver schematic.



Access to Amplifier Modules

Amplifier Layout



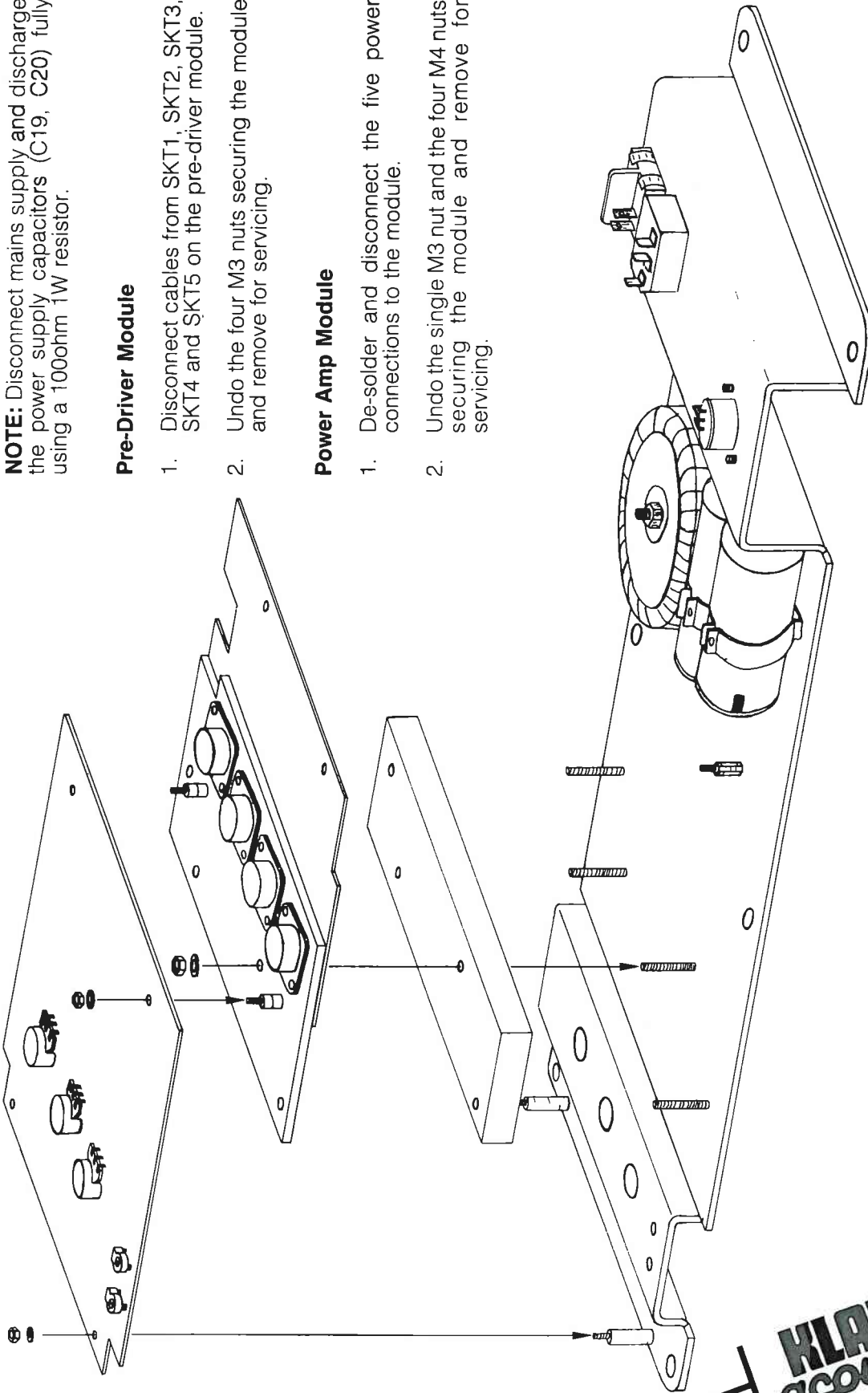
NOTE: Disconnect mains supply and discharge the power supply capacitors (C19, C20) fully using a 100ohm 1W resistor.

Pre-Driver Module

1. Disconnect cables from SKT1, SKT2, SKT3, SKT4 and SKT5 on the pre-driver module.
2. Undo the four M3 nuts securing the module and remove for servicing.

Power Amp Module

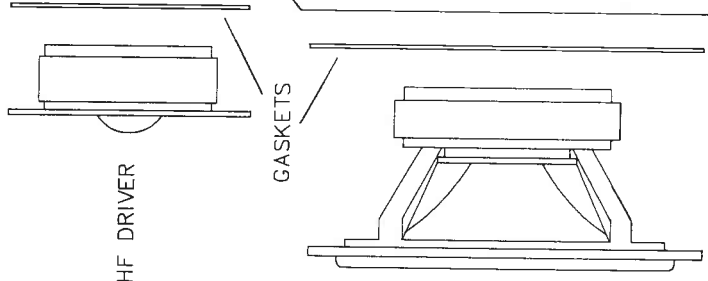
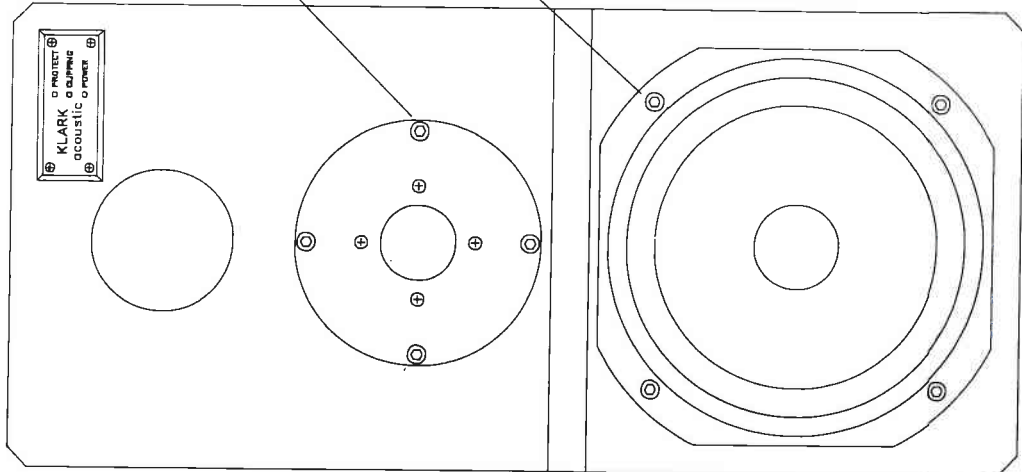
1. De-solder and disconnect the five power connections to the module.
2. Undo the single M3 nut and the four M4 nuts securing the module and remove for servicing.



Pre-Driver/Power Amp Module Removal

**KLARK
acoustic**

Low-High Frequency Driver Replacement



LF DRIVER

REMOVE THE FOUR SECURING SOCKET SCREWS HOLDING THE DRIVER IN PLACE. PULL THE DRIVER OUT OF ITS RECESS AND DE-SOLDER THE TWO CONNECTING WIRES.

NOTE: THE GASKET SHOULD NOT BE RE-USED AND MUST BE REPLACED.

PLACE THE NEW GASKET IN THE RECESS AND CAREFULLY SOLDER THE CONNECTING WIRES TO THE NEW DRIVER. PUSH THE NEW DRIVER INTO THE RECESS AND SECURE FIRMLY WITH THE FOUR SOCKET SCREWS.

HF DRIVER

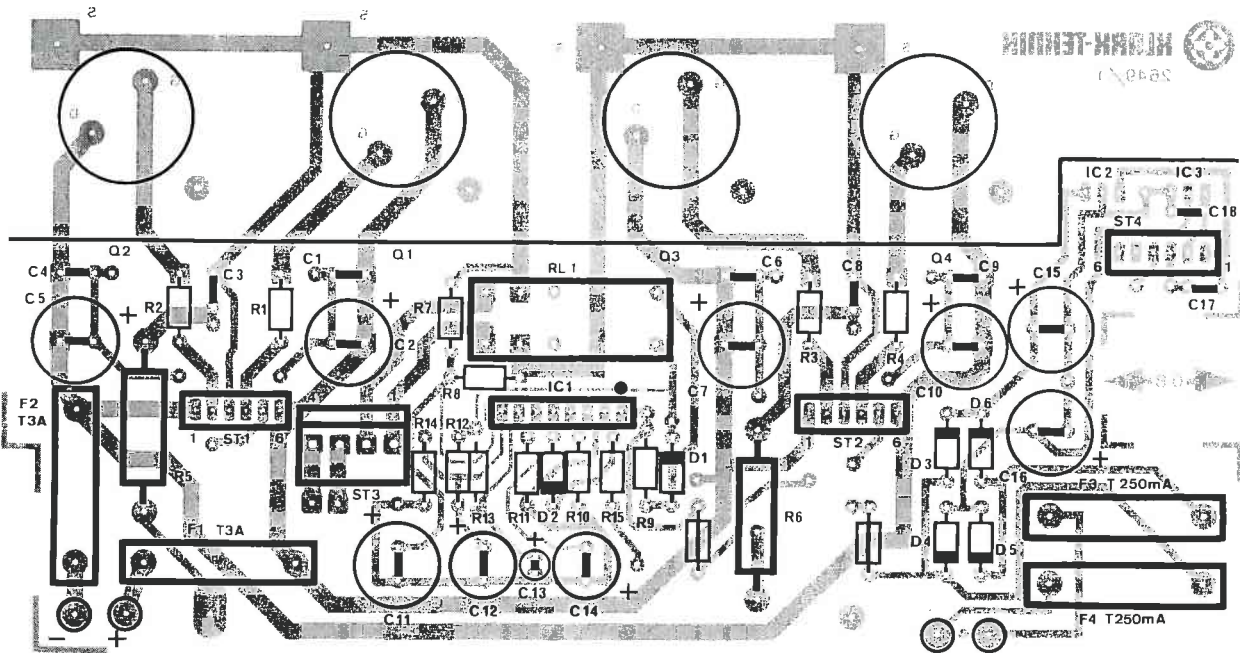
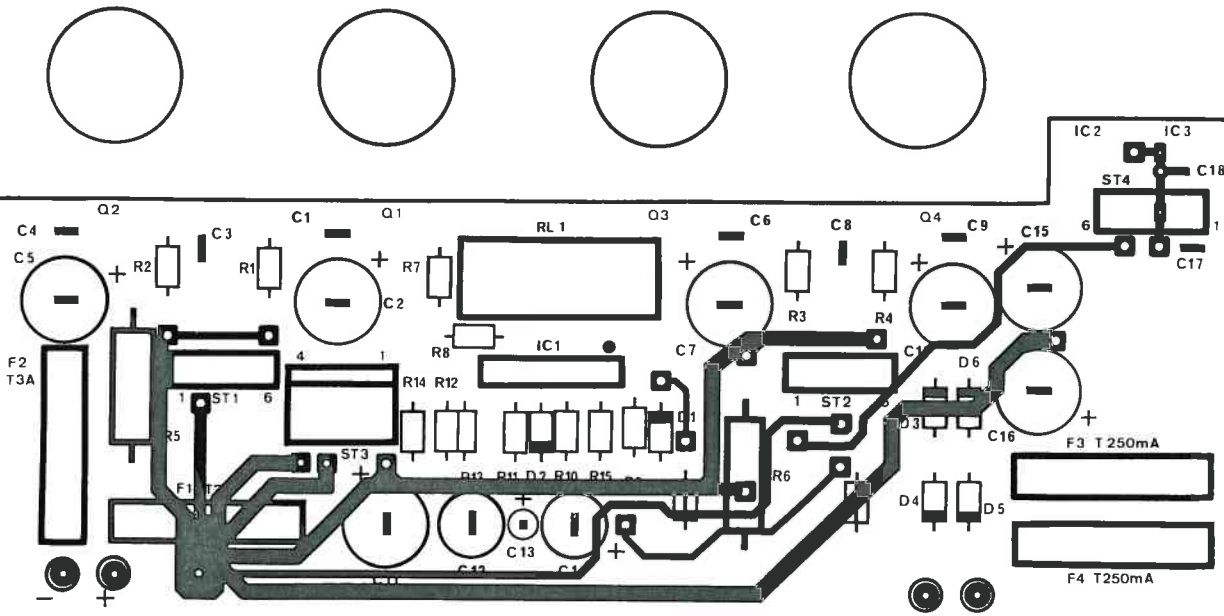
REPEAT THE SAME PROCEDURE AS FOR THE LF DRIVER REPLACEMENT

NOTE: WHEN ORDERING REPLACEMENT DRIVERS PLEASE QUOTE THE SERIAL NUMBER WHICH IS ON THE REAR OF THE MAGNET. WE CAN THEN SUPPLY DRIVERS OF EXACTLY THE SAME SPECIFICATION AS THE ORIGINAL.

DRIVER CONNECTIONS

- LF DRIVER + BROWN WIRE
- GREEN WIRE
- HF DRIVER + BLACK WIRE
- BLUE WIRE

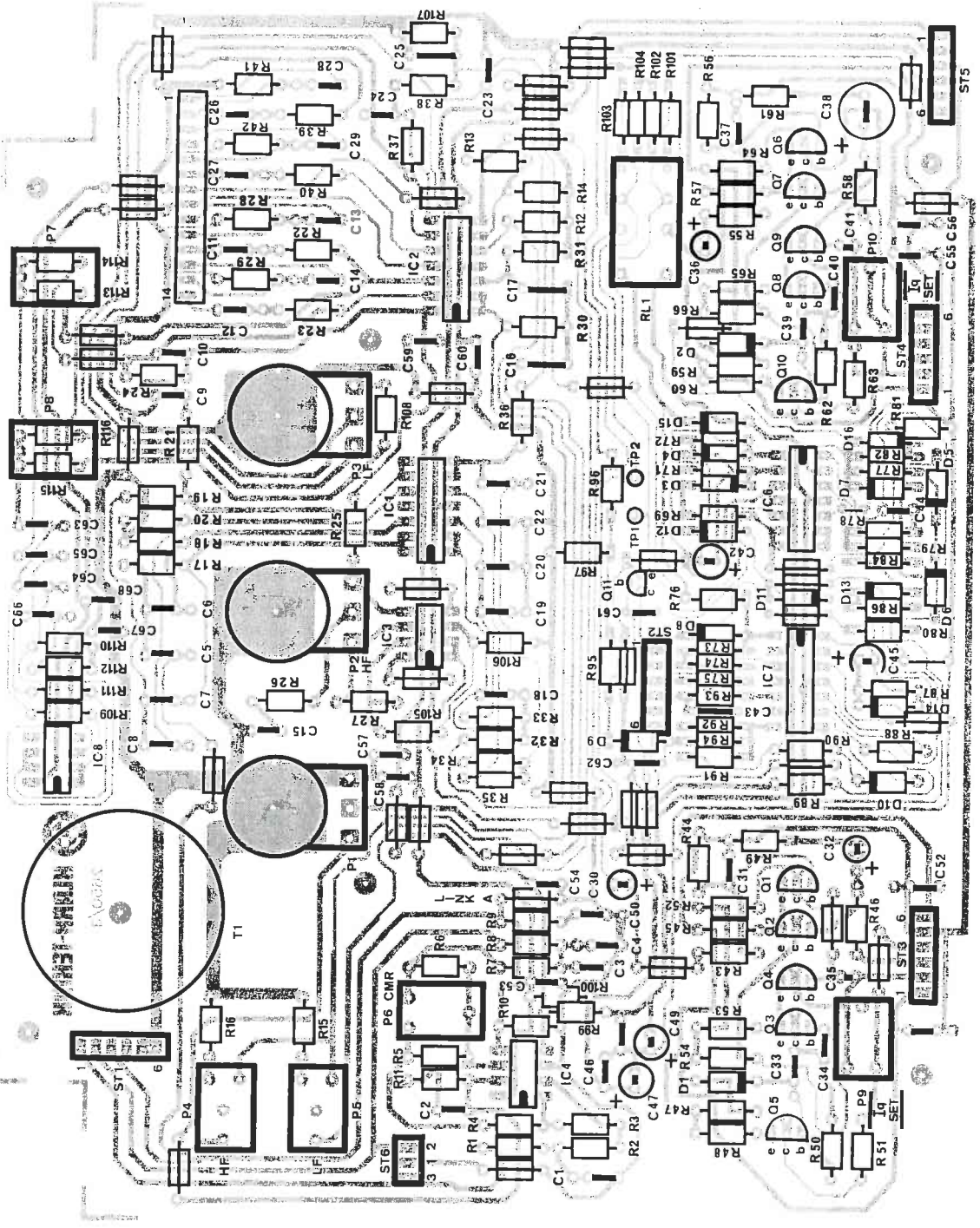
Power Amp Board Component Layout



All tracks on under side of board are printed in blue.



Pre-Driver Board Component Layout



All tracks on under side of board are printed in blue.

A large rectangular area with a thick black border, containing 25 horizontal lines for writing.



Warranty

This product is manufactured by Klark-Teknik and is warranted to be free from defects in components and factory workmanship under normal use and service for a period of one year from the date of purchase.

During the warranty period Klark-Teknik will undertake to repair or at its option, replace this product at no charge to its owner when failing to perform as specified, provided the unit is returned shipping pre-paid, to the factory or authorised service facility.*

No other warranty is expressed or implied.**

This warranty shall not be applicable and be void when this product is subjected to:-

- a) Repair work or alteration by persons other than those authorised by Klark-Teknik in such a manner as to injure, in the sole judgement of Klark-Teknik, the performance, stability, reliability or safety of this product.
- b) Misuse, negligence, accident, act of God, war or civil insurrection.
- c) Connection, installation, adjustment or use otherwise than in accordance with the instructions provided by Klark-Teknik.

* See enclosed service request form.

** "MELT" filter circuits used in the Series 300 Graphic Equalisers are warranted for 5 years.

Klark-Teknik reserves the right to alter specifications without notice. This warranty does not affect the statutory rights of the UK customer.



Important Note:

It is often useful to call your dealer or the factory explaining the nature of the problem with the unit. In many instances the problem can be solved without returning the unit to the factory. If the unit has to be returned to the factory, use original packing only. If you do not have one, we will provide a replacement.

Factory authorised service facilities are located throughout the world. Call your dealer or the factory for the location of the service facility nearest you.

Klark-Teknik Research Limited
Klark Industrial Park
Walter Nash Road
Kidderminster
Worcs. DY11 7HJ
England.

Klark-Teknik Electronics Inc.
30B Banfi Plaza North
Farmingdale
NY 11735
U.S.A.

Tel: (0562) 741515
Telex: 339821 KLARTK G
Fax: (0562) 745371

Tel: (516) 249 3660
Fax: (516) 420 1863

Klark-Teknik is Interested in Knowing You!

Klark-Teknik takes a particular interest in the way its products are used and in the people using them.

Your opinions and requirements are very important to us so that we can continue providing you with the right types of product and features you need. Please consider helping us to achieve this aim. You can do so by completing and returning the enclosed "PRODUCT REGISTRATION CARD". This will enable us to maintain a thorough understanding of our user base and consequently design and manufacture useful products to help you solve the various problems you might encounter in the course of your work.

Thank you for your co-operation.

The Klark-Teknik Group

Brand names manufactured by the Klark-Teknik group include:

Klark Acoustic – Active Monitoring Systems
Klark-Teknik – Signal Processing
Midas – Auditorium Consoles
DDA – Audio Mixing Consoles and Electronic Crossovers.

The logo for Klark Acoustic, featuring the word "KLARK" in a bold, sans-serif font above the word "acoustic" in a lowercase, italicized sans-serif font. The logo is enclosed in a stylized frame that resembles a speaker or a sound wave.

Copymaster do not remove

Note! This sheet is your Copymaster. Please duplicate on photocopier when needed.

Service Request Form

Please complete this form and send it to Klark-Teknik before returning the unit. Attach duplicate to the returned unit.

NAME

TELEPHONE

ADDRESS

MODEL No

SERIAL No

PURCHASED FROM

DATE

Please tick appropriate box

REPLACEMENT PACKING REQUIRED YES NO

- 1) Describe symptoms of malfunction.
- 2) Which channel(s) exhibit(s) the problem?
- 3) Under what conditions does the problem occur?

- | | |
|---------------------------|--------------------------|
| a) All the time | <input type="checkbox"/> |
| b) After a while | <input type="checkbox"/> |
| c) At high signal levels | <input type="checkbox"/> |
| d) At high temperatures | <input type="checkbox"/> |
| e) Other (please explain) | <input type="checkbox"/> |

Is the fault: Permanent Intermittant

- 4) What did you do to isolate the problem to this unit?
- 5) Further comments.