

Vetelec mixers third generation

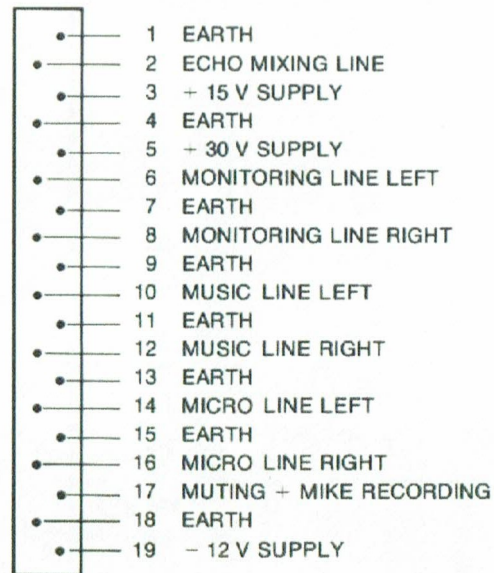
Modules documentation

Contain : original tech specs of Vetelec Third generation modules + schematics of some modules.

Warning : schematics drawings are reverse-engineering of modules, **and may contain errors !**

Only for repair help purposes !

Standard bus connectors :



Attention !

Pin N° 7 is not earth on every models, see power supply schematic.

Is it an evolution ? On this mixing table this pin is used as a « start » command.

FM Tuner Units

CONTROLS

Volume

Only with TG.112.
Progressive volume control of the signal fed to the mixing device.

Monitoring

Only with TG.112.
Progressive volume control of the signal fed to the monitor.

Stereo/mono

Mono audition can be preferable, especially in fringe areas. Push the selector button for mono, release for stereo audition.

AFC

For optimum tone quality, release AFC button and tune in with the visual aid of the tuning indicator; then push the button. Automatic Frequency Control will take over for the highly accurate tuning the indicator alone is unable to afford.

Tuning

Large diameter tuning knob with built-in fly-wheel.
Tuning control visualized by a precise tuning indicator and a 15-LED scale.

With regard to its function, the Vetelec FM Tuner Unit is to be considered a source which feeds its output signal directly to the mixing device of a Tone Control Unit (TG.312 or 313), with no intervention of any input unit.
On the other hand the FM Tuner Unit fits perfectly in with the Pre-Amplifier Unit (TG.231).

Examples:

Intim-Line

FM TUNER AMPLIFIER	PRE AMPLIFIER	POWER AMPLIFIER
TG-111	TG-231	TG-S351

Orchest-Line

MICRO	MICRO	MICRO	FM TUNER AMPLIFIER	PRE AMPLIFIER	POWER SUPPLY
TG-221	TG-222	TG-223	TG-224	TG-231	TG-011

Disco-Line

INPUT	MICRO	FM TUNER AMPLIFIER	TONE CONTROL	POWER SUPPLY
TG-211 TG-213	TG-221 TG-224	TG-111	TG-312 TG-313	TG-011

Although both TG.111 and 112 versions are interchangeable, the FM Tuner TG.111 is particularly suitable to combine with a Pre-Amplifier Unit in Orchest or Intim-Line sets, while the TG.112 has specially been designed for Disco-Line mixing consoles.

CONNECTIONS

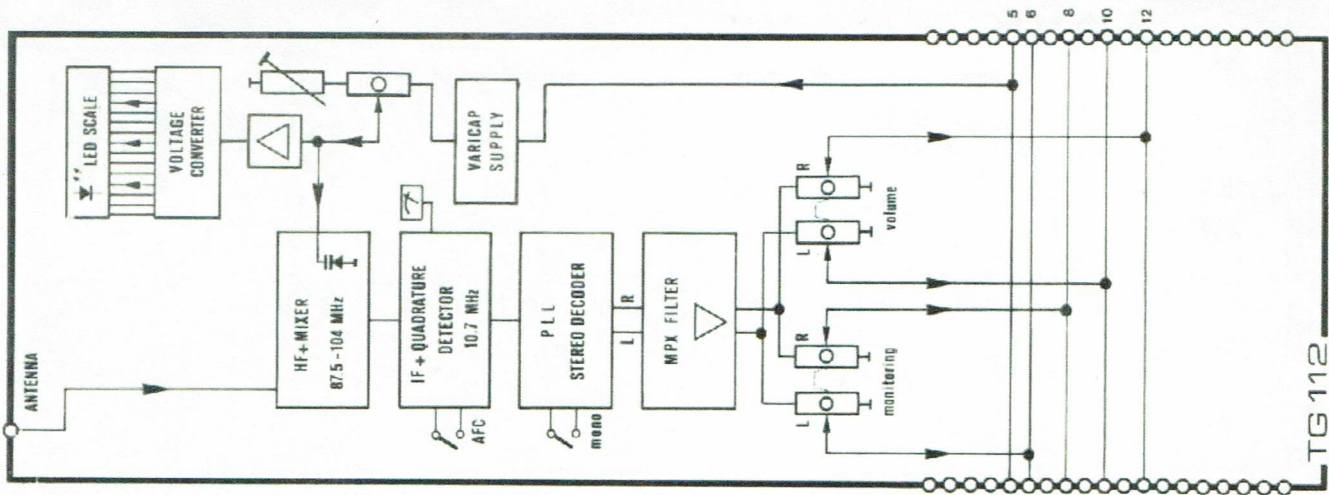
External antenna coax input 75Ω.

Internal output to the mixing device via multipin connector lines 10 & 12. With TG.112 only, internal output to the monitor via lines 6 & 8.

SPECIFICATIONS

Antenna impedance	75Ω, asymmetric
Tuning range	87.5 to 104 MHz
Usable sensitivity (40 kHz sweep width - S/N ratio 26 dB)	1.4 μV
Limiting point	0.8 μV
Capture ratio	1.4 dB
Band width	180 kHz at -3 dB
Signal to noise ratio (1 mV antenna mono)	70 dB
stereo	68 dB
Frequency response	30 Hz to 15 kHz
Deviation	±2 dB
Harmonic distortion mono	better than 0.3%
stereo	better than 1.0%
Stereo separation at 1 kHz	better than 40 dB
at 5 kHz	better than 35 dB
Power consumption -12V	30 mA
+15V	80 mA
-30V	5 mA

BLOCK DIAGRAM



The sparkling 15-LED tuning scale has been designed with a view to a convenient and unalterable tuning visualizing. No pointer, no cords, no backlash, no shifting since the varicap voltage needed for tuning is directly converted into the LED display.

no schematic yet for FM tuner !

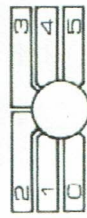
Stereo Input Units

The Stereo Input Units get input signals from either electrical or mechanical sources. The output signal is fed to the mixing device of a Tone Control Unit (TG.312 or 313). There is also a branching to a Monitor Unit (TG.911 or 312) for signal monitoring through headphones.

CONTROLS

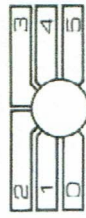
TG • 211 AUX input only.

Monitoring



Progressive volume control of the signal fed to the Monitor Unit.

Preset



Adjustable volume limiter allowing the Fader to be used along its full length, even at low output level.

Volume

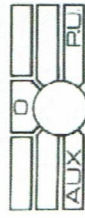
Volume control of the output signal by Vetelec Fader. Dust and waterproof contacts make up twin stereo channel coupled, 3dB step potentiometers.

TG • 212 EQ input only.

All controls have the same functions as with TG.211

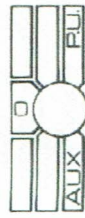
TG • 213 Both AUX and EQ input.

Monitoring



The "monitoring" control is also a selector; its position determines which signal, either AUX or EQ, is fed to the Monitor.

Preset



The "preset" position determines which signal is fed, through preset control and Fader, to the mixing device.

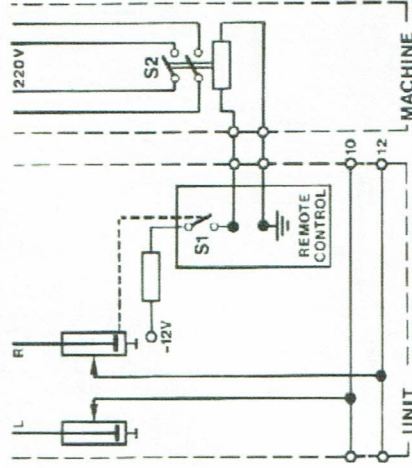
Volume

The Fader controls the output of this particular signal that has been selected by the "preset" control.

Consequently it is possible to monitor one signal, controlled by the "monitoring" potentiometer, while feeding the other signal, controlled by Fader, to the mixing device for playback.

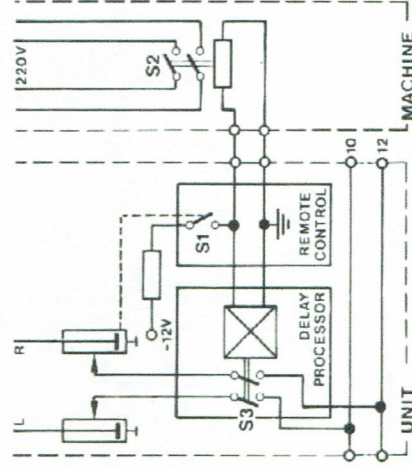
REMOTE CONTROL

Vetelec-supplied machines - record players, tape or cassette recorders - are fitted with a remote control. Other machines can also be equipped with remote control devices. Maximum power consumption: 50 mA at 12 V.D.C.



In off position the Fader closes the S1 relay contact and charges the machine's control relay with -12V, opening S2 contact. When fading in, S1 interrupts coil tension, thus closing S2 contact and starting the machine motor.

In order to mute the annoying rush-in signals, the unit can be fitted with a Delay Processor.



When fading in, S1 interrupts both relay coil and delay processor tension. While S2 contact starts the machine, S3 delays the machine's signal during 0.3 seconds - the time needed for the motor to get on speed. Other delay times optional.

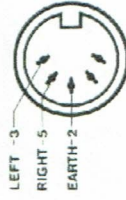
CONNECTIONS

Remote Control



External output to the remote controlled machine by means of a DIN plug.

AUX/EQ



External DIN plug input for either linear (AUX) or non-linear (EQ) signals.

Internal output to the monitor via multipin connector lines 6 & 8, and to the mixing device via lines 10 & 12.

SPECIFICATIONS

EQ Input

RIAA curve as a standard.
 Input impedance 50 kΩ
 Sensitivity 2 mV
 Overload capacity 34 dB
 Deviation ± 1 dB
 Signal to noise ratio (DIN curve A) 74 dB

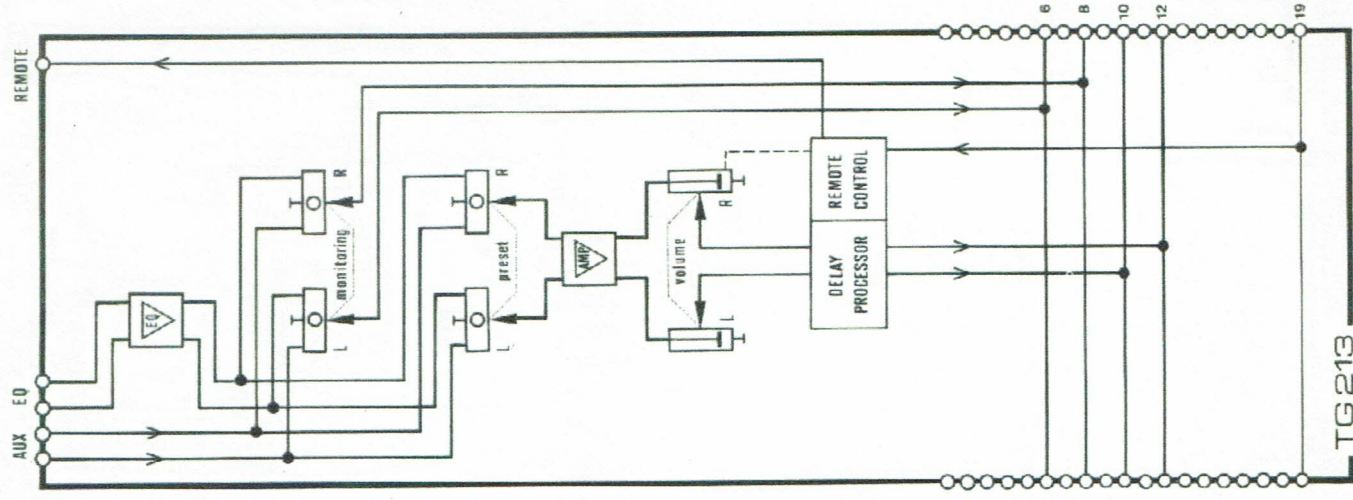
AUX input

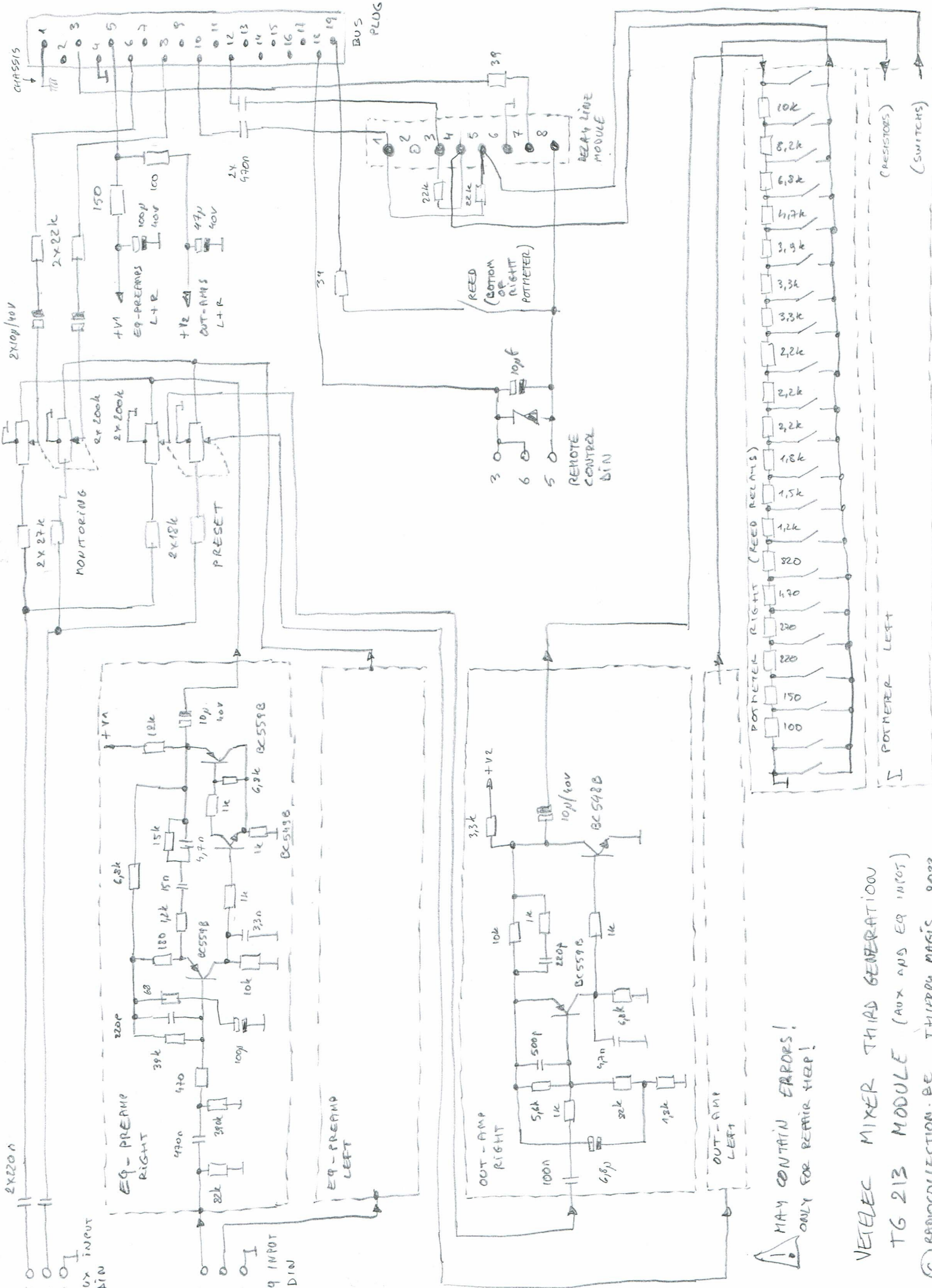
Input impedance 50 kΩ
 Sensitivity 240 mV
 Frequency response 15 Hz to 30 kHz
 Deviation ± 1 dB
 Signal to noise ratio (DIN curve A) 85 dB
 Harmonic distortion better than 0.05 %
 Power consumption +30 V 22 mA



VETELEC

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VEELEC MIXER THIRD GENERATION
TG 213 MODULE (AUX AND EQ INPUT)
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Tone Control Unit

The Tone Control Unit gets signals from the input (Micro & Music) or source (FM Tuner e.g.) units. The output signal is fed to the stereo power amplifier. There is a recording output for the music signals and another one for the mixed music + micro signals. A mono output has been provided for to operate a light modulator.

CONTROLS

Output

Twin high-precision VU-meters visualise the stereo output signal.

Echo

Progressive volume control of the signal fed to the CCD Echo Unit.

Sense

Potmeter controlling the sensitivity of the Automatic Muting Control (AMC).

Time

Potmeter controlling the music signal's fading-in time after muting.

Depth

Potmeter controlling the depth level of the music signal, when muted.

Manual

Pushing the "manual" button simulates micro signal action on AMC. For adjusting the threefold sense/time/depth control or hand operating.

Tone Control

Separate bass & treble control of the mixed music signals by Vetelec Fader.

AUTOMATIC MUTING CONTROL

The Vetelec Tone Control Unit features an absolutely unique threefold adjustable muting device, which deadens the music from the moment one speaks into the microphones.

Micro signals coming from one or various Micro signals via a special "muting" line, are converted into a D.C. voltage; when reaching a previously determined turn-over point, it operates a level detector activating the muting device.

The sensitivity i.e. the position of the turn-over point, is adjustable from, let's say, a fingersnap to a dreadful roaring.

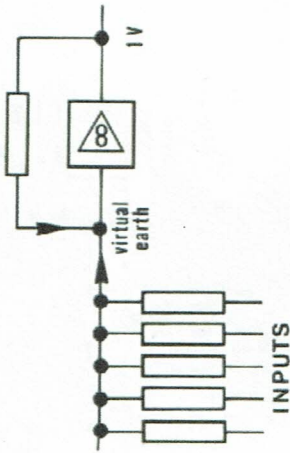
The time needed for the music signal to reach its normal level after muting, is adjustable from 0.25 to 2.0 seconds.

The depth level the music signals are muted to, can be adjusted from -3dB to -26dB.

What's more, the automatic control is matched to a hand-operated muting device, which supplies a D.C. voltage, simulating micro signal impulses and activating the muting device.

LEVEL STABILIZER

Normally each additional input would reduce the output level. That's where the electronic Level Stabilizer comes in.



The various inputs, previously reduced to a virtual earth, are infinitely amplified and fed back to the input node, so as to result in a 1V output. As the input voltage is infinitely low, a nearly unlimited number of input units can be connected without any noticeable influence on the output signal, which means: without any technical intervention.

CONNECTIONS

Internal inputs

Music signals coming from various Music Units via multi-pin connector lines 10 & 12.

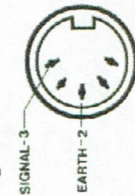
Micro signals coming from various Micro Units via lines 14 & 16.

Muting signals coming from various Micro Units via line 17.

Internal Output

Mixed music signal fed to the CCD Echo Unit via connector line 2.

Light Modulator



DIN plug to Light modulator.

Music Recording



DIN plug feeding only the mixed stereo music signal to a tape or cassette recorder.

Mike + Music Recording



DIN plug feeding the mixed stereo micro + music signal to a tape or cassette recorder.

Output 1 & 2

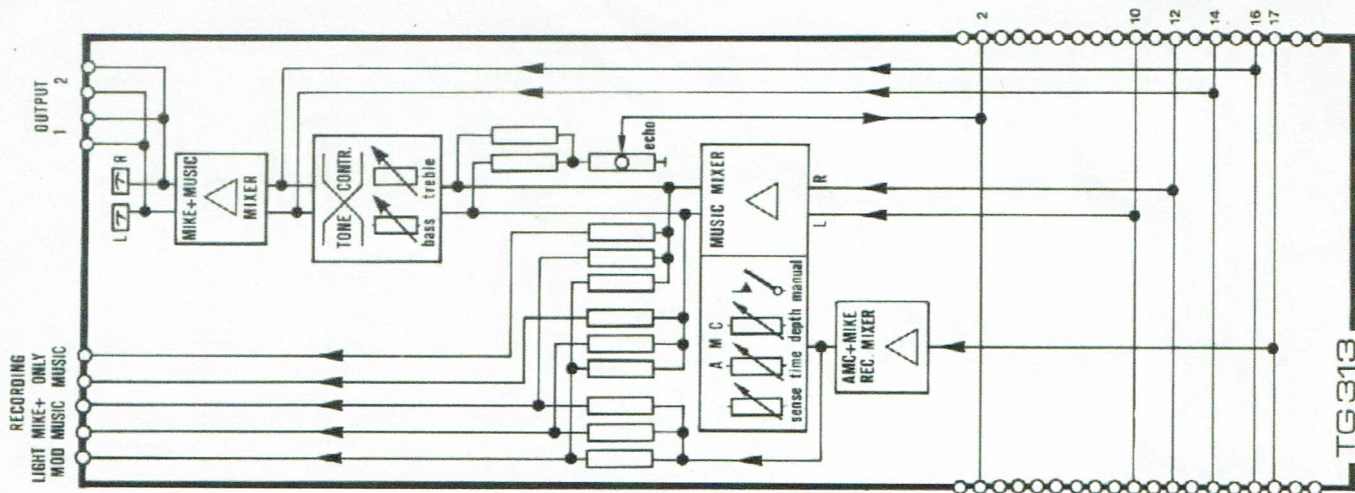




The TC has two DIN plug connections for feeding mixed micro + music signals to two stereo power amplifiers.

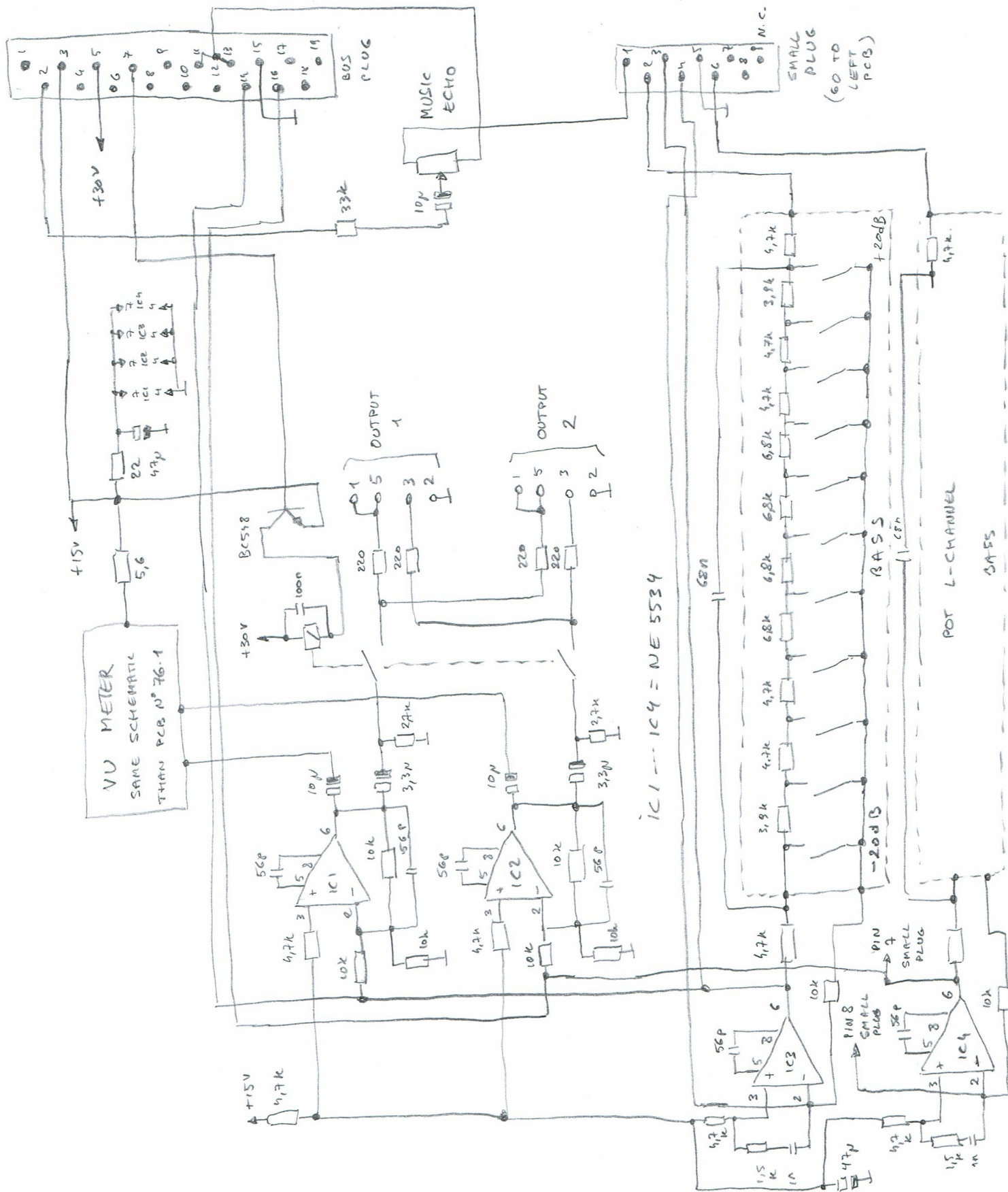
SPECIFICATIONS

Bass	± 20 dB at 70 Hz
Treble	± 20 dB at 8 kHz
Power Amplifier output	1000 mV at 1 kΩ max 7000 mV
Recorder output	90 mV at 6.8 kΩ
Light modulator output	330 mV at 33 kΩ
Muting depth	- 3 dB to - 26 dB
Muting time	250 msec. to 2 sec.
Frequency response	10 Hz to 30 kHz
Deviation	± 1 dB
Total harmonic distortion at 1 V output	better than 0.05 %
Power consumption	
- 12 V	50 mA
+ 15 V	15 mA
+ 30 V	60 mA

BLOCK DIAGRAM



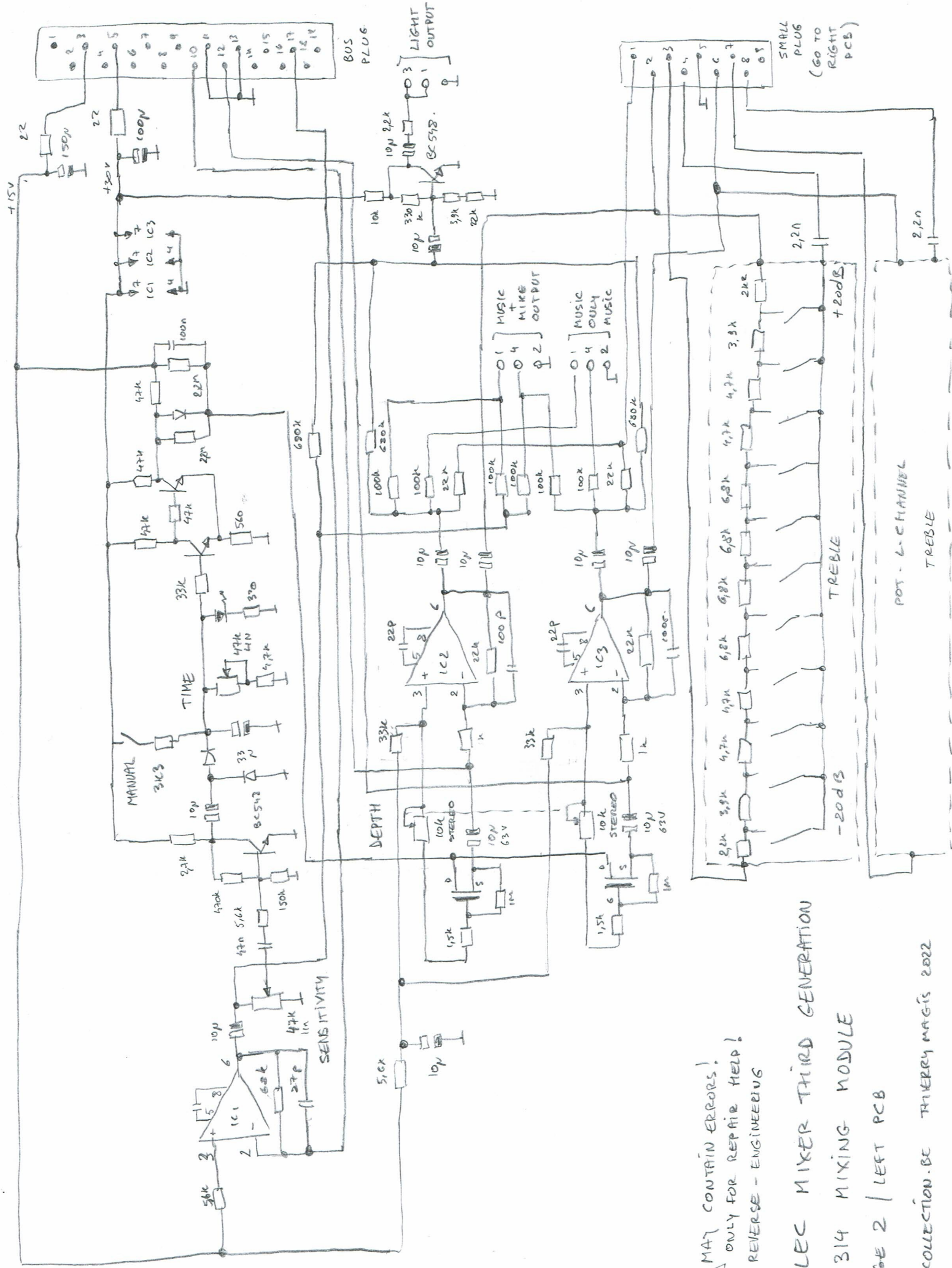


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VETELEC MIXER
 THIRD GENERATION

TG 314 MIXING MODULE
 PAGE 1 | RIGHT PCB

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VETELEC MIXER THIRD GENERATION
 TG 314 MIXING MODULE
 PAGE 2 / LEFT PCB

Micro Units

Each Micro Unit gets its input signal from an acoustical source through a microphone. TG.223 & 224 with both Mike and Aux input can also get signals from mechanical or electrical sources, micro signals are not to be fed to a central TC device. They only need mixing in a mixing control, which can be part of either a TC Unit (TG.313 or 312) a micro Output Unit (TG.523) or even a Power Amplifier Unit (TG.S351).

CONTROLS

TG • 221 & TG • 222

Echo

Progressive volume control of the signal fed to the CCD Echo Unit. The CCD's total input level is watched by its own Peak VU-meter.

Monitoring

The «monitoring» control determines the volume of the signal fed to the Monitor. By using the potmeter as an on/off switch, one can monitor each Micro Unit, say: each voice or instrument, separately.

As the monitoring control is branched after the volume control, the sound engineer is able to make up the orchestra's balance, on the understanding that all monitoring controls are entirely open, or at least, that they are all in the same opening position.

Treble & bass

Two separate potmeters control treble & bass tones, according to the individual timbre of each voice or instrument.

Preset



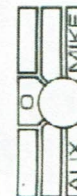
Progressive volume preset allowing the preamp tone control to be driven within its optimum dynamic range. TG.222 version is fitted with an Overload Detector: when lit, it points out that the dynamic range has been exceeded.

Volume

Volume control of the output signal fed to the central mixing device. The Vetelec Fader features dust and water-proof contacts that make up a 3 dB step potmeter.

TG • 223 & TG • 224

Preset



The preset is not only a volume control but first of all a selector that chooses either the mike or the aux input signal.

All other controls have the same function as with respectively TG.221 and TG.222. It is clear that they refer to this particular signal that has been preselected by the «preset» knob.

LED PEAK VU-METER

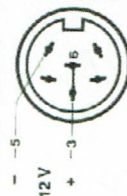
This VU-meter, figured by two red, one orange and four green LED's visualizes the volume of the signal fed to the central mixing device. Contrary to mechanical VU-meters, the LED display indicates even very short peaks. Most of all it makes up the long looked-for remedy against the unbearable howling produced by acoustical feedback (Larsen effects). Really, even with very complex sound systems, the LED Peak VU-meters points at a glance to the «guilty» microphone!

OVERLOAD DETECTOR

Another Vetelec feature is the Overload Detector, that allows the optimum use of the units full dynamic range in all circumstances. Everywhen the preamp tone control is overdriven, even for a short time, the overload LED lights up for a well-defined duration.

CONNECTIONS

Remote Control



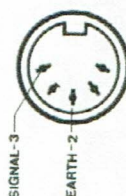
External output to the remote controlled machine by means of a DIN plug. Only with TG.223 & 224.

Mike



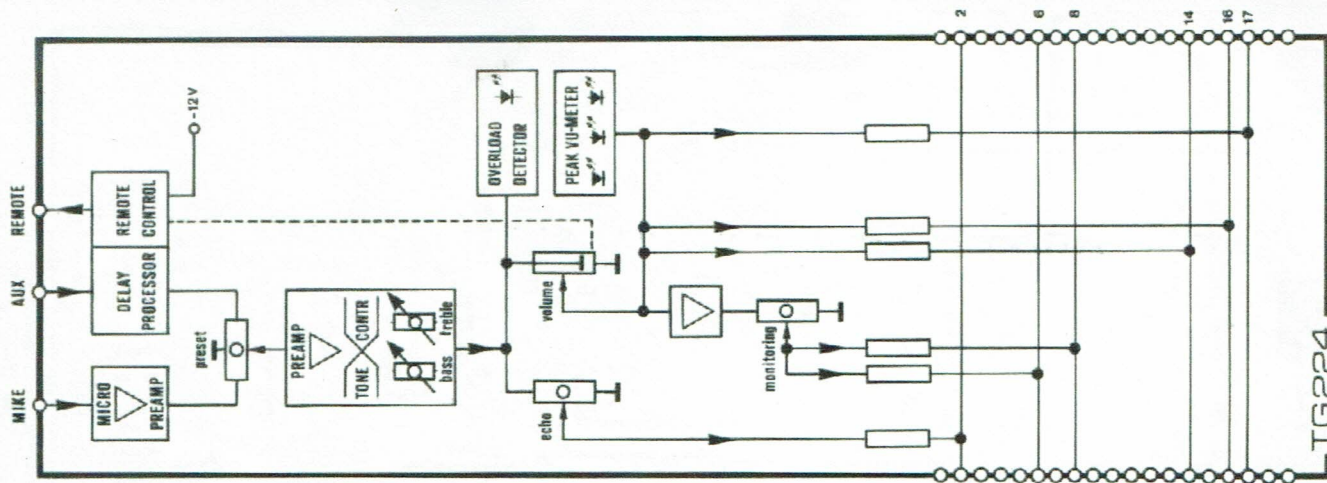
External Mike input. Symmetrical microphone via DIN plug pins 1 & 3. Asymmetrical microphone via pins 1 & 2.

Aux



External Aux input via DIN plug pins 2 & 3. Only with TG.223 & 224.

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Internal outputs

By way of the internal multipin connector: to the CCD Echo Unit via line 2, to the Monitor Unit via lines 6 & 8, to the central mixing device via lines 14 & 16 and to the AMC via muting line 17.

SPECIFICATIONS

Mike input

For symmetrical or asymmetrical microphone.
 Input impedance 15 kΩ
 Sensitivity 1 mV
 Frequency response 10 Hz to 20 kHz
 Deviation ± 1.5 dB
 Preamp overload capability 40 dB
 TC overload capability 12 dB
 Signal to noise ratio (DIN curve A) 64 dB

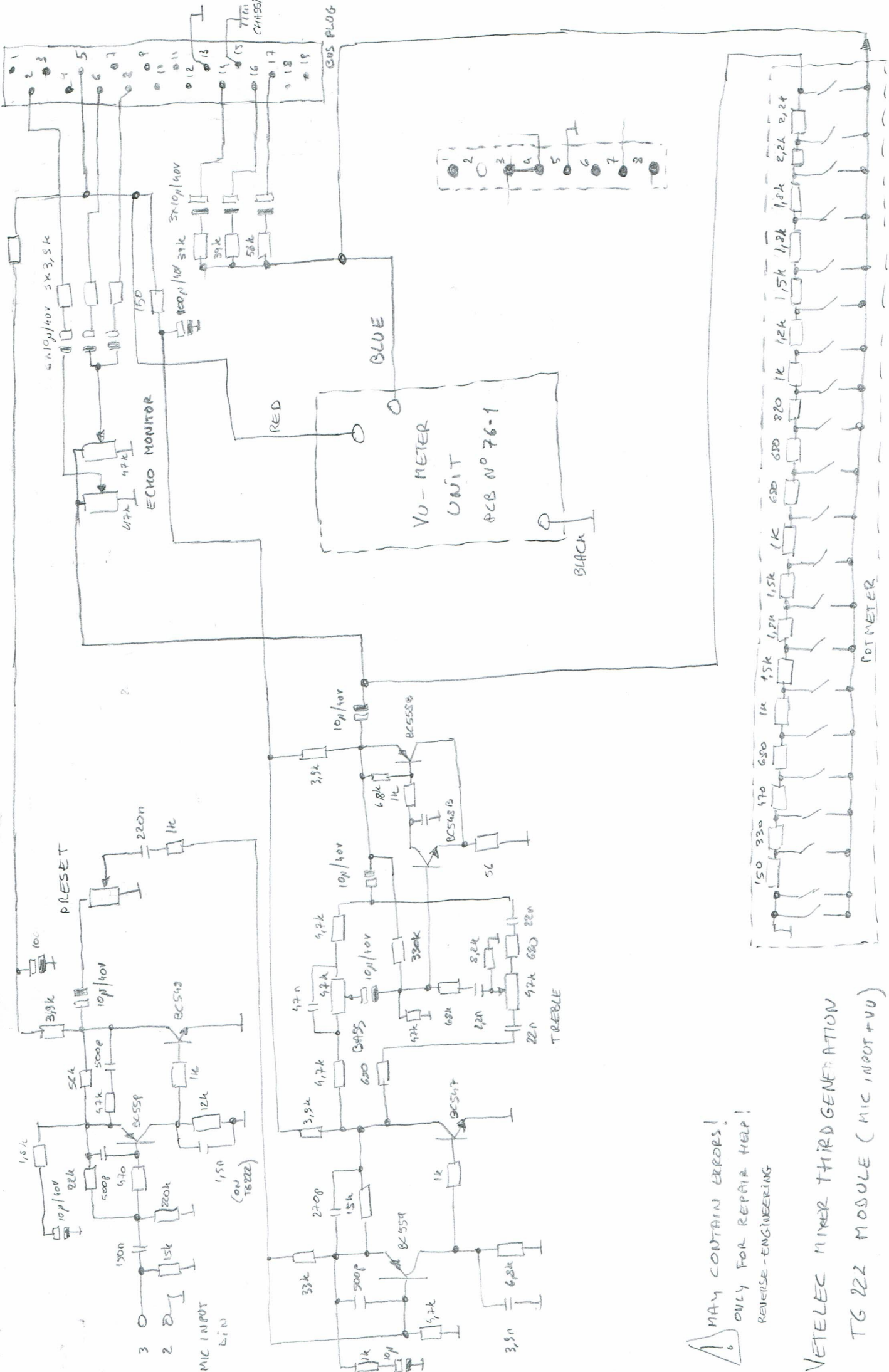
Aux input

Input impedance 100 kΩ
 Sensitivity 180 mV
 Frequency response 10 Hz to 30 kHz
 Deviation ± 1.5 dB
 Signal to noise ratio (DIN curve A) 80 dB
 Bass ± 19 dB at 100 Hz
 Treble ± 21 dB at 7 kHz
 Total harmonic distortion better than 0.05 %
 Power consumption + 30 V.D.C.
 TG.221 & 223 22 mA
 TG.222 & 224 45 mA

As part of our policy of continuous product improvement, the Company reserves the right to alter the specifications of any equipment without notice.

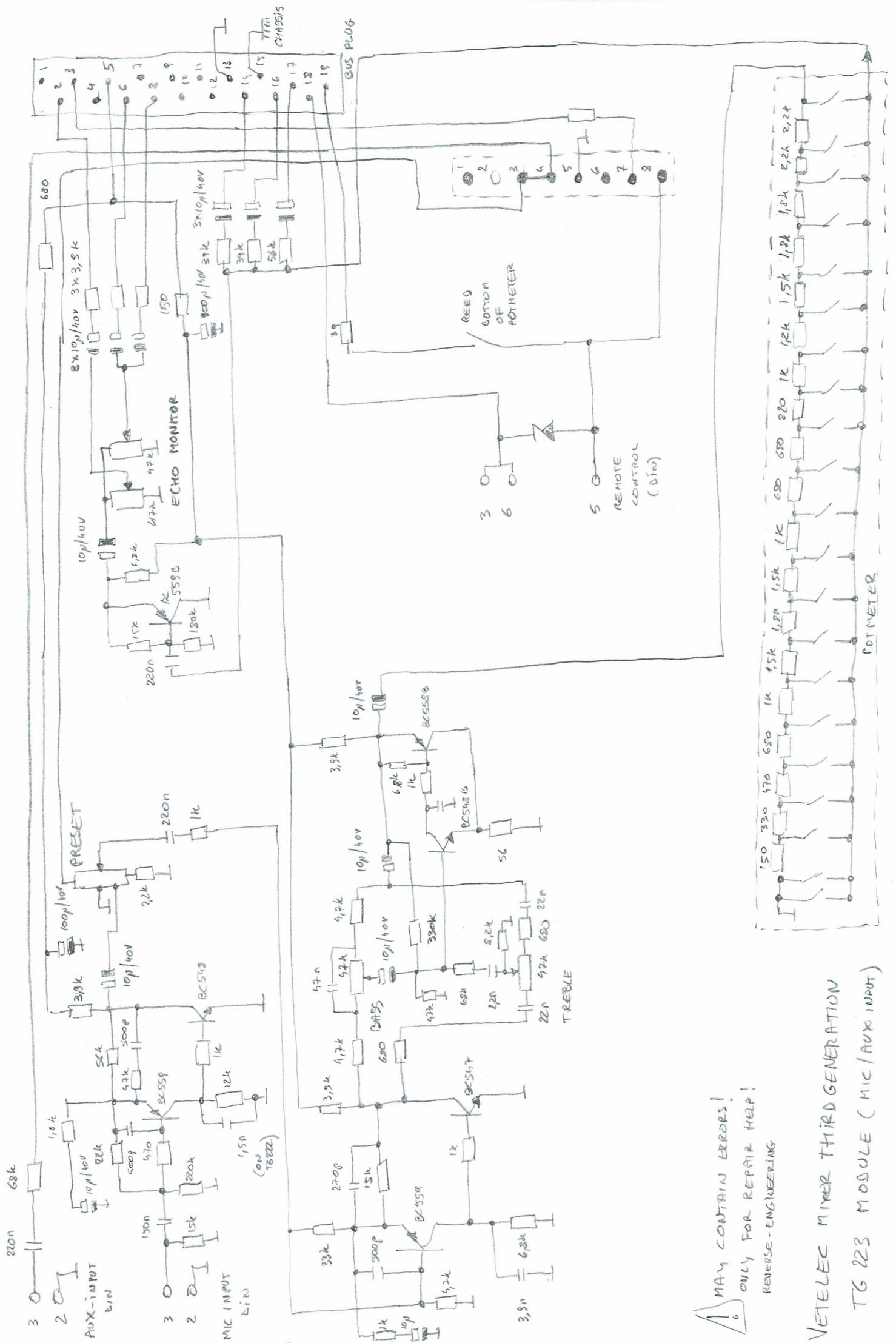


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VETELEC MIXER THIRD GENERATION
 TG 222 MODULE (MIC INPUT + VU)



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VETELEC MIXER THIRD GENERATION
 TG 223 MODULE (MIC/AUX INPUT)

CCD Echo Unit

The CCD Echo is a «special effects» unit that adds echo signals to both music and micro inputs, this in a purely electronic way, without intervention from a tape recorder, echo chamber or any other mechanical component.

In the first place the CCD Echo Unit grafts an echo upon micro signals, coming from various Micro Units through their individual «echo» controls, and feeds the compound signal to a final mixing device (Tone Control Units TG.312 and TG.313 or Micro Output Unit TG.523).

In the same way it picks up music signals from the music mixer that forms part of a TG.313 Tone Control Unit, to feed the composite music + echo signal to the final mixing device of that very TG.313 unit.

CONTROLS

Panorama

In a stereo sound system the echo signals are equally spread over both channels. «Panorama» control allows the signal to slide progressively from one channel to the other. Locating the echo in space is now possible, by simply adjusting the pan-potmeter.

Monitoring

Echo signals are to be monitored, just the same as are basic input signals, the more so as the CCD Echo features great diversity of adjustment possibilities. Monitoring the echo signals by headphone allows pre-setting all these controls: delay time, reverberation and complex delay.

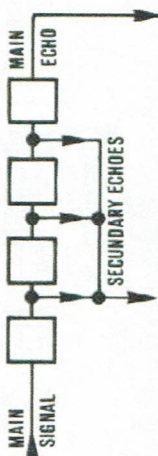
The «monitoring» knob determines whether the echo signal is fed to the Monitor, and controls its volume.

Volume

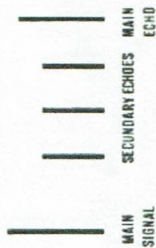
The «volume» knob controls the proportion between main signal and echo signal volume. This proportion largely contributes to determine the nature of the effect to be achieved. Indeed, even if in nature echo signals are always weaker than the main signal, with CCD the echo signal can be the stronger one, thus creating a very remarkable effect.

DELAY LINE CONTROLS

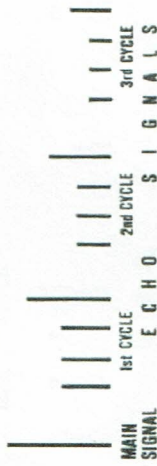
Imagine we feed a signal to a delay line, made up of four delay buckets, with a branching after each of the first three buckets. Like this:



It will result in a complex signal, composed of a main signal, three secondary echoes and one main echo. Let's visualize it as follows:



When feeding back this compound signal, we'll achieve another, even more complex signal, that would look like this:



There are a lot of adjustments that can be made to such a delay line.

First of all we can control the time needed to once cross the line: we call it «delay time». We can also determine how many times the complex echo signal will be fed back, which means: we determine the number of cycles, the reverberation. Finally we can adjust the volume proportion between the main echo and the secondary ones; that's what we call: complex delay.

Combining those three delay line controls offers a lot more «echoing» possibilities than nature does.

Complex delay

A simple echo spot turns into a multiple spot echo, a simple finger snap into horse trotting! But maybe you don't need horse-trotting all the time, so you reduce the secondary echoes: make it sound sober and dry!

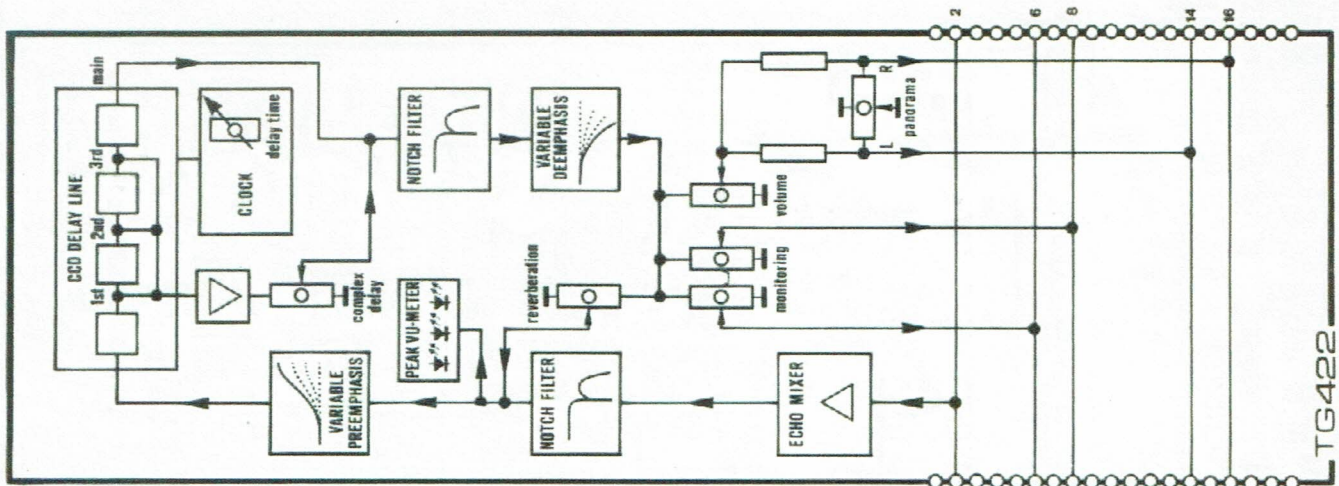
In fact, what the «complex delay» knob controls, is the volume of the secondary echo signals, comparatively to the main echo.

Reverberation

What kind of echo is it you want?

An open air «public address» echo is to obtain with just one echo cycle, mountain echo needs several main echoes, while a reverberant room effect can be simulated by full opening the knob up to an «endless» reverberation.

BLOCK DIAGRAM



Delay time

In nature the time needed for an echo to come back depends on the distance that separates the source from the reflecting obstacle.

We can simulate that very distance by adjusting the delay time of our CCD Echo Unit. Speaking about public address effect, as we did in connection with reverberation, a long delay time could suggest a very wide open space.

Anyway, there are some more applications: a short delay time will add a third dimension to music reproduction, or simulate voice doubling; a long delay time is very effective to put the stress on an important word.

Delay time is adjustable from 40 to 300 msec.

CONNECTIONS

All inputs, both micro and music signals, via internal echo mixing line n° 2.

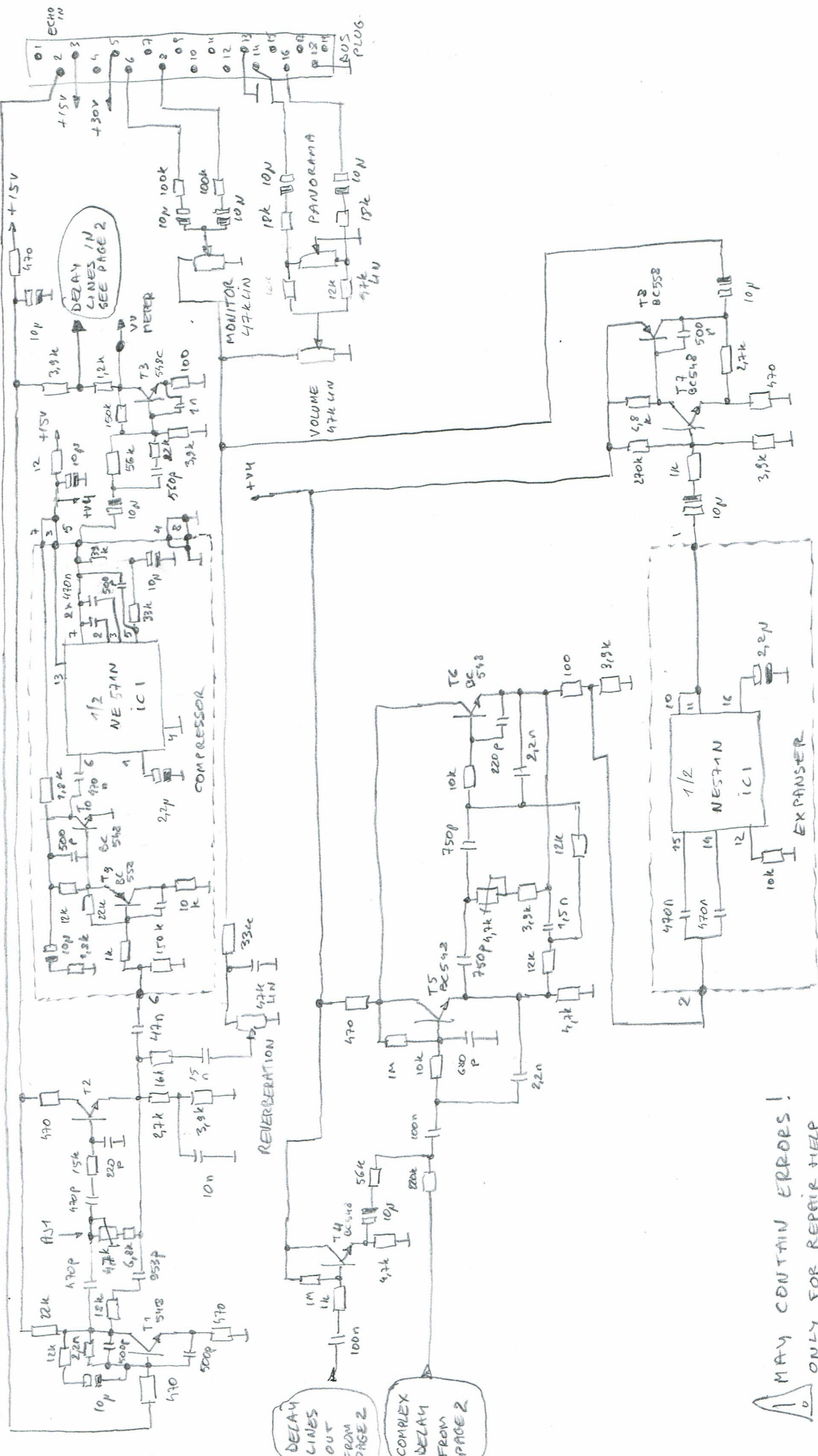
Mono output signal to the Monitor on 6 & 8 connector lines to the Monitor.

Mono output to the final mixing device via multi-pin connector lines 14 & 16. It's the «panorama» knob that determines whether the echo signal is fed to the left or the right channel.

SPECIFICATIONS

Frequency response	50 Hz to 10 kHz
Deviation	± 3 dB
Total harmonic distortion	better than 1 %
Signal to noise ratio	better than 70 dB
(DIN curve A)	
Power consumption	
+ 15 V	15 mA
+ 30 V	30 mA

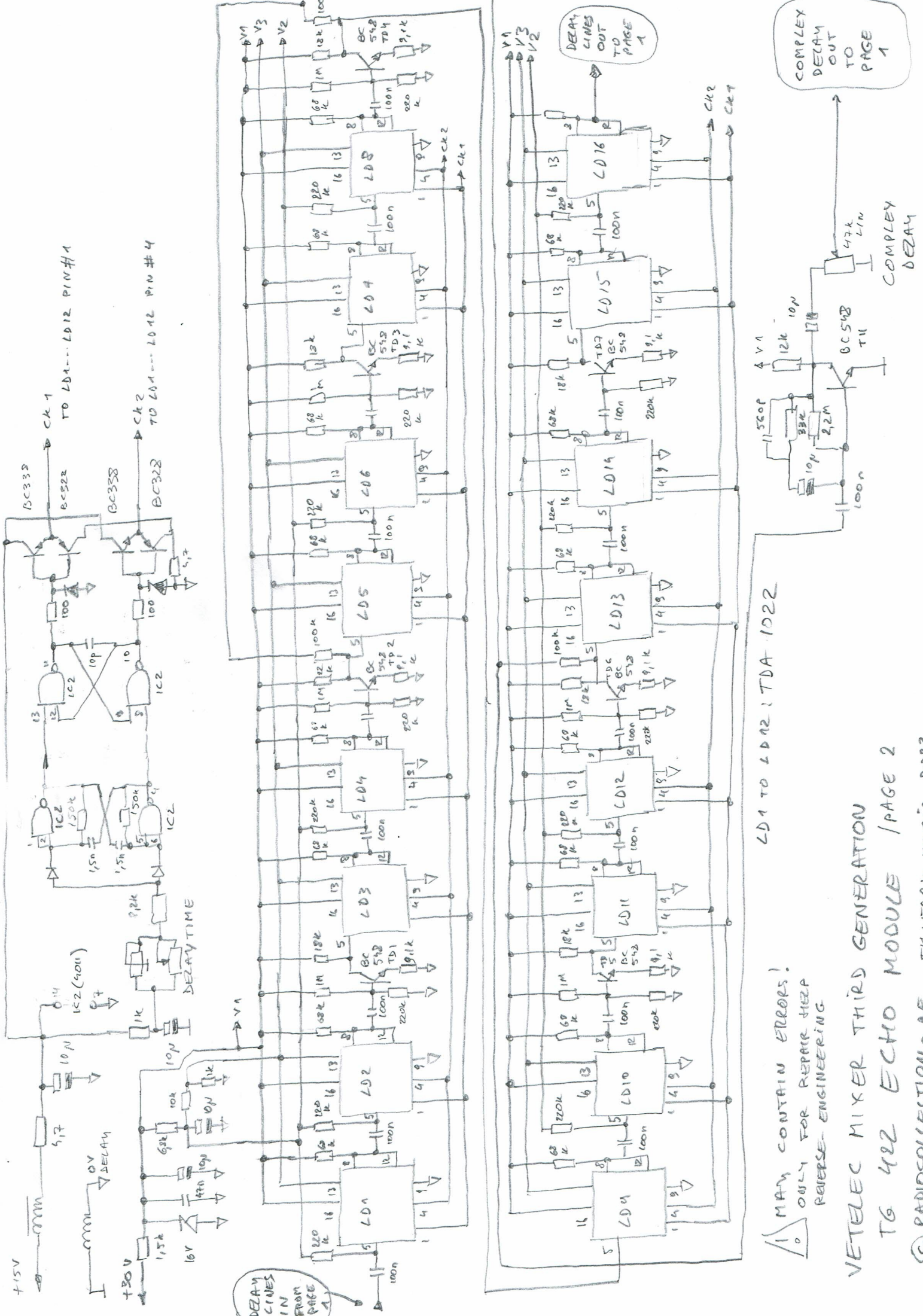




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VETELEC MIXER THIRD GENERATION
 T6 422 ECHO MODULE / PAGE 1

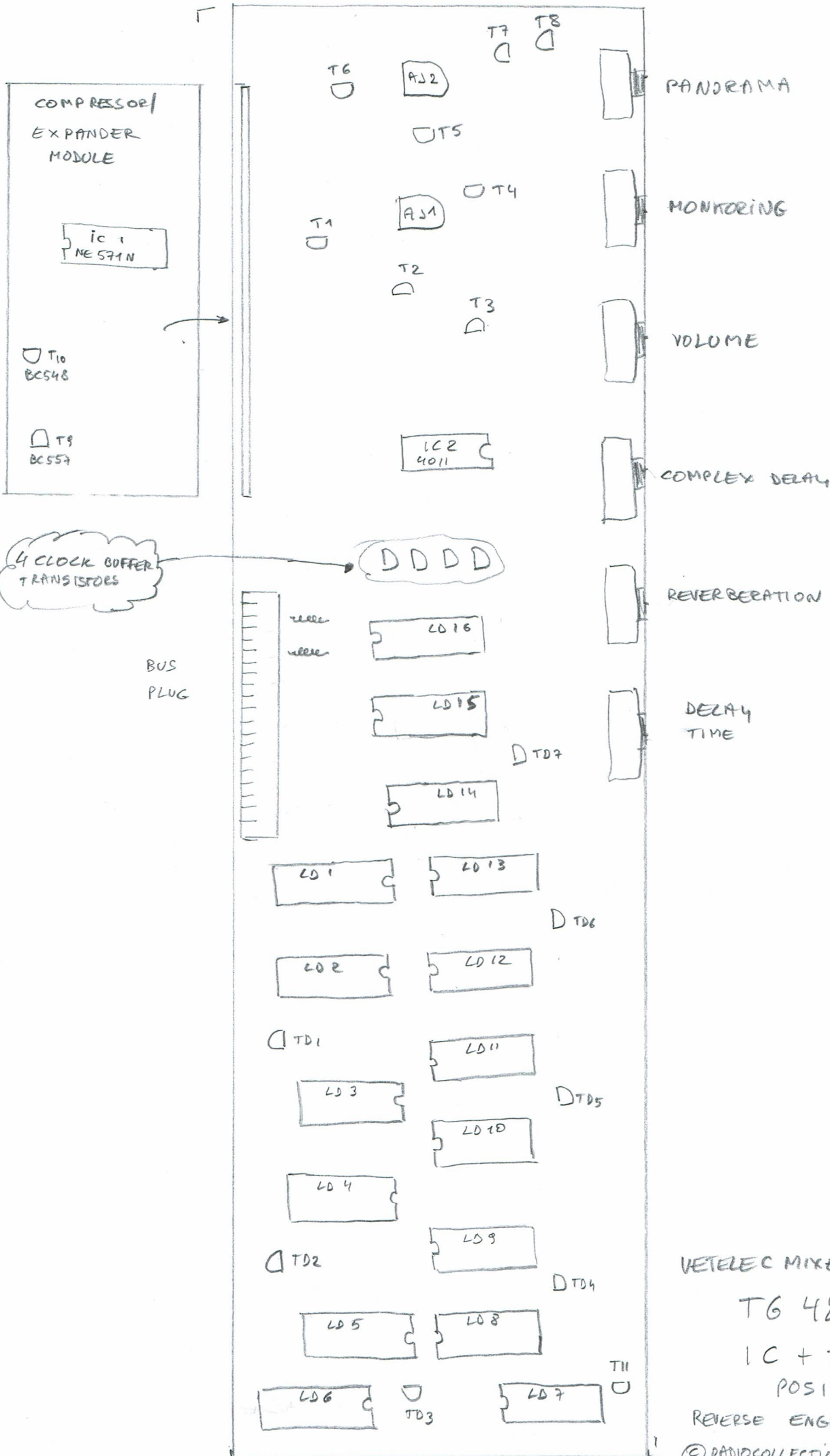
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LD1 TO LD12 : TDA 1022

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VETELEC MIXER THIRD GENERATION / PAGE 2
 TG 422 ECHO MODULE / PAGE 2
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VETELEC MIXER THIRD GEN.
 TG 422 / PAGE 3
 IC + TRANSISTOR
 POSITIONS
 REVERSE ENGINEERING

No schematic yet for TG513 !

Stereo Monitor Unit

Various units, inputs (Micro & Music), sources (FM Tuner e.g.) and even "special effects" units (s.a. Echo) send out mono or stereo signals through their individual "monitoring" controls. The Stereo Monitor Unit mixes these signals and feeds them to a headphone for monitoring. On the other hand, signals coming from the central mixing device (Tone Control TG-911 or Output units TG-513, 522 or 523) make a detour over the Monitor Unit on their way to the power amplifiers. Which allows the mixed monitor signals, instead of the central mixing device signals, to be fed directly to the power amplifiers.

CONTROLS

Reserve

On/ off push-button switch; pilot lamp lit when reserve is on duty.

Treble & Bass

Two separate potentiometers control both treble & bass tones of the mixed signals.

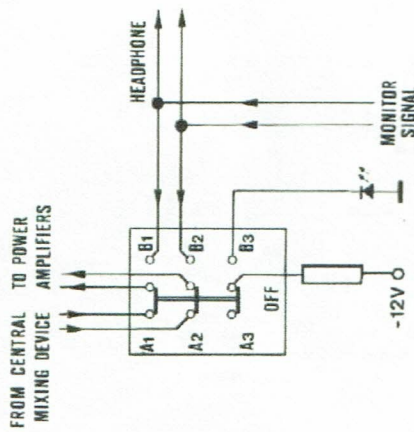
Volume

Progressive, twin stereo channel volume control of the input signals.

RESERVE

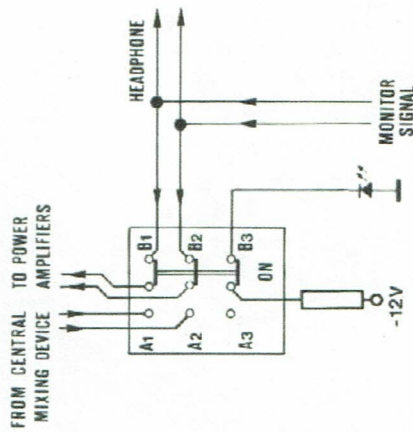
The Monitor Unit is to be considered a parallel circuit to the central mixing device. This circuit can easily be connected to the Power Amplifiers by a simple push-button switch.

RESERVE OFF



When reserve is off duty, the push-button switch closes A-contacts; the stereo signals coming from the central mixing device just pass by on their way to the power amplifiers. B-contacts are open and there is no connection at all with the mixed monitor signals.

RESERVE ON

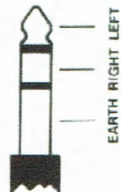


When reserve is on duty, the switch opens A-contacts, interrupting the signal flow coming from the central mixing device, and closes B-contacts so that the mixed monitor signal is directly fed to the power amplifiers. At the same time B3 closes the LED pilot lamp circuit.

CONNECTIONS

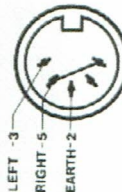
Signals coming from various units through their individual "monitoring" controls come in via internal multipin connector lines 6 & 8.

Headphone



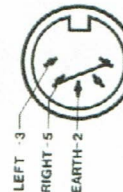
Standard 6 mm jack on the front panel.

Reserve IN



External DIN-plug for mixed stereo signal input from the central mixing device.

Reserve OUT



External DIN-plug for mixed stereo signal output to the power amplifiers.

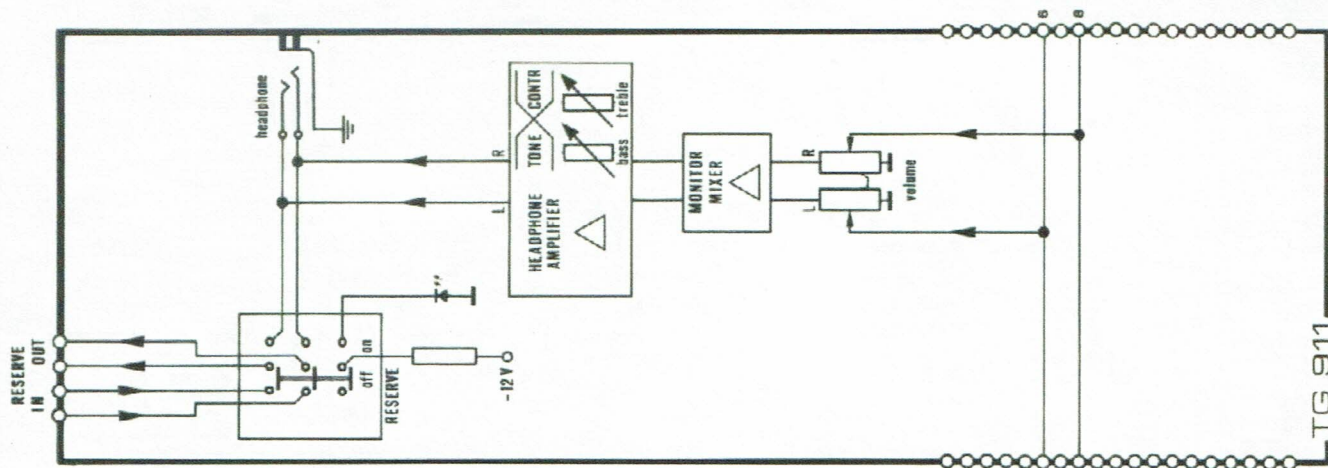
SPECIFICATIONS

Bass	± 16 dB at 50 Hz
Treble	± 15 dB at 10 kHz
Nominal output power	25 mW in 8 Ω
Maximum available power	150 mW in 8 Ω
Headphone impedance	4 Ω to 600 Ω
Frequency response	10 Hz to 20 kHz
Deviation	± 1 dB
Total harmonic distortion at 25 mW output	better than 0.25 %
Power consumption	
- 12 V D.C.	20 mA
+ 15 V D.C.	80 mA
+ 30 V D.C.	45 mA



VETELEC

BLOCK DIAGRAM



Power Supply Unit

CONNECTIONS

External connection to 220 V ~ mains by European standard plug.

Internal outputs to all connected units via multipin connector lines.

- 12 V D.C. for auxiliary functions via line 19

+ 15 V D.C. stabilized via line 3

+ 30 V D.C. stabilized via line 5

All units are connected to earth via multipin connector lines 1, 4, 7, 9, 11, 13, 15 and 18.

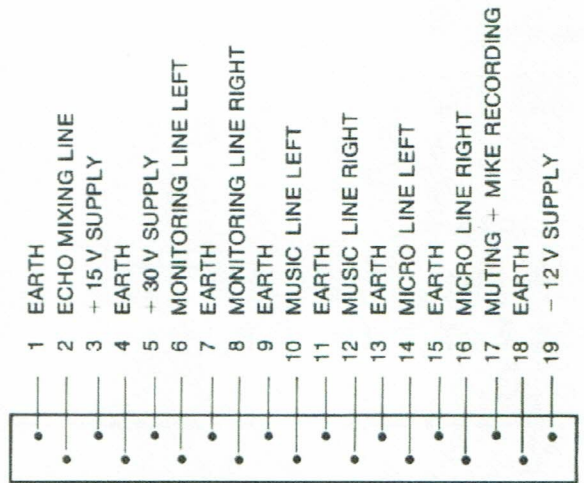
The Power Supply Unit is suitable to a mains supply of 220 V. It provides all connected units with stabilized + 15 V and + 30 V for very sensitive electronic connections, and with non-stabilized - 12 V for auxiliary functions, such as remote control, pilot lamps and scale illumination.

CONTROLS

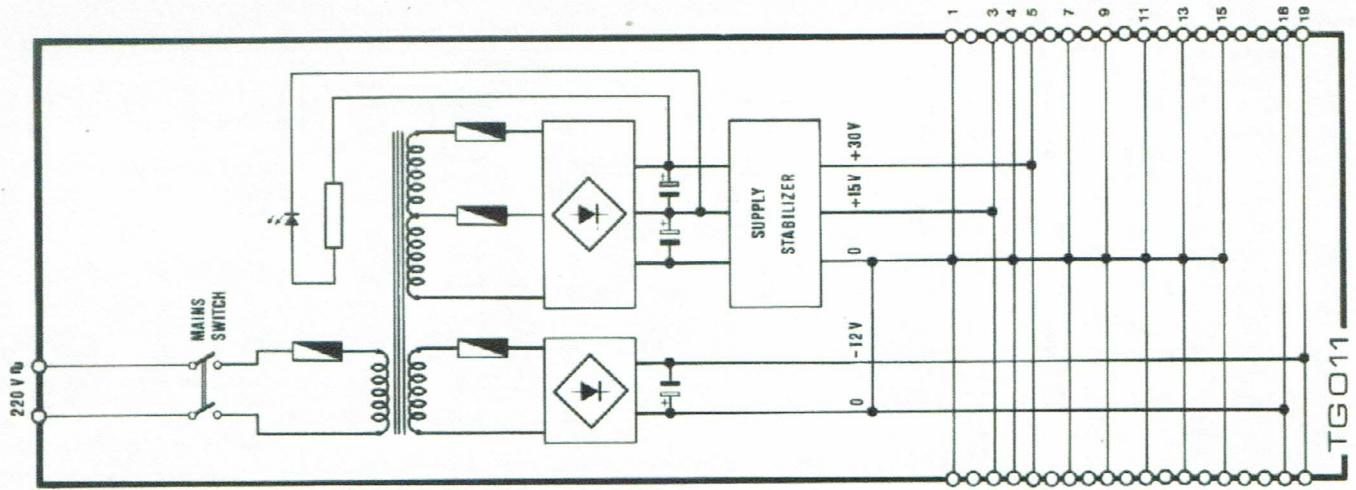
On/off push button mains switch; pilot lamp lit when on duty.

MULTIPIN CONNECTOR

Every Third Generation Unit is fitted with a gold contact multipin connector for mechanically and electronically impeccable connections. Each pin corresponds to a transit signal line and each line carries a well-defined signal, allowing the units to pick up the signals needed and leave the other signals alone.



BLOCK DIAGRAM



SPECIFICATIONS

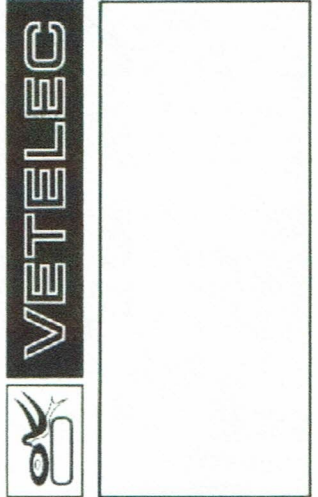
Mains 220 V ~ 50 Hz
 D.C. voltage - 12 V non stabilized
 + 15 V stabilized
 + 30 V stabilized

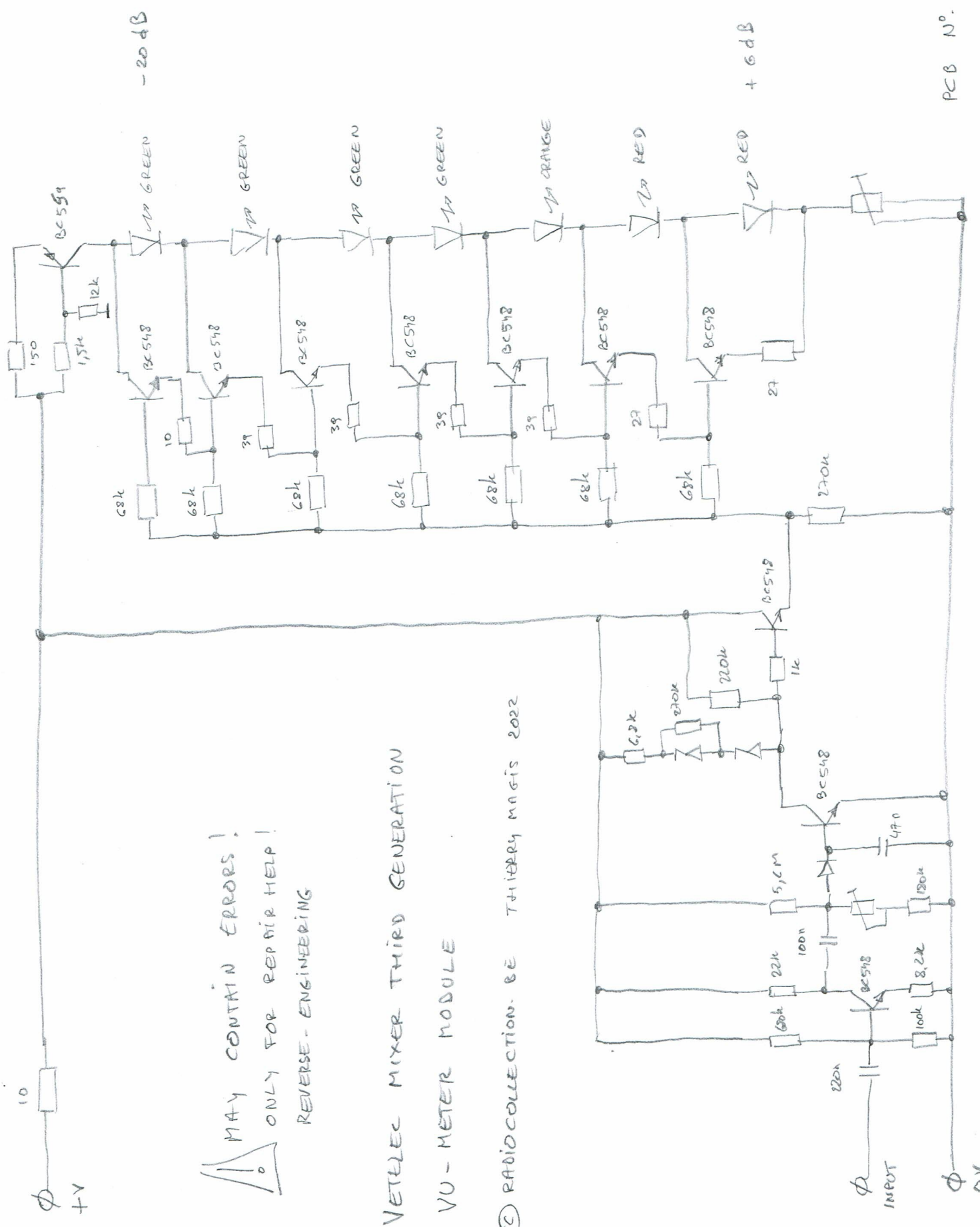
Maximum power consumption


Primary 40 VA
 - 12 V D.C. 1000 mA
 + 15 V D.C. 800 mA
 + 30 V D.C. 400 mA

Fuses

Primary 250 mA slow
 Secondary 3 x 1 A slow



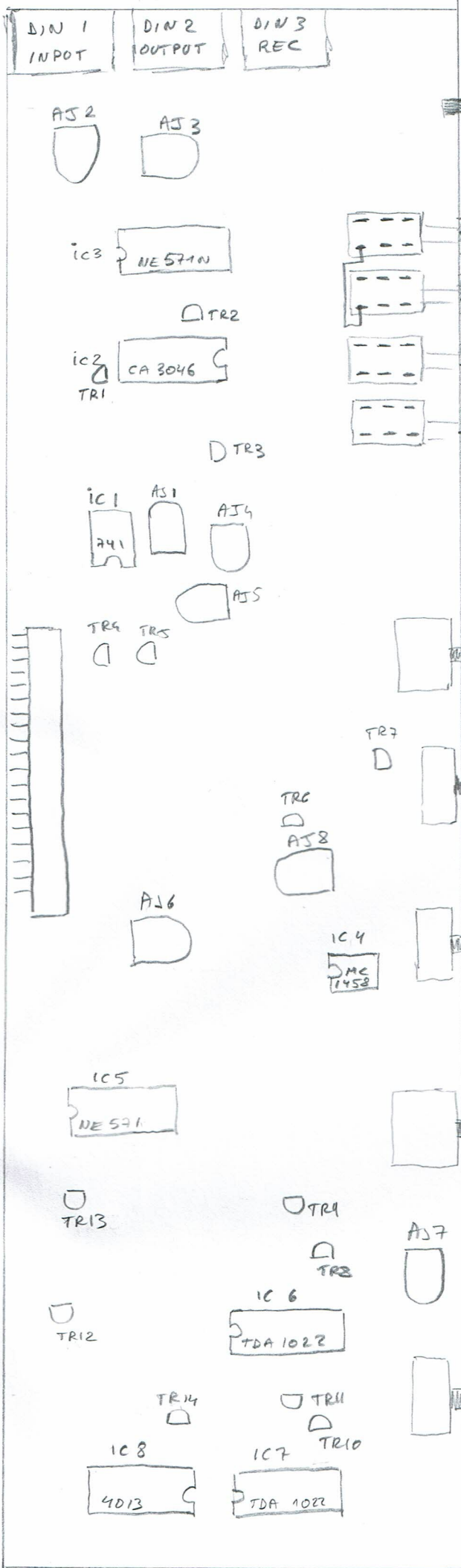



 MAY CONTAIN ERRORS!
 ONLY FOR REPAIR HELP!
 REVERSE-ENGINEERING

VETELEC MIXER THIRD GENERATION

VU-METER MODULE

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OVERLOAD

EFFECTS

NOISE GATE

PHASING

MANUAL / AUTO

MONITORING

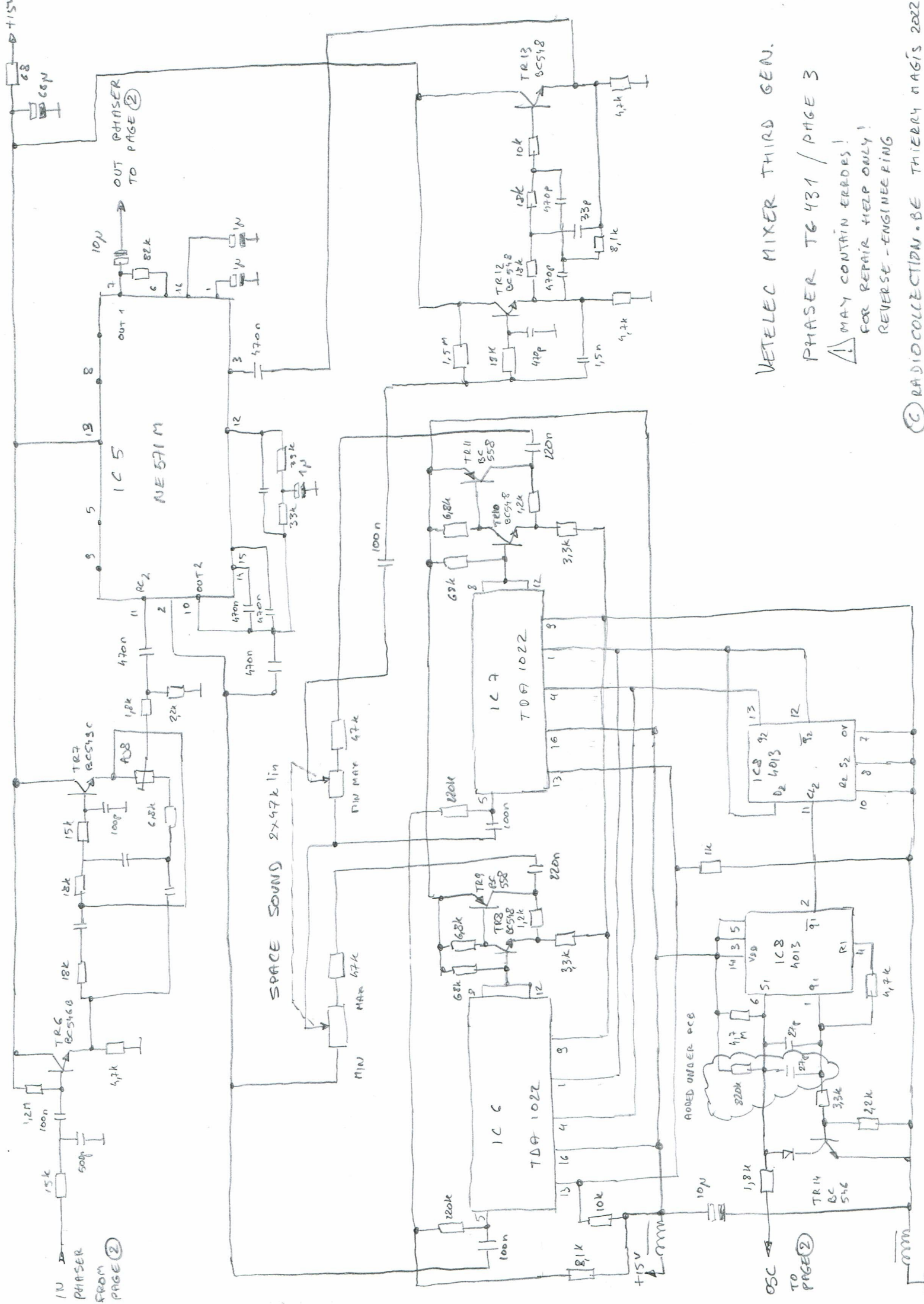
SWING

SPEED

SPACE SOUND

SLIDING

VETELEC MIXER THIRD GEN.
 PHASER TG 431 / PAGE 1
 COMPONENT POSITIONS
 REVERSE ENGINEERING



VETELEC MIXER THIRD GEN.

PHASER TG 431 / PAGE 3

⚠ MAY CONTAIN ERRORS!
FOR REPAIR HELP ONLY!
REVERSE - ENGINEERING