

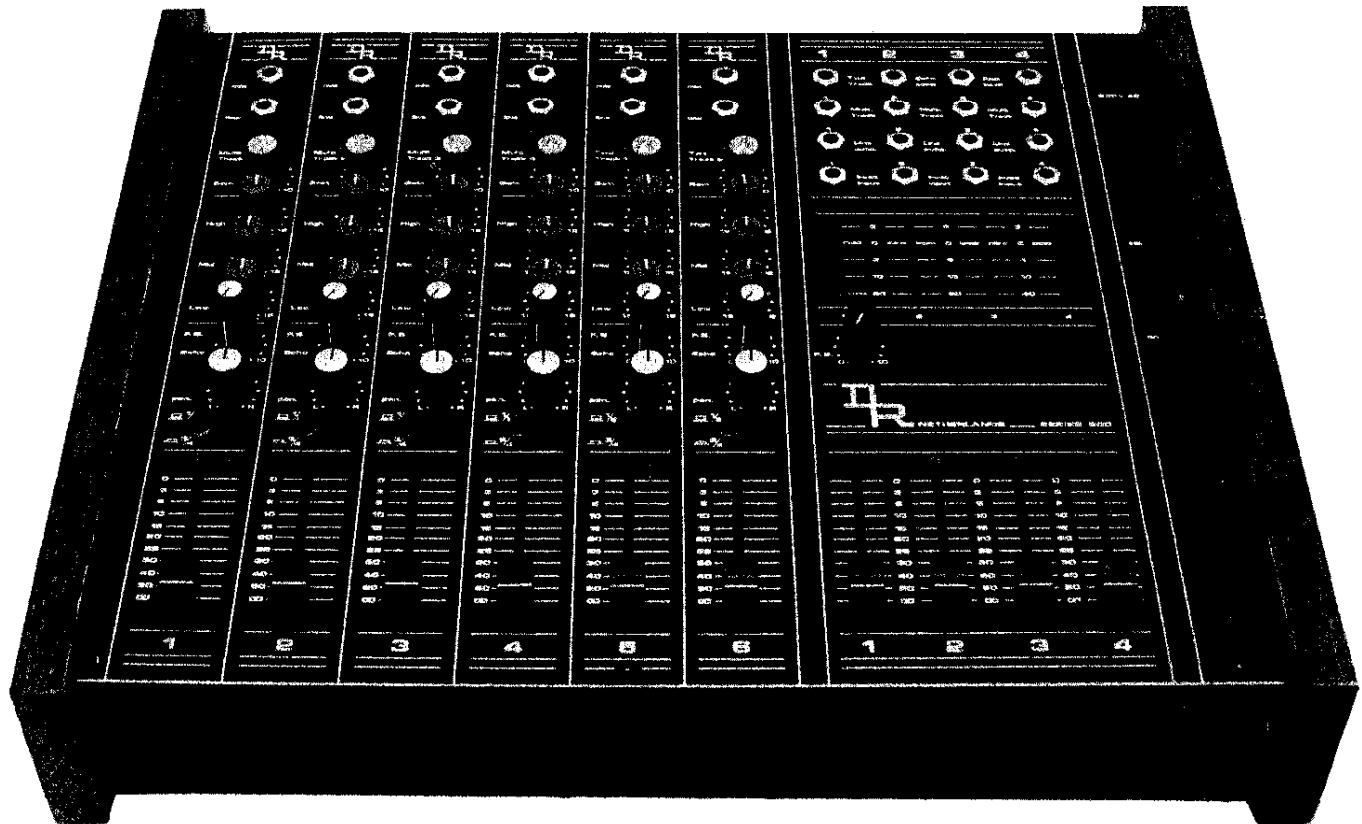
**"200 SERIES"**

**USER MANUAL**





series 200



The D & R 200 series is the professional answer for the four track market in mixing desks. These desks have unbelievable features and qualities, yet are still favourably priced. The series is the result of ten years experience in mixing desk design and was developed after listening to the needs of musicians working with four track machines. The desks are fully professional with features such as balanced Mic inputs, an insertion point, a three band tone control and a separate line input per channel. Besides these features (we'll tell you more about them later) we'd like to tell you something about what's inside these revolutionary desks. All desks have, of course, professional epoxy printed circuit boards, with carefully designed track layouts.

All the integrated circuits used are of the latest Bi-Fet Technology which gives an enormously wide power band width and very fast rise time. This means in music exceedingly low distortion and a crystal clear sound even on cymbals. In the microphone amps use is

made of extremely low-noise integrated circuits - the quietest in existance and for ease of servicing we've put them all in sockets. We have made the desks very reliable and given them a neat internal appearance by, almost, eliminating hand wiring. Torroidal transformers are used in the power supply (to eliminate hum induction) and regulators with short circuit protection.

To give more specific information we shall now describe the channel functions. At the top there is the balanced, stereo jack input for the microphone. Besides the advantages of symmetrical connection (hum & noise suppression), special wiring can give a 30 dB attenuation at the front end, to cope with extremely high amplitude signal.

The gain control has a wide and smooth range for both mic and line signals. It can handle any signal entering the desk. The separate line input also serves as insert **point** for microphone signals. This makes possible the use of limiters, equalizers, noise gates, compressors or other auxillary equipment.

Between the line input and the gain control is the remix pushbutton. The outputs of the four track machine are connected to channels 1-2-3-4 and to channel 5 and 6 the outputs of the two track machine. The in/output wiring for these tape decks is done through jack sockets in the Master section and internally routed to the channels. This system eliminates patching during a session and makes track "bouncing" very easy.

The Equalizer is of our proven three band type with carefully chosen frequencies. The desk has as standard a post-fader echo send and as an option a pre-fader foldback send. The pan-pot facilitates smooth movement of the signal from right to left and vice-versa. The routing function routes the signal via a locking push button. Up is to Master outputs 1 and 2. Down is for Master outputs 3 and 4. A 58 mm fader completes the channel controls. The Master sections of these desks are provided with four identical output amplifiers complete with fast acting 5-segment Ledbars. Also located in the Master section is the optional rotary foldback control.

The in/output jacks have the following functions from top to bottom:

The two stereo jacks on the left of the first row are for the Master stereo recorder. The outputs are connected directly from the Master output 1 and 2 and the returns are connected to the two track push buttons in channel 5 and 6.

The jack adjacent to these two on the first row is the output to an echo unit, echo being independantly switchable on each channel. Finally on this row we have the (optional) fold back output.

The second row comprises four stereo in/output jack sockets for the four track machine. The tip of the jack is connected to the Master o.p.'s and the ring of the jack to the multitrack push buttons in channels 1 - 4.

The third row gives an extra direct connection to the Master output amplifiers. Finally the buss inputs make up the fourth row. These are four inputs which can accept outputs from other mixing desks and/or echo and reverb signals from auxillary units.

The front panel, which supports the electronics, is fitted into a vinyl covered, wooden surround with polished, veneered side pieces, giving the desks a superb finish. It can be seen from the above that the 200 series has remarkable possibilities which can not be found on any other desk in this price range.

#### OPTIONS

Foldback sends per channel and master volume control

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## SPECIFICATIONS

### INPUTS

Mic impedance 1 kOhm balanced.  
Line impedance 22 kOhm unbalanced  
Common mode rejection greater than -65 dBv.  
Minimum mic input level for -10 dBv out: -70 dBv (max input level -8 dBv)  
Minimum line input level for -10 dBv out: -40 dBv (max input level +20dBv)  
Minimum multitrack/two track input level for -10 dBv out: -22 dBv  
(max input level +35 dBv)

### FREQUENCY RESPONSE

20 - 20.000 Hz (-1 dB) from any input to any output.

### LEVELS

All outputs nominal -10 dBv (300 mV)  
Output impedance less than 100 Ohms.  
Buss inputs -10 dBv (300 mV) (100 kOhm)  
Break level (line input) nominal -26 dBv.

### NOISE

Mic input at max -123 dBv 20 - 20.000 Hz.  
Line input at max -77 dBv 20 - 20.000 Hz.  
Output noise master fader down -100 dBv.  
Output noise master fader up - 80 dBv.

### DISTORTION

Total distortion typically less than 0,039 %.

### EQUALISATION

High ± 16 dB at 10.000 Hz.  
Mid ± 12 dB at 1000 Hz.  
Low ± 16 dB at 70 Hz.

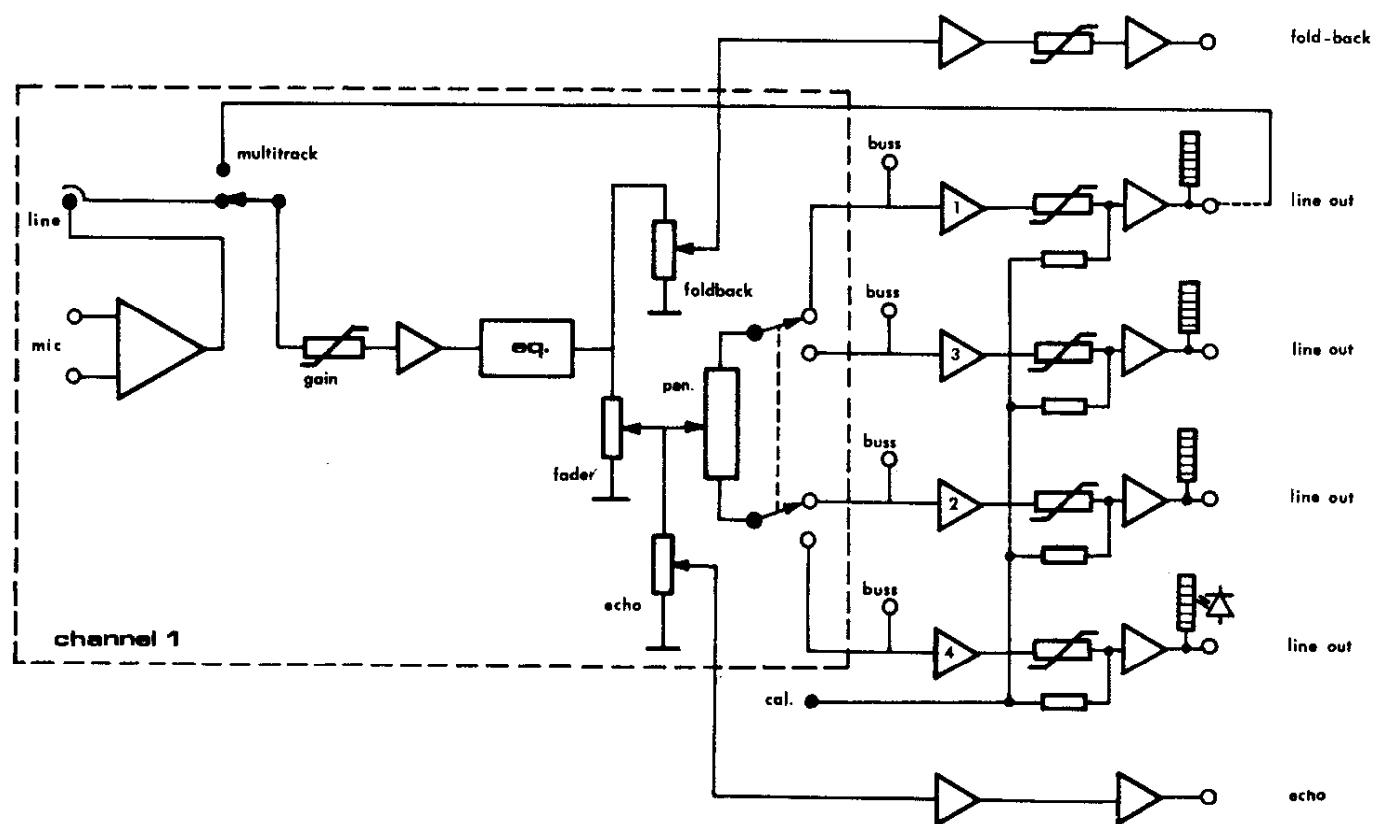
### OVERALL

Headroom more than 30 dB.  
Fader attenuation more than 80 dB.  
Max gain through desk 60 dB.  
After the channel fader is 6 dB of gain available.  
-10 dBv output level gives a reading of -6 on the peak level meter.  
Calibration gives 50 Hz on all recorder outputs on a -10 dBv level.

### DIMENSIONS

465 x 385 x 95 mm.

BLOCK DIAGRAM



We reserve the right to modify or change designs without prior notice.

## *INSTRUCTION MANUAL SERIES 200*

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Used correctly the 200 Series can provide excellent service for many years. This manual is a good way to get to know it, and to become acquainted with its possibilities. Read this guide therefore thoughtfully in order to become familiar with all these possibilities so that you will be able to make the best use of them.

### *INPUTS*

Above each set of channel controls are two stereo jack-sockets. The top one (Mic) is the symmetrical (balanced line) input for the microphone, into which any low impedance microphone may be inserted. The connections for the stereo jack are shown in the diagram below.

As it may be that the plug provided with your microphone is other than a jack, X.L.R. (CANNON) being common it is wise to keep this diagram for future reference.

Jack tip = XLR Pin 2  
Jack ring = XLR Pin 3  
Jack body = XLR Pin 1

The numbers 1 - 2 - 3 refer to the XLR connectors on which the numbers are embossed next to their corresponding pin.

### **BALANCED LINE CONNECTIONS**

Jack Tip = +  
Jack Ring = -  
Jack Body = Earth/Screen

### **LINE JACK**

A stereo jack must be used for the line input, connections as follows:

Jack Tip = +  
Jack Ring = N.C. (No Connection)  
Jack Body = Earth/Screen

### **LINE JACK AS INSERTION POINT**

If the microphone input is used on a particular channel the line input can be used as an insertion point (echo send and return etc.) with connections as follows:

Jack Ring = Output (to input of effects unit)  
Jack Tip = Input (from output of effects unit)  
Jack Body = Screen/Earth.

### **UNBALANCED MICROPHONE**

If you wish to use an unbalanced (a symmetrical) microphone it is necessary to connect the ring to the body of the jack plug (pin 1 to pin 3 on an XLR connector). The tip of the jack plug serves in this case as the + (in phase) connection. We do not recommend, however, the use of unbalanced microphones as these increase the chance of interference and disturbance from radio-breakthrough.

### **CHOICE OF MICROPHONE**

It remains to be said that any good low impedance and dynamic (or electret) microphone can be used in the microphone input. Remember, however, that the output or finished mix is heavily dependant upon the correct choice of microphone in so far as the quality of the said microphone is concerned. The output can only be as good as the input which enters via the microphone.

### **EFFECTS**

As has been said, when a channel on the 200 is fed via the microphone input the, then, free line input can be used as an insertion point (effects send and return point). By way of this facility many effects can be brought into circuit such as noise gates, compressor - limiters, equalizers etc. Take care to ensure that the effects units match the 200. Compare the specifications of the effects unit you wish to use with those of the 200 series.

### **LINE INPUT**

The line input is intended for use with line signals such as keyboards (organs, synthesizers) guitars, bass guitars, rhythm boxes, metronomes etc. All of these can be connected directly into the line input socket.

### *TRACK SWITCH*

The track switch, below the mic/line sockets, gives the possibility of a choice between 2 different input signals:

- 1 : The microphone/line input signal from the jacks located above the input channels
- 2: The multitrack and 2-track master inputs which are combined with the multitrack and 2-track master outputs in the output section.

The track switch gives the advantage that the line signal does not have to be patched in order to monitor a 4 or 2-track recorder. These recorders are connected to the multitrack IN/OUT and the 2-track master IN/OUTPUT sockets in the output section. Therefore all inputs entering the channel at the line inputs of the channels are not used for the 2 and 4-track recorders.

In short then: keyboards, guitars, organs etc. enter the mixer at the line jack socket and recorders are connected to the multitrack and 2-track master inputs. With the track switch then the signal which is to be fed to the output is chosen: the line signal or the recorder signal. The 4-track recorder is switched by the multitrack switches on channels 1 - 2 - 3 and 4 of the mixer and the two track recorder with the two track switches on the channels 5 and 6.

### *GAIN*

The rotary gain control varies the volume of the line or microphone pre-amplifier.

## **SETTING THE GAIN**

Set the fader of the channel concerned at 6. Choose one output or pair of outputs to which the signal is to be fed and set the output/master faders of these channels at maximum. Set the gain now so that the LED meters indicate an average of  $\pm$  0 dB. This is the optimum position for the gain control. In principle the gain control during all further operations is not made use of, the volume now being adjusted with the fader.

Note : an incorrectly adjusted gain control can cause distortion or too high a noise level. Follow these instructions then for optimum results.

## **TONE CONTROLS**

The 200 has a 3 section tone equalization circuit which affects the high, mid and low frequencies separately. The High and Low controls allow for a maximum increase or decrease in amplification of + or - 18 dB and the Mid allows for an increase or decrease of 12 dB.

## **ECHO**

The echo control varies the amount of any special effect such as echo, reverb, flanging etc. to be mixed with the dry signal. Each channel has a separate echo control which gives the possibility of different levels of the effect on each channel. The echo send jack socket is located in the output section. The tip of this (Mono) jack is the Send which goes to the input of the effect unit. The output of the effect unit is returned to the buss input on the mixer which corresponds with the track from which the signal, in the first place, was taken. It is also possible to return the output of the effect unit to all the tracks. To do this all the buss inputs are connected in parallel to the output of the effects unit.

## **ECHO COMPATABILITY**

It will be necessary to make sure the specifications of the echo or any other effect unit used are suitable for use with the 200 to avoid the possibility of mis-matching.

## **FOLDBACK**

If you have the optional foldback output on your 200 (a small potentiometer concentric with and above the echo control on each channel) you have the possibility of monitoring each signal separately without influencing the recorded signal.

The foldback output jack suitable for driving a mono headset (not less than 600 ohms) or an amplifier is located in the top right hand corner of the 200. The Master foldback control located in the Master Section of the desk controls the output level of the foldback signals.

## **PAN AND ROUTING**

The pan control works in conjunction with the routing press-button switch to determine to which output channel a particular input signal is fed. The combination of switch and Pan positions together with their corresponding output channels are as follows:

Routing Switch High	Pan control fully anti clockwise = Output channel 1
Routing Switch High	Pan control fully clockwise = Output channel 2
Routing Switch Low	Pan control fully anti clockwise = Output channel 3
Routing Switch Low	Pan control fully clockwise = Output channel 4.

## **VOLUME FADERS**

Clearly from the name these faders are used to regulate the volume of the input and the output channels, (one fader per channel). It is recommended that the mixer is operated with the channel faders set at around - 6 dB and the masters between 0 and 10.

## **OUTPUT SECTION**

The output section comprises 4 identical output channels numbered 1 - 4. Each output has a volume fader (see above). Above these 4 faders is the Master foldback control.

Above the Master foldback control are 4 LED meters which indicate the signal level per output channel, from left to right Output channels 1 - 2 - 3 and 4 respectively.

The push-button calibration switch (Cal) feeds a calibration tone of  $\pm$  50 Hz to all 4 output channels. With this tone the matching of the recorder to the 200's signal strength becomes an easy matter. Once the recorder is connected to the desk press the Cal Switch and set the recorder V.U. meters to zero dB.

## **JACK CONNECTORS**

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### **BUSS INPUTS**

In the top right area of the 200 are all the various jack sockets, the row nearest the LED Meters being the Buss inputs. To these inputs (which feed directly the output amplifiers of the 200) a second tape recorder can be connected. In this case the 200 acts as the Master mixer. It is also possible to use these inputs for a rhythm box, metronome etc. Using these inputs for such units has the advantage of leaving all the channels free for other line (or mic) signals. At the same time the buss inputs are the echo return inputs.

### **LINE INPUTS**

Next, above the buss inputs, we have the line output jacks. These are the Master output sockets from which the final signal is taken. A recorder can be connected to these jacks but in practice it is easier to connect the recorder to the multitrack and 2-track master In/Outputs of the desk. If used as a stage or P.A. mixer the line outputs are used to drive the slaves or power amplifiers, or to patch the 200 into a Master P.A. mixer.

### **MULTITRACK AND 2 TRACK JACKS**

The afore mentioned multitrack In/Outputs are located above the line jacks. These Multitrack jacks are at the same time input and output jacks and are to be used only with stereo jack plugs. This means that a 4 channel recorder can conveniently be connected to the 200 with only one stereo jack per channel. At the same time the track switch is used for switching from a line input in the channel to the recorder and vice-versa. This switch works only when the recorder is connected to the multitrack in/output jacks. The same applies to the two track master. The operation of the two track master stereo jacks is practically identical with the multitrack jacks, the only difference being that the two track master in/output jacks are designed for connection to a two track recorder. The remix switches in channels 5 and 6 are connected to the two track master outputs.

### **ECHO SEND AND FOLDBACK**

Finally we have the echo send the output of which is fed to the input of the echo or other effects unit, followed by the optional fold-back output jack.

**WARRANTY**

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D & R Electronics warrants the products sold shall be free from defects in materials and workmanship under normal use and service for a period of one (1) year from the date of delivery when properly installed.

D & R shall repair and/or replace any defective part of the desk that has come to fail under normal use for a period of one year from the date of delivery.

Under no circumstances shall D & R be liable for any other damage, either direct or consequential.

# **"200 SERIES"**

## **GEBRUIKS AANWIJZING**





manufacturer of: recording - broadcast - p.a. - mixingdesks - signal processors

## INGANGEN

De series 200 is voorzien van zes vrijwel identieke ingangen.

Ingang 1, 2, 3 en 4 zijn volledig gelijk aan elkaar.

Het enige verschil tussen 1-4 en 5-6 vindt U bij de multitrack/2- trackschakelaar waar verderop uitleg over wordt gegeven.

Bovenaan het ingangskanaal vindt U een stereo-jack aansluiting en een XLR (cannon)-connector.

De bovenste, de mikrofooningang (MIC), is de symmetrische ingang waarop laag-ohmige mikrofoons kunnen worden aangesloten.

De aansluiting van de XLR-connector op deze ingang is als volgt:

- 1 = aarde
- 2 = in phase
- 3 = uit phase

Indien U een mikrofoon gebruikt zonder gebalanceerde uitgang dient U punt 3 met punt 1 te verbinden

Het verdient echter aanbeveling symmetrische mikrofoons te gebruiken omdat de kans op storingen en radio instraling dan zo beperkt mogelijk blijft.

Indien een mikrofoon op de ingang van de 200 wordt aangesloten kan de LINE ingang als insertiepunt worden gebruikt.

Op deze jack kunnen vele apparaten worden aangesloten zoals compressors, limiters, noise gates, equalizers enz.

Zie voor deze "rand"-apparatuur ons verdere programma.

Vergelijk wel de specificaties van het effectapparaat met die van de series 200. De LINE-ingang kan ook gebruikt worden voor het aansluiten van keyboards, (bas-) gitaren, synthesizers, drumcomputers enz.

De MULTITRACK/2-TRACK schakelaar geeft de mogelijkheid om tussen twee verschillende ingangsgroepen te kiezen.

Dat is a) de mikrofooningang op de XLR-connector

b) de MULTITRACK en 2-TRACKMASTER ingang

Deze bevinden zich gecombineerd met de multitrack en de 2-track master uitgangen bij de uitgangssectie.

Deze schakeling heeft het voordeel dat de aangesloten lijnsignalen NIET hoeven te worden losgekoppeld om een 2- of 4-sporen rekorder af te luisteren.

Deze rekorders worden nl. op de MULTITRACK IN/UIT en de 2-TRACK MASTER IN/UIT aangesloten, waarbij alle aangesloten apparaten van de LINE-ingangen van de ingangskanalen gewoon aangesloten kunnen blijven.

Met de MULTITRACK/2-TRACK schakelaar kan nu worden gekozen welk signaal naar de uitgang wordt gevoerd: het lijn/mikrofoon signaal of het rekordersignaal.

De 4-kanalen rekorder wordt via de MULTITRACK/2-TRACK schakelaars op de kanalen 1 t/m 4 geschakeld en de 2-sporen rekorder met de MULTITRACK/2-TRACK schakelaars op de kanalen 5 en 6.



manufacturer of: recording - broadcast - p.a. - mixingdesks - signal processors

## GAIN

Met de GAIN-draaipotmeter wordt het volume van de lijn- of mikrofoonvoerversterker geregeld.

- Regel de GAIN als volgt af:
- zet de betreffende fader van het ingangskanaal op 6
  - kies één of twee uitgangen waar het signaal naar toe wordt gestuurd
  - stel de uitgangsfaders in op maximaal

Regel de GAIN nu zó af dat de led-meters een gemiddelde van 0 dB aangeven. Dit is de optimale stand voor de GAIN.

Tijdens de verdere mix wordt de GAIN in principe niet meer gebruikt, het volume wordt dan met de faders geregeld.

Een niet goed afgeregelde GAIN kan dus vervorming van het signaal of een te hoog ruis niveau tot gevolg hebben.

Volg dus de aangegeven procedure voor optimale resultaten.

## TOONREGELING

De series 200 is voorzien van een 3-delige toonregeling, HIGH, MID, en LOW. HIGH en LOW geven een maximale versterking of verzwakking van + of - 16 dB en MID geeft een maximale versterking of verzwakking van + of - 12 dB.

## ECHO/FOLDBACK

Met de ECHO/FOLDBACK sectie kan een effect zoals galm enz. aan het droge signaal worden toegevoegd.

Per ingangskanaal kan de gewenste hoeveelheid effect worden afgesteld.

Op de uitgangssectie treft U een ECHO/SEND-RETURN jack connector aan.

Dit is een connector waarvan de ring van de plug aan de uitgang van het effectapparaat wordt aangesloten en de tip van de jack aan de ingang van het effectapparaat wordt aangesloten.

Met de vier ECHO/RETURN draaipotmeters boven de uitgangsfaders wordt de totale hoeveelheid effect die per uitgang bij het droge signaal wordt toegevoegd afgeregeld.

Deze procedure kan zowel bij opname als bij weergave (de uiteindelijke mix) worden gevuld.

Hierdoor is het mogelijk om twee verschillende effecten, of één effect maar op verschillende wijze aan het uiteindelijke signaal toe te voegen.

Let er wel op dat de effectapparatuur over de juiste specificaties beschikt zodat er geen aanpassings problemen kunnen ontstaan.





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## PAN & ROUTING

De PAN fungeert tesamen met de routingdruktoets als schakeling om te bepalen naar welk uitgangskanaal een bepaald signaal wordt gestuurd:

routing omhoog : PAN naar links = uitgang 1  
routing omhoog : PAN naar rechts = uitgang 2

routing ingedrukt : PAN naar links = uitgang 3  
routing ingedrukt : PAN naar rechts = uitgang 4

Als de PAN knop NIET geheel naar links of rechts wordt gedraaid, wordt het ingangssignaal verdeeld over twee uitgangen.  
Let wel: of alléén tussen 1 en 2 of tussen 3 en 4.  
Andere combinaties zijn niet mogelijk.

## VOLUME FADERS

Het doel van deze faders zal een ieder wel duidelijk zijn: het regelen van het volume van de ingangs- en uitgangskanalen.  
Het is aan te bevelen dat iedere fader van de ingangssectie gebruikt wordt in het gebied rond de -6 dB en bij de uitgangssectie tussen de 0 en 10.

## UITGANGSSECTIE

De uitgangssectie omvat vier gelijke uitgangskanalen, genummerd 1 t/m 4. Elke uitgang heeft een volume fader, waarvan het doel duidelijk zal zijn: het regelen van de 4 respectievelijke uitgangsvolumes.  
Daarboven bevinden zich de 4 ECHO RETURN regelaars, waarmee (zoals onder ECHO RETURN reeds werd beschreven) de retour-hoeveelheid echo effect die met

ECHO FOLDBACK reeds werd beschreven) de retour-hoeveelheid echo of effect die met de ECHO FOLDBACK regelaars op de ingangskanalen kan worden ingesteld. Met andere woorden: met deze echo-returnknoppen wordt de TOTALE hoeveelheid echo of effect die op een bepaalde uitgang wordt gewenst, ingesteld. Boven de ECHO RETURN-knopen bevinden zich vier LED-meters die het volume per uitgang aangeven, met daarnaast de CAL-druktoets. De CAL toets geeft bij het indrukken een afregeltoon van ± 50 Hz op alle uitgangen.  
Met deze toon kunt U uw rekorder gemakkelijk op de D&R 200 afregelen.  
Als de rekorder eenmaal is aangesloten drukt U de CAL in en zet U de ingangsregelaars van de rekorder zo dat de VU meters van uw rekorder 0 dB aangeven.





manufacturer of: recording - broadcast - p.a. - mixingdesks - signal processors

## BUSS INPUTS

Boven de LED-meters bevinden zich diverse jack-aansluitingen, met als onderste de BUSS-ingangen.

Op deze ingangen (welke DIREKT op de uitgangssectie van de mixer zijn aangesloten) kan een tweede mixer worden aangesloten, wwarbij de series 200 dan als hoofdmixer kan fungeren, maar ook kan hier een drumcomputer, metronoom e.d. op worden aangesloten.

Deze wijze van aansluiten heeft het voordeel dat alle ingangskanalen vrij blijven voor andere lijnsignalen.

Boven de BUSS bevindt zich de LINE OUTPUT.

Dit is de hoofduitgang waar het uiteindelijke signaal uitkomt.

Hierop KAN een rekorder worden aangesloten, maar in het gebruik is het gemakkelijker om rekorders op de multitrack en 2TR master aan te sluiten.

Bij gebruik als podium of PA-mixer wordt de line-uitgang gebruikt om de versterkers te voeden, of om de 200 aan te sluiten op een hoofd PA-mixer.

## MULTITRACK- AND 2 TRACK-JACKS

De al genoemde multitrack IN OUTS bevinden zich boven de LINE OUTS.

Deze multitrack IN/OUT is zowel ingang als uitgang, en wordt d.m.v. een stereo jack aangesloten.

Het gemak hiervan is dat een vier-kanalen rekorder met één stereo-jack per kanaal kan worden aangesloten.

Tevens kan in dit geval de MULTITRACK/2-TRACK knop worden gebruikt voor het omschakelen van een lijningang op het ingangskanaal en omgekeerd.

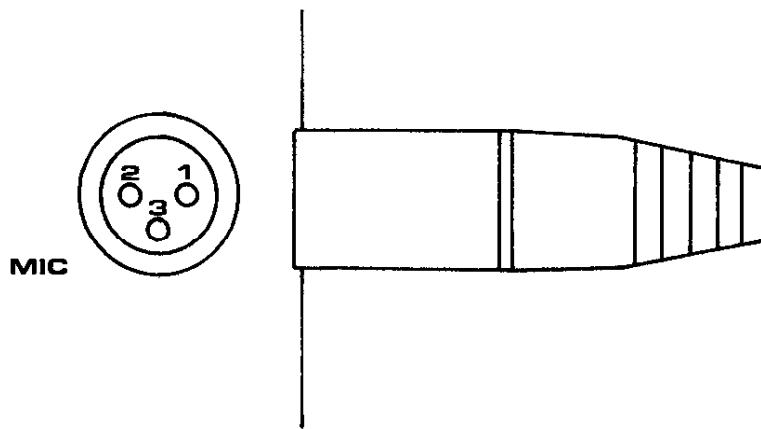
Hetzelfde geldt voor de 2 TR master

De functie van de 2 TR master stereo-jacks is exact hetzelfde als van de MULTITRACK IN/OUTS, met dit verschil dat deze aansluiting in principe bedoeld is om een 2-sporen master rekorder of cassettedeck aan te sluiten.

De MULTITRACK/2-TRACK knopjes op kanaal 5 en 6 zijn met deze 2-TRACK master verbonden.

Als laatste bevinden zich mog de ECHO SEND/RETURN (uitgang naar ingang vanaf een effectapparaat) en de FOLDBACK-uitgang op de uitgangssectie. In de tekening ziet U de uitgangssectie afgebeeld.

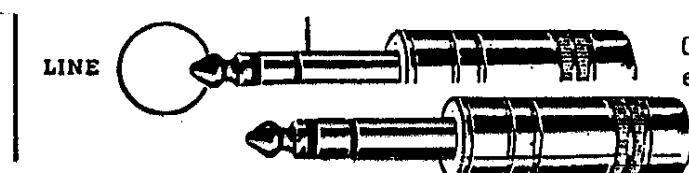




XLR plug

gebalanceerde mikrofooningang:

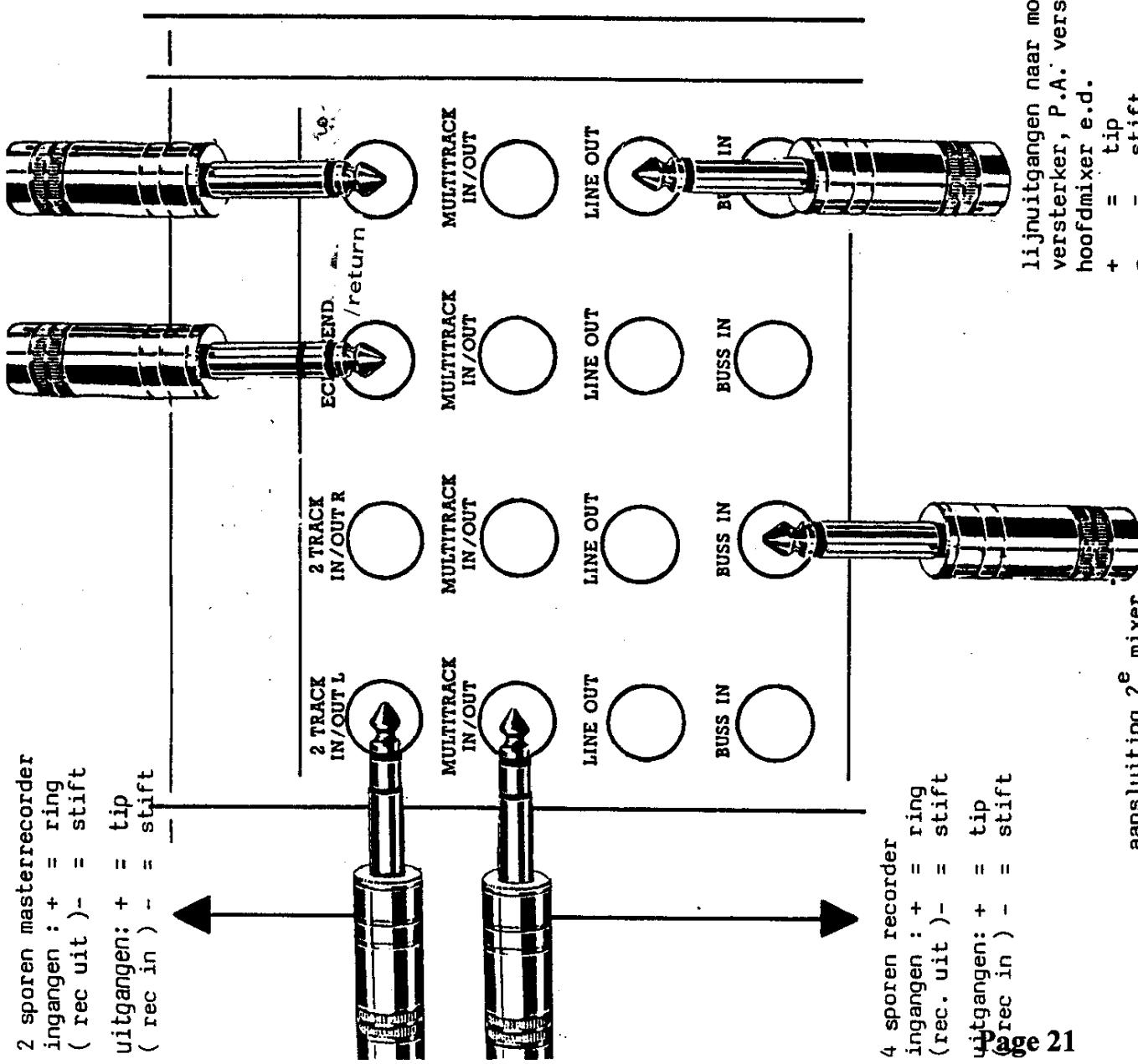
- 1 : afscherming  
 2 : in phase (+)  
 3 : uit phase (-)



Gebruik voor een lijnaansluiting bij voorkeur  
een STEREOPLUG ! tip = +  
ring = ongebruikt  
stift = afscherming/

bij gebruik van een microfoon kan de lijningang als  
insertiepunt worden gebruikt.  
+ uitgang = ring ( naar ingang effectapparaat )  
+ ingang = tip ( van uitgang effectapparaat )  
- in-uitgang = stift

2 sporen masterrecorder  
 ingangen : + = ring  
 ( rec uit )- = stift  
 uitgangen: + = tip  
 ( rec in ) - = stift



4 sporen recorder  
 ingangen : + = ring  
 ( rec. uit )- = stift  
 uitgangen: + = tip  
 ( rec in ) - = stift

# product safety

This product is manufactured with the highest standards and is double checked in our quality control department for reliability in the "HIGH VOLTAGE" section.

## CAUTION

- Never remove any panels, or open this equipment. No user serviceable parts inside.
- Equipment power supply must be grounded at all times.
- Only use this product as described, in user manual or brochure.
- Do not operate this equipment in high humidity or expose it to water or other liquids.
- Check the AC power supply cable to assure secure contact.
- Have your equipment checked yearly by a qualified dealer service center.
- Hazardous electrical shock can be avoided by carefully following the above rules.

## EXTRA CAUTION FOR LIVE SOUND

Ground all equipment using the ground pin in the AC power supply cable. Never remove this pin. Ground loops should be eliminated only by use of isolation transformers for all inputs and outputs. Replace any blown fuse with the same type and rating only after equipment has been disconnected from AC power. If problem persists, return equipment to **qualified service technician**.

## Please carefully read the following information

Especially in sound equipment on stage the following information is essential to know. An electrical shock is caused by voltage and current, actually it is the current that causes the shock. In practise the higher the voltage the higher the current will be and the higher the shock.

But there is another thing to consider and it is resistance. When the resistance (in Ohms) is high between two poles, the current will be low and vice versa.

All three of these; voltage, current, and resistance are important in determining the effect of an electrical shock. However, the severity of a shock is primarily determined by

the amount of current flowing through a person.

A person can feel a shock because the muscles in a body respond to electrical current and because the heart is a muscle it can affect, when the current is high enough. Current can also be fatal when it causes the chest muscles to contract and stop breathing.

At what potential is current dangerous. Well the first feeling of current is a tingle at 0.001 Amp of current. The current between 0.1 Amp and 0.2 Amp is fatal.

Imagine that your home fuses of 20 Amp can handle 200 times more current than is necessary to kill. How does resistance affect the shock a person feels. Atypical resistance between one hand to the other in "dry" condition could well over 100,000 Ohm. If you are playing on stage your body is perspiring profusely and your body resistance is lowered by more than 50%. This is a situation in which current can easily flow. Current will flow when there is a difference in ground potential between equipment on stage and in the P.A. system.

Please do check if there is any potential between the housing of the mikes and the guitar/synth amps, which will be linked by your body on stage. Imagine, a guitar in your hand and your lips close to the mike! A ground potential difference of above 10 volts is not unusual, in improperly wired buildings it can possibly be as high as 240 volts. Although removing the ground wire sometimes cures a system hum, it will create a very hazardous situation for the performing musician.

**Always earth all your equipment by the grounding pin in your mains plug. Hum loops should only be cured by proper wiring and isolation input/output transformers.**

Replace fuses always with the same type and rating after the equipment has been turned off and unplugged. If the fuse blows again you have an equipment failure, do not use it again and return it to your dealer for repair.

And last but not least Be carefull not to touch a person being shocked as you, yourself could also be shocked. Once removed from the shock, have someone send for medical help immediately.

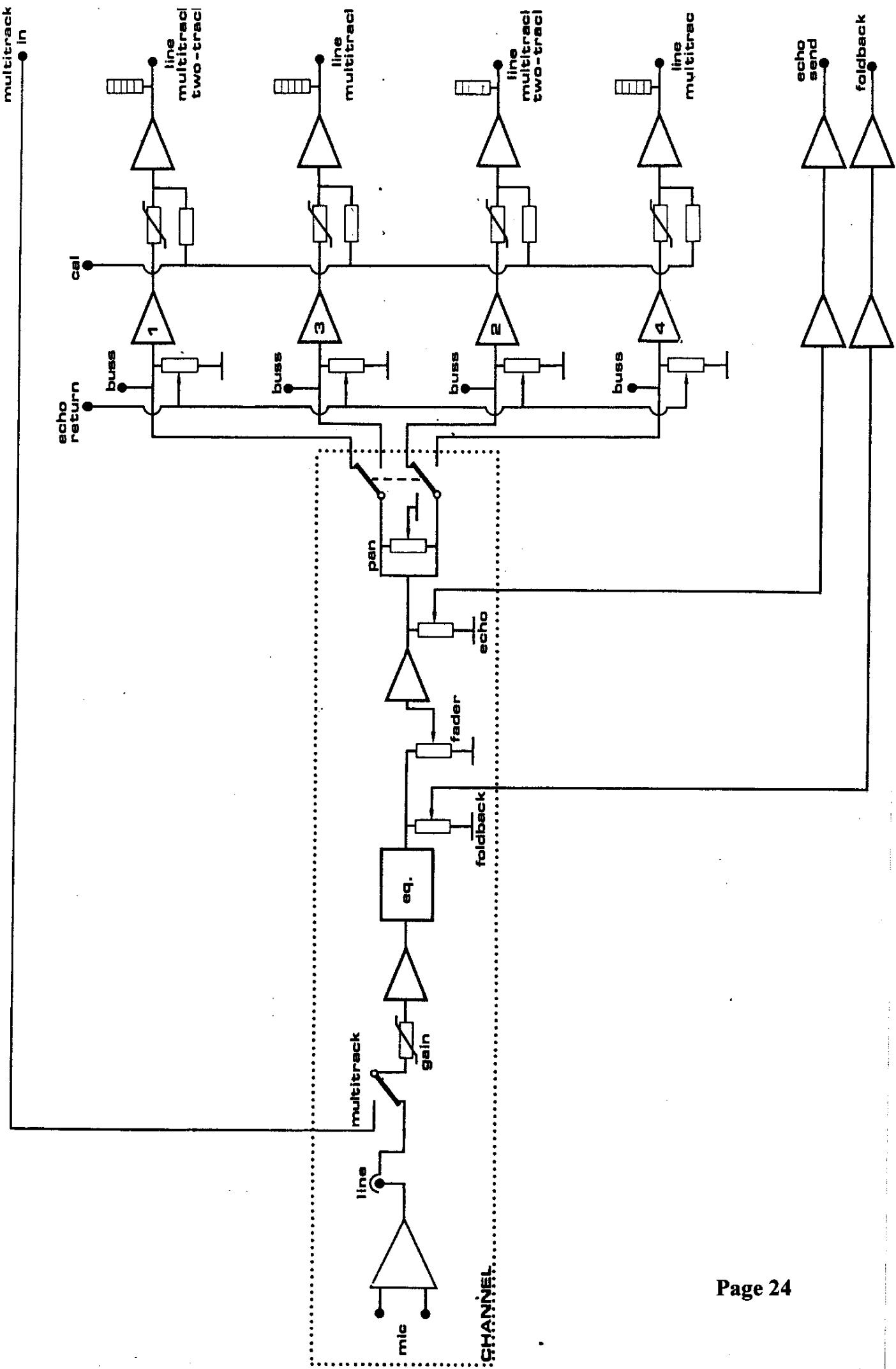
**Always keep the above mentioned information in mind when using electrically powered equipment.**

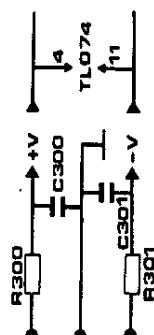
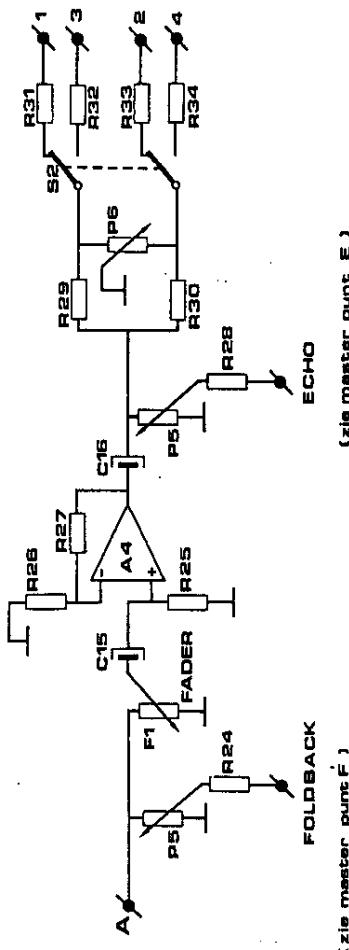
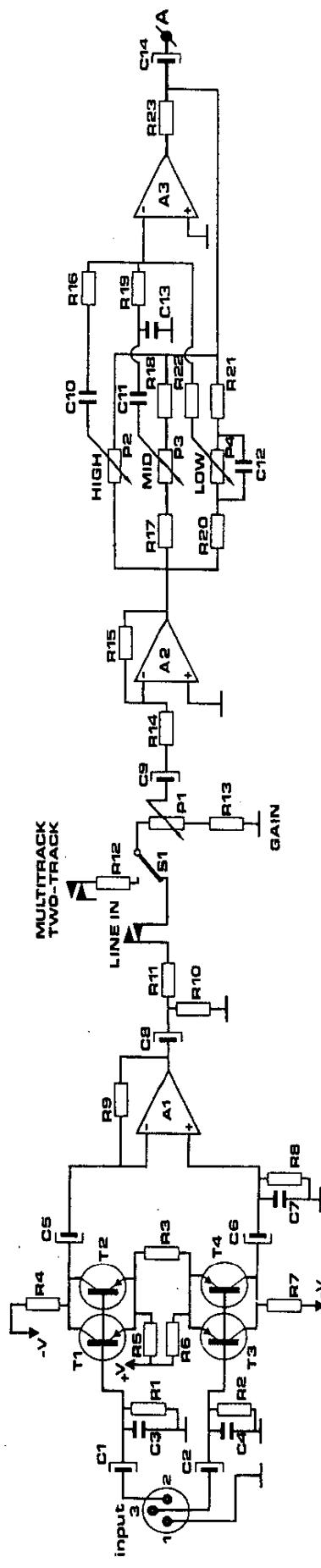
Page 22

# **"200 SERIES"**

# **SERVICE MANUAL**







{ zie Master Point E } { zie Master Point F }

P.R. RIJNKADE 15b 1382 GS WEESEP PHONE: 02940 18014 <b>ELECTRONICA BV</b>		TITLE: SERIES 200 MONO CHANNEL		P.C.B. INDEX. 200-1i	NOTES
		DRAWN : A. DEKKERS	DATE : 13-09-85		
		SHEET. OF	© 1984	CHECKED:	

ELECTRONICS S.V.

## produktie en ontwikkeling van gebruiksmergwaren en accessoires

Date: 03-09-1985

**E & R department**

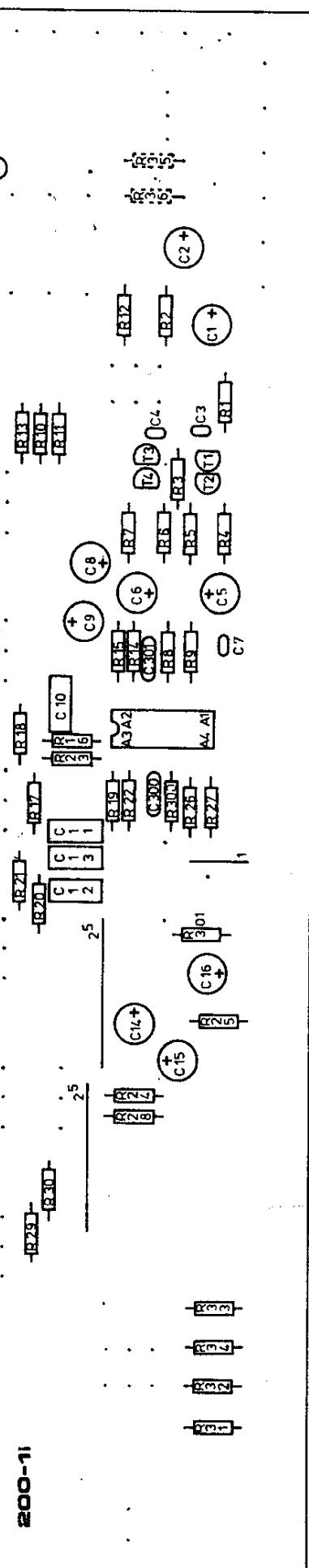
Title : 288-1 MONO CHANNEL

PartNr		Value	Notes	ArtNr
mic	R1	4 k 7	5%	0737
	R2	4 k 7	5%	0737
	R3	270 E	5%	0722
	R4	4 k 7	5% met. film	0737
	R5	8 k 2	5% met. film	0740
	R6	8 k 2	5% met. film	0740
	R7	4 k 7	5% met. film	0737
	R8	10 k	5%	0741
	R9	10 k	5%	0741
	R10	100 k	5%	0753
line	R11	100 E	5%	0717
	R12	47 k	5%	0749
	R13	68 E	5%	0715
	R14	22 k	5%	0745
	R15	220 k	5%	0757
eq	R16	18 k	5%	0744
	R17	10 k	5%	0741
	R18	10 k	5%	0741
	R19	10 k	5%	0741
	R20	10 k	5%	0741
	R21	10 k	5%	0741
	R22	47 k	5%	0749
	R23	100 E	5%	0717
foldb	R24	47 K	5%	0749
fader	R25	100 k	5%	0753
	R26	1 k 0	5%	0729
	R27	2 k 2	5%	0733
echo	R28	47 k	5%	0749
pan	R29	6 k 8	5%	0739
	R30	6 k 8	5%	0739
	R31	47 k	5%	0749
	R32	47 k	5%	0749
	R33	47 k	5%	0749
	R34	47 k	5%	0749
phant	R35	6 k 81	1% optional	0846
	R36	6 k 81	1% optional	0846
supp	R300	10 E	5%	0705
	R301	10 E	5%	0705
mic	C1	47 / 25	elco	0287
	C2	47 / 25	elco	0287
	C3	270 p	ker	0230
	C4	270 p	ker	0230
	C5	47 / 25	elco	0287
	C6	47 / 25	elco	0287
	C7	47 p	ker	0221
	C8	47 / 25	elco	0287
line	C9	47 / 25	elco	0287

eq	C10	19000 p	Poly	0246
	C11	6800 p	Poly	0251
	C12	0.022	Poly	0256
	C13	0.010	Poly	0253
fader	C14	47 / 25	e lco	0287
	C15	47 / 25	e lco	0287
	C16	47 / 25	e lco	0287
supp	C300	0.1 / 63	ker	0241
	C301	0.1 / 63	ker	0241
mic	T1-T4	BC 560/416	PNP	0327
	A1-A4	TL 074	bifet opamp	0305
gain	P1	22 kB	15 mm mono	0106
high	P2	100 kR	15 mm mono	0113
mid	P3	100 kR	15 mm mono	0113
low	P4	100 kR	15 mm mono	0113
fb/echo	P5	47 kB co	15 mm concentric	0112
pan	P6	10 kR	15 mm mono	0103
	F1	10 kB PHI	58 mm mono fader	0130
	S1	2 x 2 switch	FOX	0400
	S2	2 x 2 switch	FOX	0400
	J1	XLR 3p female	plastic	0424
	J2	Cliff break	plastic	0432

BESTUKKINGSINDEX:

200-11



NOTES:

P.C.B. INDEX.

DRAWN :

DATE :

CHECKED :

TITLE:

RIJNKADE 15 b  
1382 GS WEESEN  
HOLLAND  
PHONE: 02940 18014  
ELECTRONICA BV

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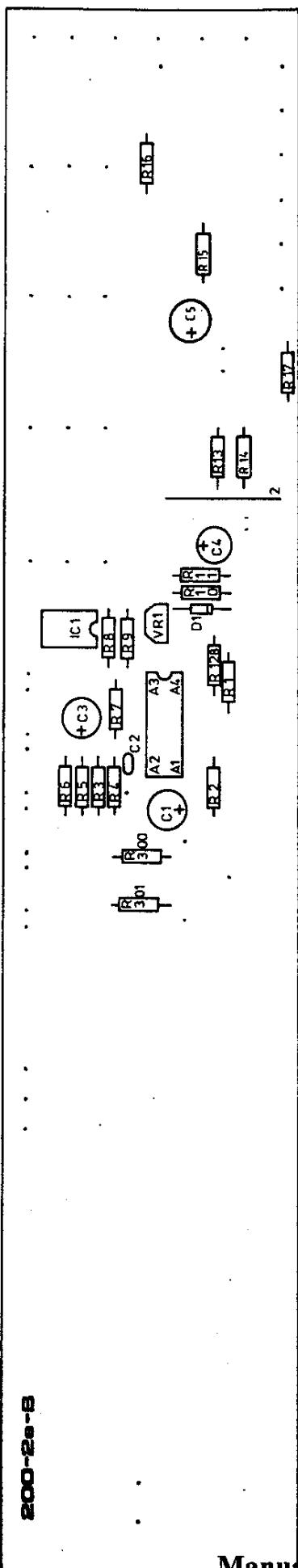
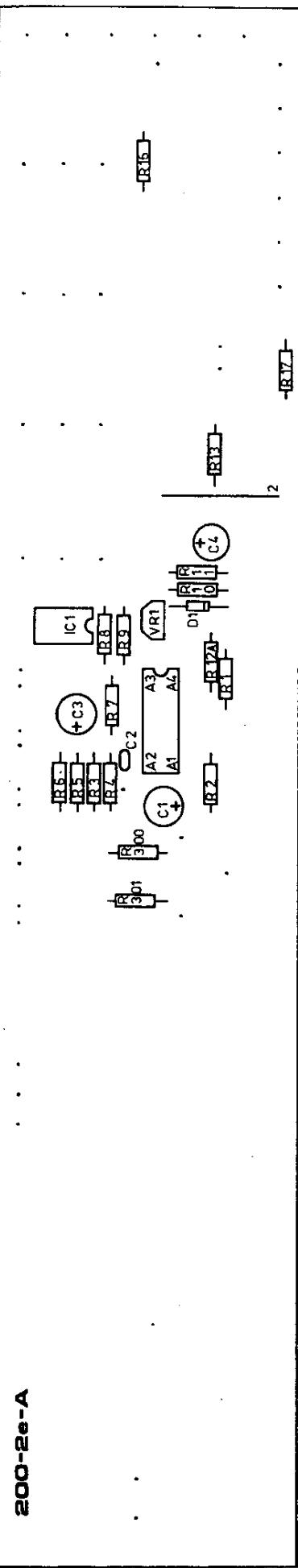
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200-2e-A

BESTEKONSKRIP

四二〇

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Manual Page 30



TITLE:		P.C.B. INDEX.	
		DRAWN :	
		DATE :	
		© 1984 CHECKED:	
RIJNKADE 15 b 1382 GS WEESP HOLLAND PHONE: 02940 18014		SHEET OF	
ELECTRONICA BV			

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===== ELECTRONICA B.V. =====

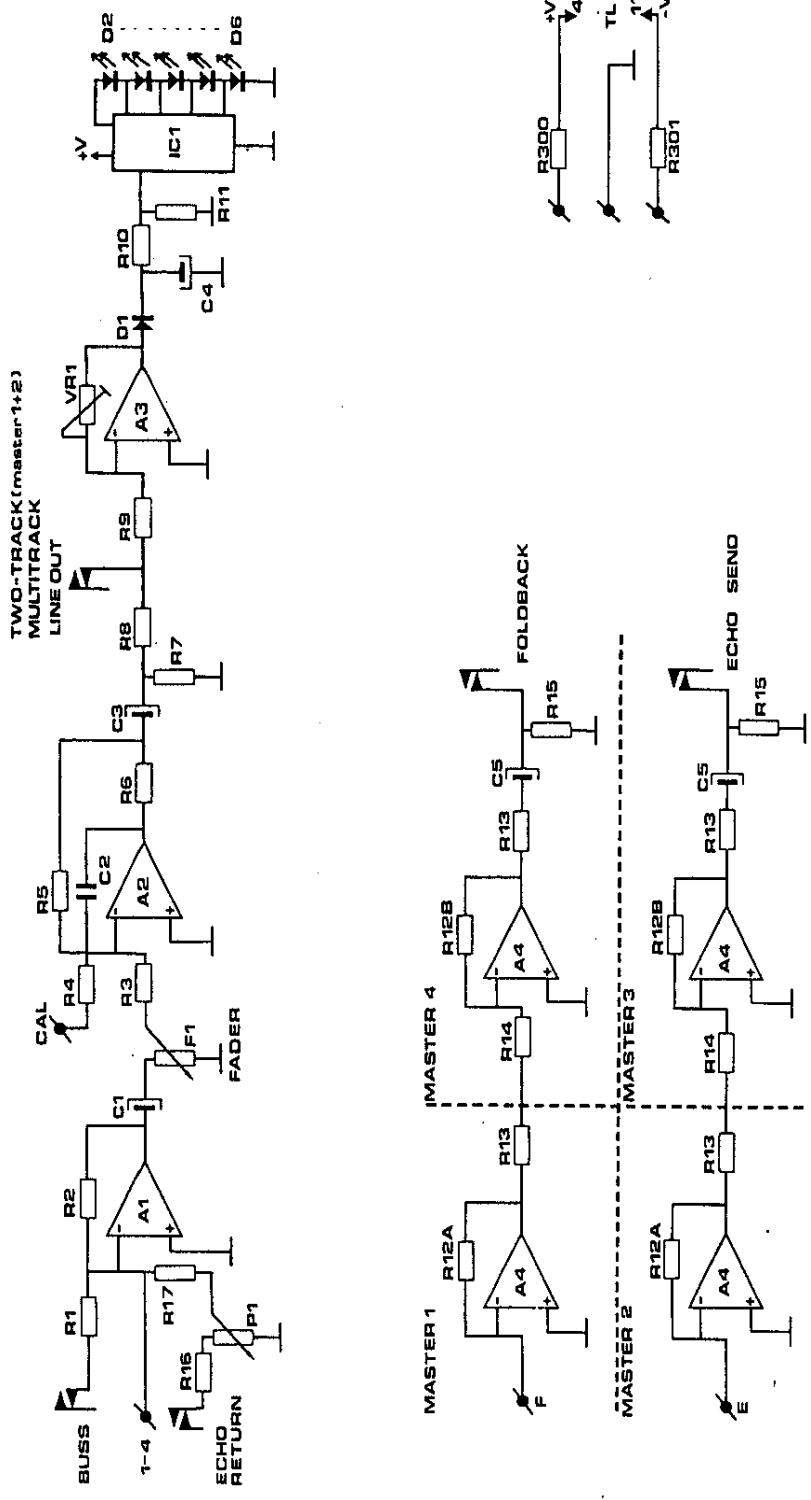
produktie en ontwikkeling van  
geluidsmengpanelen en accessoires

Date: 11-09-1985

R & D department

Title : 200-2-(A+B) MASTER + LEDBAR

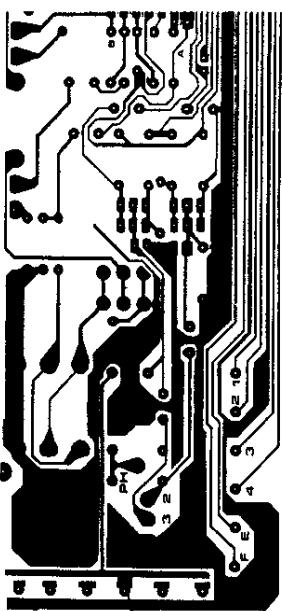
	PartNr	Value	Notes	ArtNr
mixbuss	R1	82 k	5%	0752
	R2	82 k	5%	0752
fader	R3	22 k	5%	0745
	R4	22 k	5%	0745
	R5	22 k	5%	0745
	R6	47 E	5%	0713
	R7	47 k	5%	0749
	R8	47 E	5%	0713
ledbar	R9	8 k 2	5%	0740
	R10	120 k	5%	0754
	R11	15 k	5%	0743
fb/echo	R12A(print 200-2-A)	100 k	5%	0753
	R12B(print 200-2-B)	10 k	5%	0741
	R13	47 E	5%	0713
	R14(print 200-2-B)	10 k	5%	0741
	R15(print 200-2-B)	47 k	5%	0749
echo r.	R16	10 E	5%	0705
	R17	22 k	5%	0745
supp.	R300	10 E	5%	0705
	R301	10 E	5%	0705
mixbuss	C1	47 / 25	elco	0287
fader	C2	10 p	ker	0213
	C3	47 / 25	elco	0287
ledbar	C4	2.2 / 63	elco	0280
fb/echo	C5 (print 200-2-B)	47 / 25	elco	0287
ledbar	D1	1N4148	small signal	0342
	D2-D5	LED	5 x 2 mm groen	0389
	D6	LED	5 x 2 mm rood	0390
ledbar	VR1	220 k	mini trimpot	0149
ledbar	R1-R4	TL 074	bifet opamp	0305
ledbar	IC1	uA 267	leddriver	0312
echo r.	F1	10 kB	12.5 mm mono	0884
	F1	10 kB PHI	58 mm mono fader	0138
	J1-J4	Cliff stereo	plastic	0433



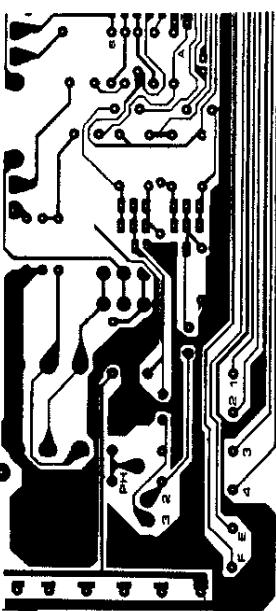
RIJNKADE 15 b 1382 GS WEESP PHONE : 02940 18014 ELECTRONICA BV	TITLE : SERIES 200 MASTER + LEDBAR	P.C.B. INDEX. 200 - 2e - (A+B)	NOTES :
	DRAWN : A. DEKKERS		
	DATE : 16-09-85		

SHEET. OF © 1984 CHECKED:

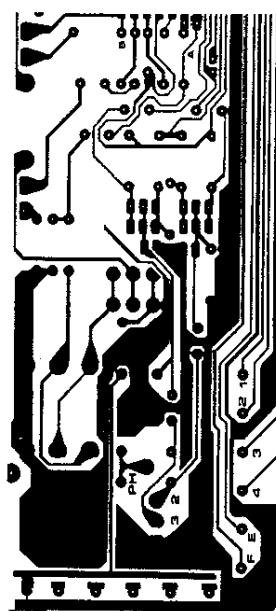




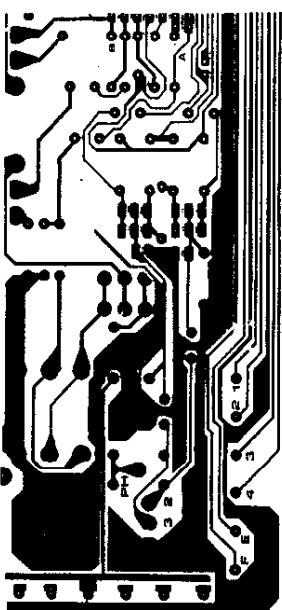
M2



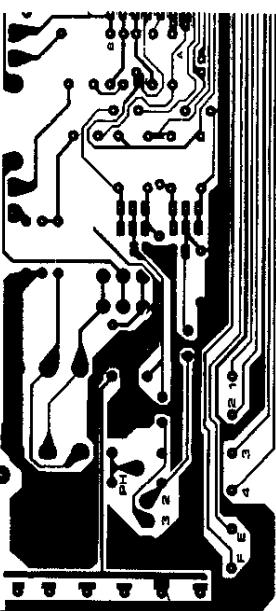
M4



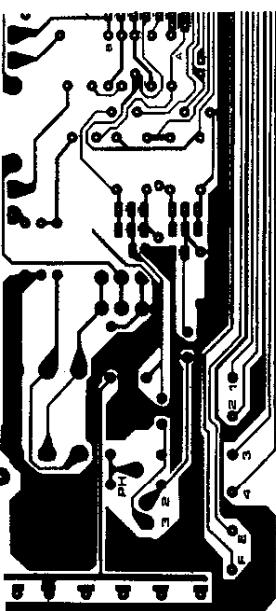
TR



M1



M3



TL

CHANNEL 4

CHANNEL 3

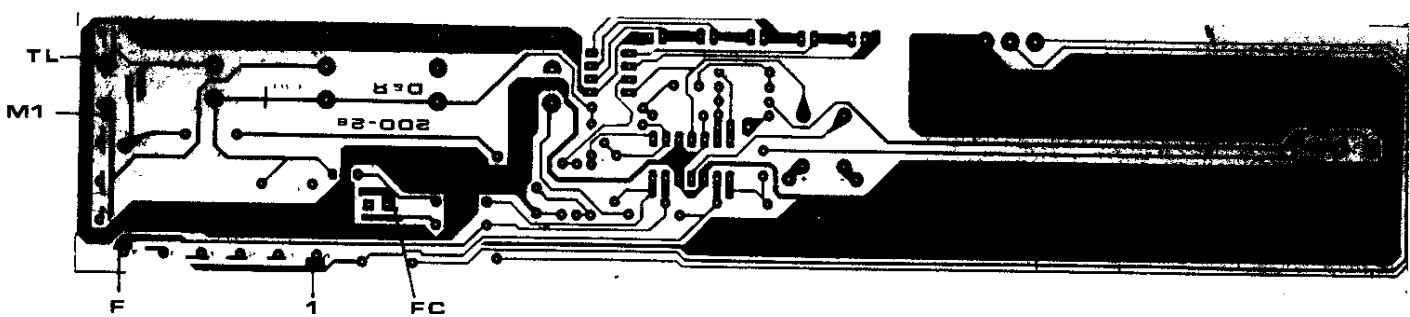
CHANNEL 6

CHANNEL 5

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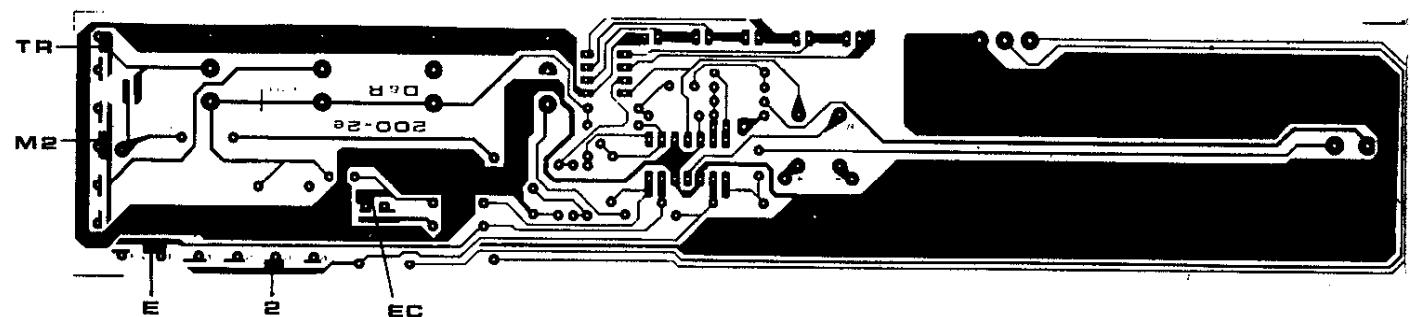
MASTER 1

PRINT 200-2-A (MET STIP)



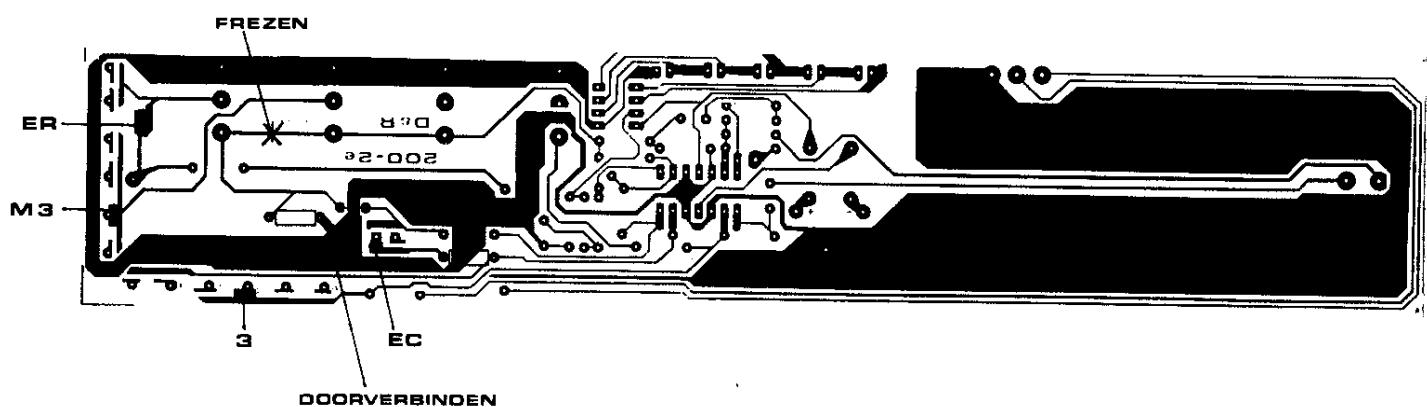
MASTER 2

PRINT 200-2-A (MET STIP)



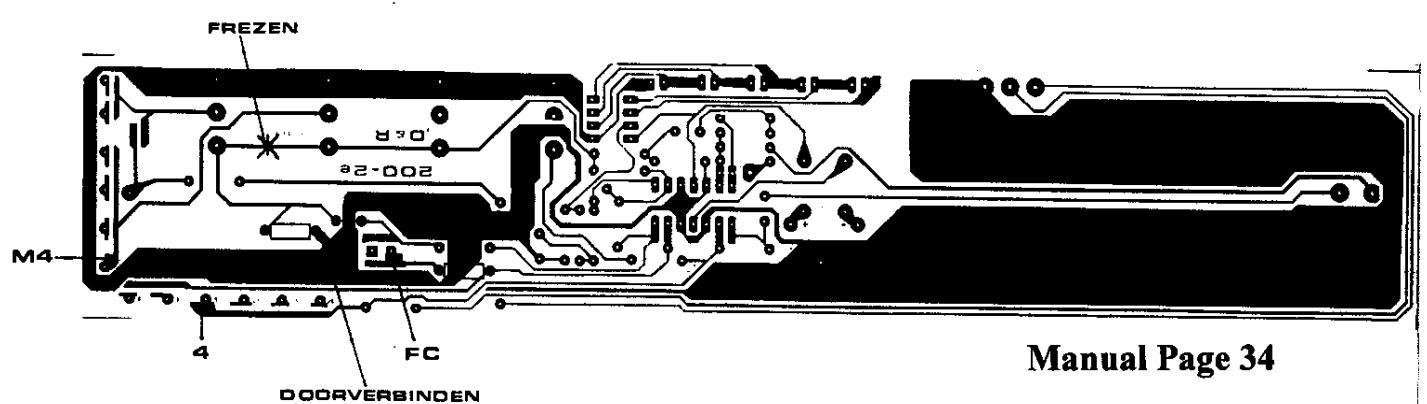
MASTER 3

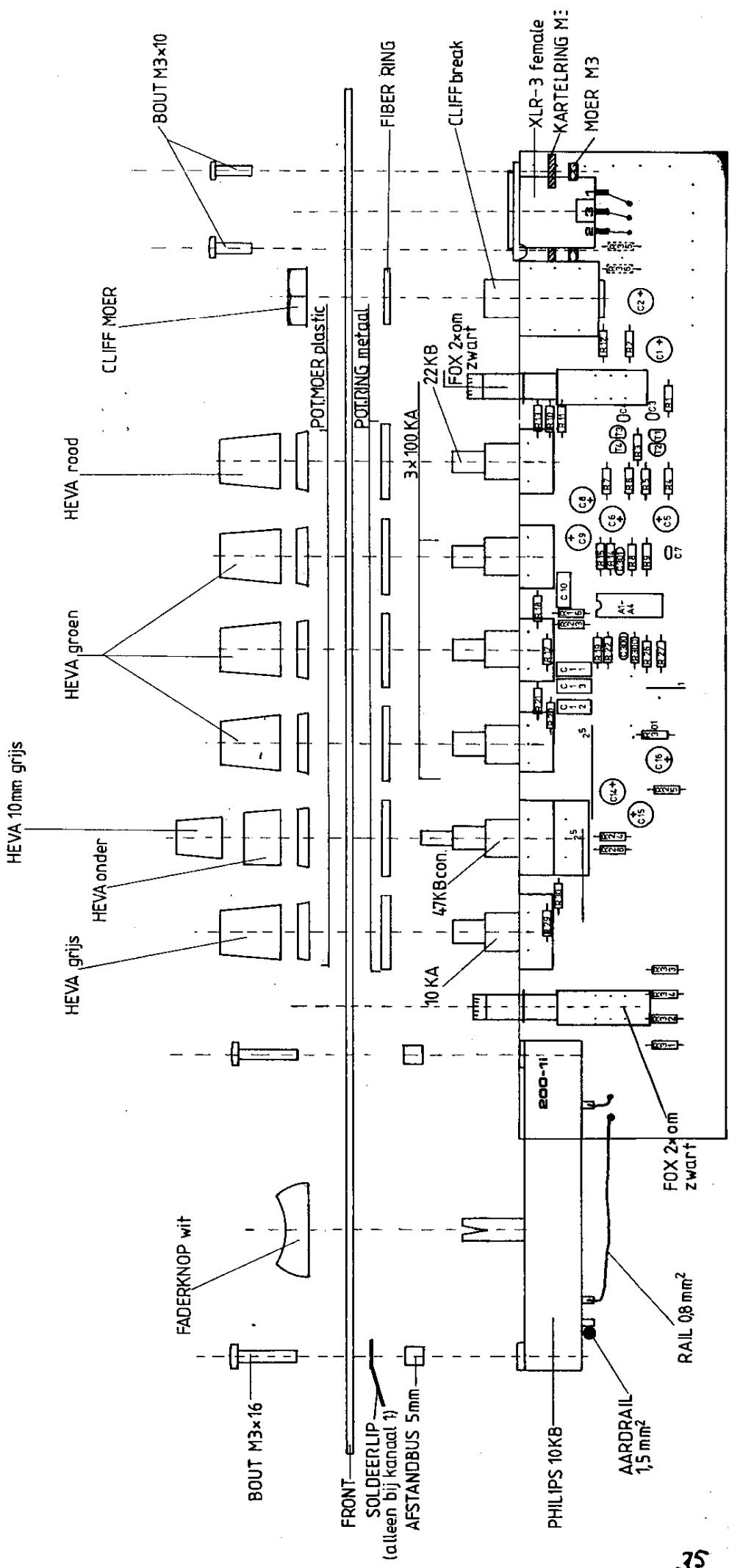
PRINT 200-2-B (ZONDER STIP)

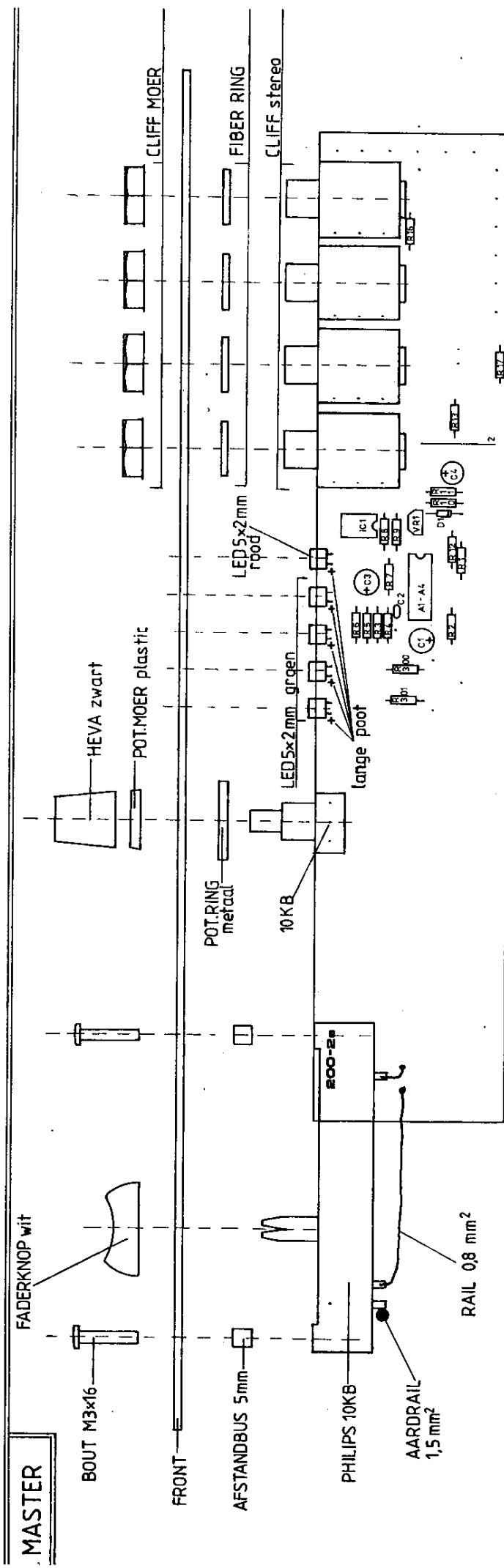


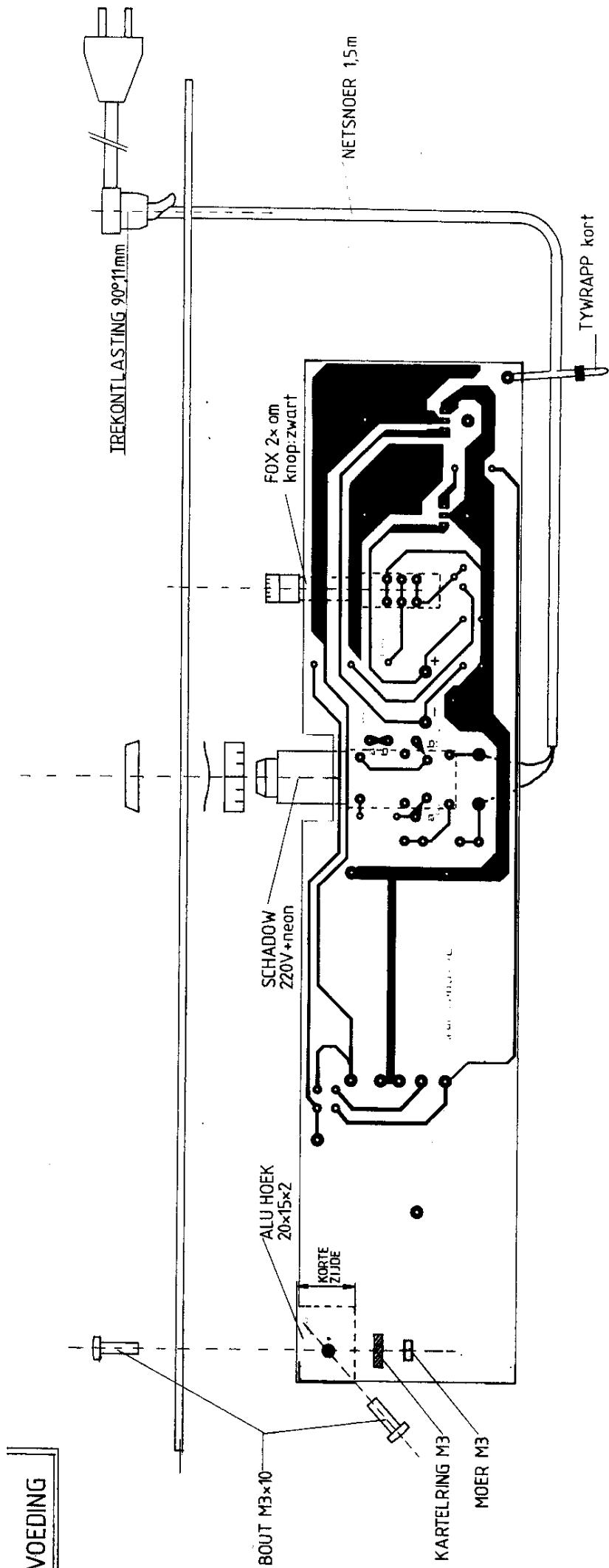
MASTER 4

PRINT 200-2-B (ZONDER STIP)









CHANNEL 1

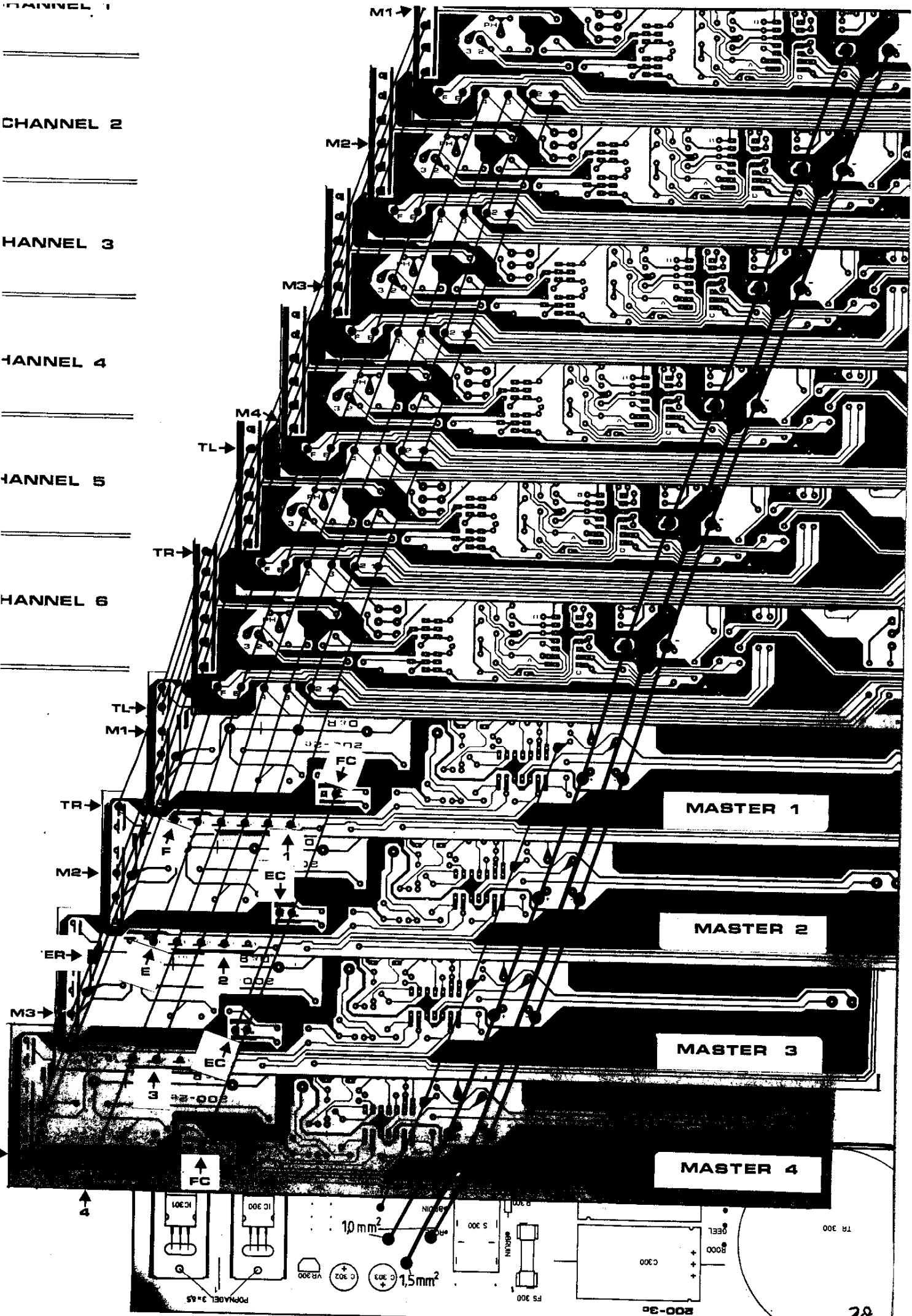
CHANNEL 2

CHANNEL 3

CHANNEL 4

CHANNEL 5

CHANNEL 6

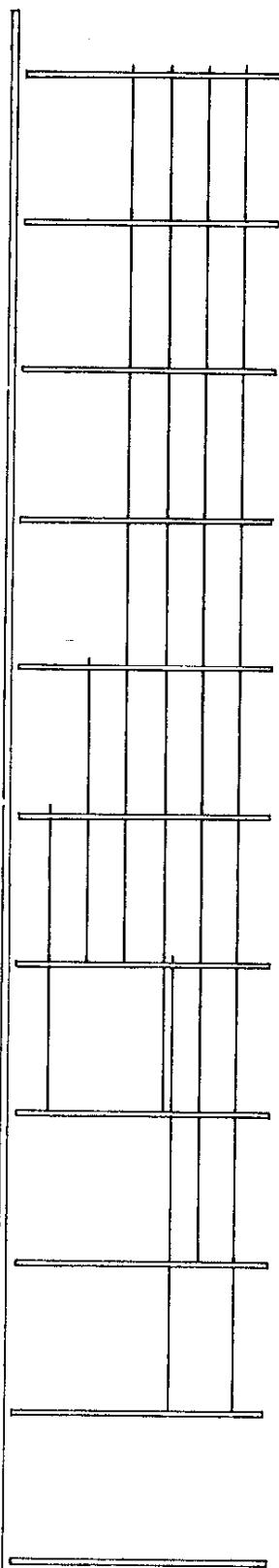


## SERIES 200

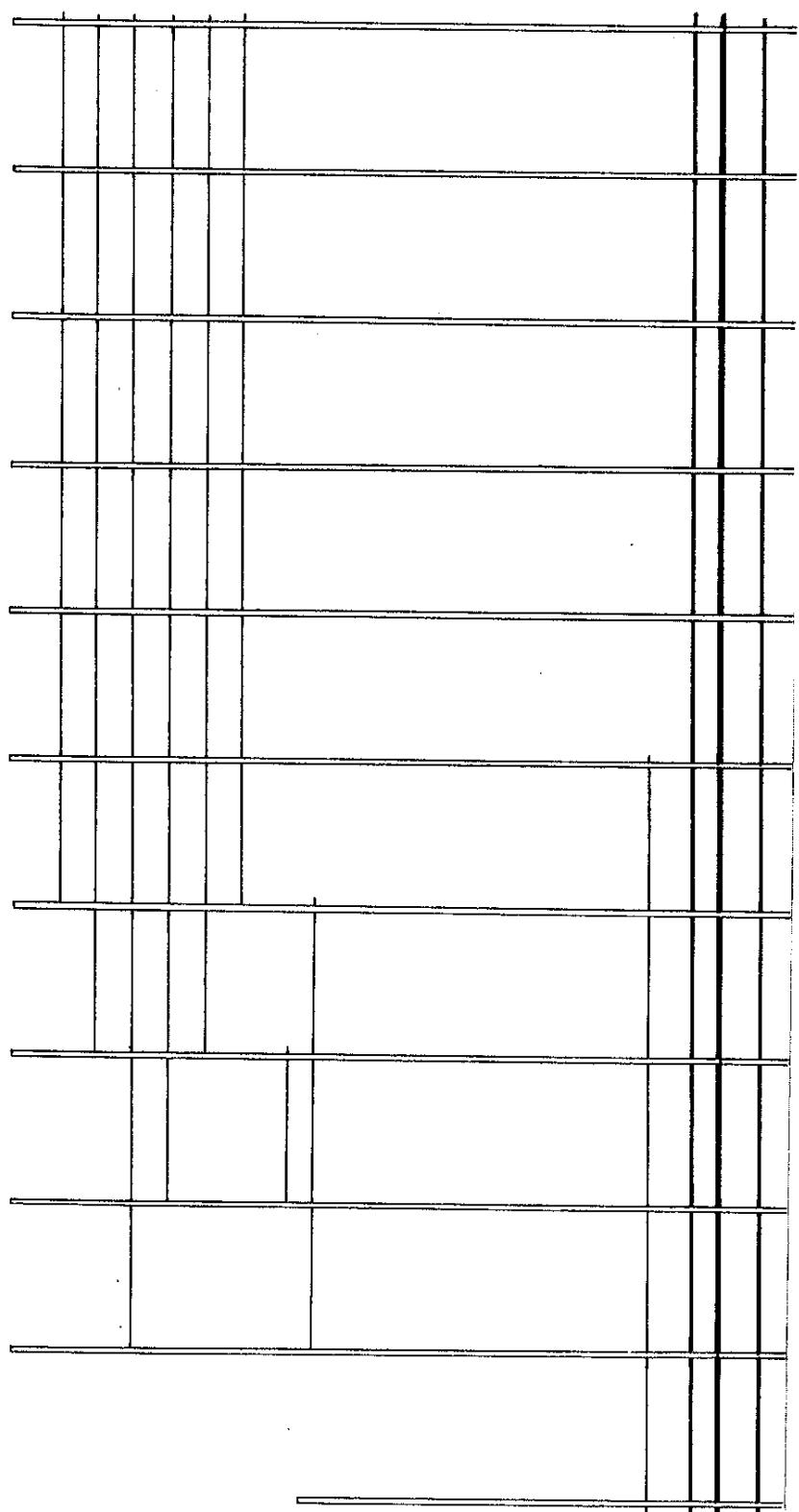
## ZIJAANZICHT

## ACHTERAANZICHT

CHANNEL 1



FRONT



LET OP: ALLE KNOOPEN ZIJN VAN HEVA  
ALLE POTMETERS ZIJN MONO

LR MONTEREN MET:  
BOUT M3x10  
KARTELRING M3  
MOER M3

CLIFF MONTEREN MET FIBER RING  
DOTJES WIJZEN NAAR KANAAL 1

POTMETERS MONTEREN MET:  
1 POTRING METAAL  
POTMOER PLASTIC

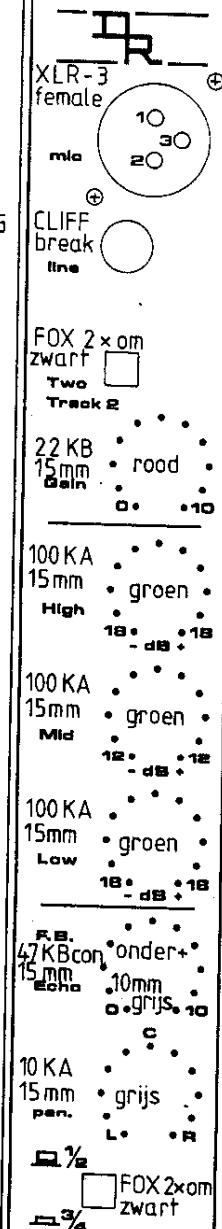
DOTJES WIJZEN NAAR KANAAL 1

SET OP : CONCENTRISCH →

LE FADERS MONO  
FADERZIJDE MET 2 AANSLUIT-  
PES KOMT ONDER

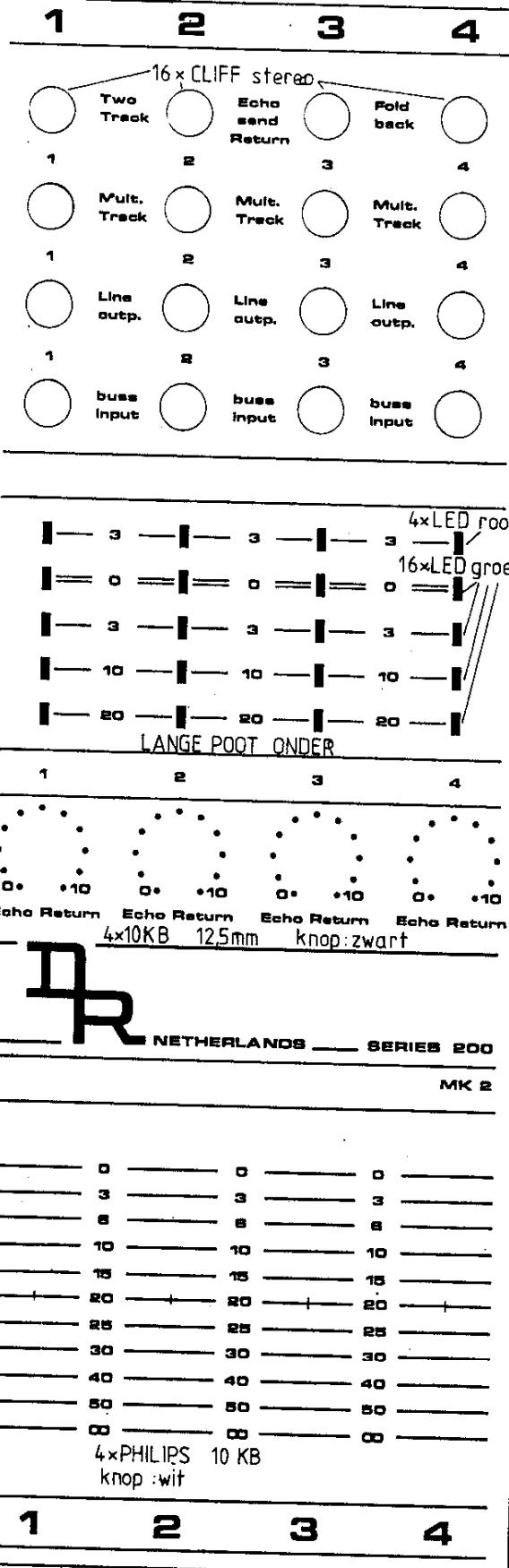
ANDERS MONTEREN MET:  
BOUT M3x16  
AFSTANDSBUS 5mm  
SOLDEERLIP (alleen bij kanaal 1)

SET OP:  
JE GEBRUIK VAN RADIOHM FADER  
WORDEN DE AFSTANDSBUSJES 5mm  
VERVANGEN DOOR AFSTANDSBUSJES  
IN 3mm



PHILIPS 10 KB  
knop: wit

**6**



220V AC

FOX 2 xom  
zwart  
cel.

on

== ELECTRONICA B.V.

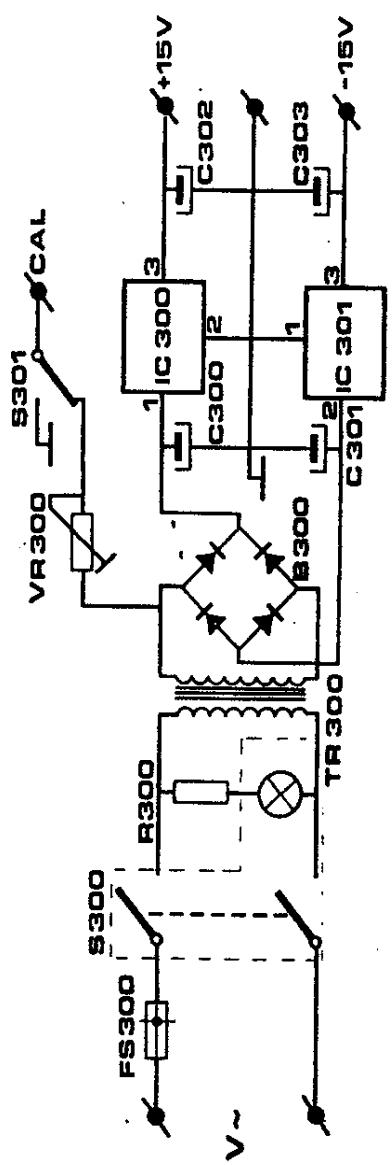
## produktie en ontwikkeling van geluidsmengpanelen en accessoires

Date : 10-09-1985

R & D department

Title : 200-3 POWER SUPPLY

PartNr	Value	Notes	ArtNr
R300	330 k	5%	0759
C300	4700 / 25	elco ax.	0298
C301	4700 / 25	elco ax.	0298
C302	100 / 25	elco	0292
C303	100 / 25	elco	0292
VR300	1 M	mini trimpot	0151
B300	BB0C1000		0345
TR300	06013/15V	ringkern	0586
IC300	L7815	pos. reg.	0320
IC301	L7915	neg. reg.	0321
S300	220V + neon	SHADOW	0405
S301	2 x 2 switch	FOX	0400
FS300	63 mA	fuse	0650
fader	C2	10 p	ker
			0213



**RJUKADE 15 b**  
 **1382 GS WEESP  
**HOLLAND****  
**PHONE: 02940 16**  
**ELECTRONICA B.V.**

TITLE : SERIES 200		P.C.B. INDEX. 200-3C
POWER SUPPLY		DRAWN : A DEKKERS
		DATE : 16-09-85
SHEET OF	© 1984	CHECKED :

## TEST :

### AFREGELLEN VAN DE LED-BAR:

ZORG VOOR EEN UITGANGSNIVEAU VAN -4 dBV OP ALLE LIJNUITGANGEN, REGEL NU MET DE INSTELPOT.METERS OP DE MASTERPRINTEN DE 4 LED-BAR'S AF OP 0 dB

### AFREGELLEN VAN DE CALIBRATIETOON:

REGEL DE INSTELPOT.METER OP DE VOEDINGSPRINT ZO AF DAT DE CALIBRATIETOON OP ALLE LIJNUITGANGEN EEN NIVEAU HEEFT VAN -10 dBV (dat is dus -10 op de LED-bar's)