"STEREO LIMITER"

USER MANUAL

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

STEREO LIMITER manual

Setting the stereo limiter

Set the threshold knob so that the led lights only occasionally on peaks.
This is the moment when limiting takes place.next set the output to the desired level. When the limiter is switched to the fast (f) attack position it now prevents any signal from appearing at its output which is higher than a certain level.
The level indication on the frontpanel indicates the point at which the limiting takes place.If you turn the control more clockwise heavier limiting will take place and the output has to be adjusted again. In this situation it is also wise to adjust the release control according to the musical information.
Adjustmet of the attack switch is also dependant on the transient behaviour of the incoming signal.
Usually the release control is set to minimum for signals with a minimum low frequency content. When low frequency signals have to be limited,the release time must be extended in order to prevent distortion.

If you want to use the limiter for mono signals,you will have to leave the unused channel disconnected as the side chain circuits are coupled.

We hope that by using this stereo limiter you are able to solve your overload problems.

POWERING

The unit can be powered from110v as well as 220 volt by setting the mains switch on the back of the unit(on 9½" units only). Some units may be set already at the factory with a fuse outside instead of a voltage selector.

NOTE

READ SAFETY INSTRUCTIONS VERY CAREFULLY ON THE BACKPAGE!

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 servicable 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 READ THE FOLLOWING INFORMATION VERY CAREFULLY.

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 vica 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 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 dangereous.
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. A typical 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 extensively 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 guitarsynth 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.

Allthough removing the ground wire sometimes cures a system hum, it will create a very hazardeous situation for the performing musician.
Always earth all your equipment by the grounding pin in your mains plug.
Hum loops should be only cured by propr 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 inmediately

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

D&R ELECTRONICA B.V. WEESP

Conformity statement according to ISO/IEC Nr 22 and EN 45014

Name Manufacturer	**D&R Electronica Weesp b.v.**
Addres manufacturer	**Rijnkade 15B,** **1382 GS Weesp,** **The Netherlands**

declares that this product

Name product	**Stereo Limiter**
Modelnumber	**n.a.**
Produktoptions	**All**

passed the following product specifications:

Security	**EN 60950: 1988 +A1, A2**
EMC:	**CISPR-22: 1985 / EN 55022: 1988 class B (*)** **EN 50082-1: 1992** **IEC 801-2:1991 / prEN 55024-2:1992 - 3kV CD, 8kV AD** **IEC 801-3:1984 / prEN 55024-3:1991 - 3 V/m** **IEC 801-4:1988 / prEN 55024-4:1992 - 0.5kV signalcables,** **1 kV powercables.**

Extra information:

The product passed the specifications of the following regulations;

Low voltage 73 / 23 / EEG
EMC-regulations 89 / 336 / EEG.

(*) The product is tested in a normal users environment.

D&R

"STEREO LIMITER"

SERVICE MANUAL

Adjustprocedure Stereo-Limiter II

- Measure plus and minus 18 volts on TL 074
- Connect signal to input L 1 kHz 0 dB
- Switches attack - fast
  release - minim.
  output - 0 dB
  threshold - 0 dB
- Adjust potmeter until red LED lightens
- Increase inputsignal to + 10 dB, outputlevel could increase 0,5 dB
- Increase inputsignal to + 20 dB, outputsignal could increase 0,5 dB
- Set threshold-potmeter to - 10 dB
  Adjust inputlevel until red LED lightens
  Read inputlevel on meter; this should be between -13 and -7
  (by 100 k this is about - 4 dB)
- Set threshold to + 18 dB
  Turn potmeter until LED lightens
  Read inputlevel on meter; this should be between + 16 dB and + 20 dB

-Release-adjustment:

threshold - 0 dB
output - 0 dB
inputlevel - + 20 dB - 1 kHz.

- Test: A) release potmeter to minimum
  set switch on tonegenerator back with 10 dB on the scope
  (triggering on TV) ; the signal should be normal again
  after 0,5 seconds.

B) Release-potmeter to maximum, the switch tonegenerator from + 20 dB to + 10 dB.

On the scope, the signal should be normal again after 3 sec..

- Attack-adjustment:
  - to fast: Look at the scope and switch with the tone-generator the signal from + 10 dB to + 20 dB. The signal may not be effected a lot while switching
  - to medium: do the same and the signal may be a little bit effected.
  - to slow: the same, and the signal may be effected more.
- Conditions while testing:
  - threshold 0 dB
  - output 0 dB
  - inputlevel 10 dB - 1 kHz
  - release to minimum
- Testing:
  - switch from fast to medium and then to slow; while switching the signal may not change more then 0,8 dB.
- Adjust output:

  conditions: threshold 0 dB
  output-potm. 0 dB
  inputlevel 0 dB - 1 kHz

  Put outputlevel to -18 dB: read outputlevel

  Then set outputlevel to + 14 dB: read outputlevel again.

  The difference has to be about 30 dB.

- Stereo-link adjustment

  Conditions: threshold 0 dB

  output 0 dB

  release minimum

  attack fast

  adjustment-potmeter turned to the right.

- Testing:

  Inputlevel left channel + 5 dB

  Connect input left to input right (short circuit)

  Set adjustment-potmeter on the print to the left, just so far that the meter reacts just a little bit.

  Disconnect right input, meter goes back about 0,2 dB.

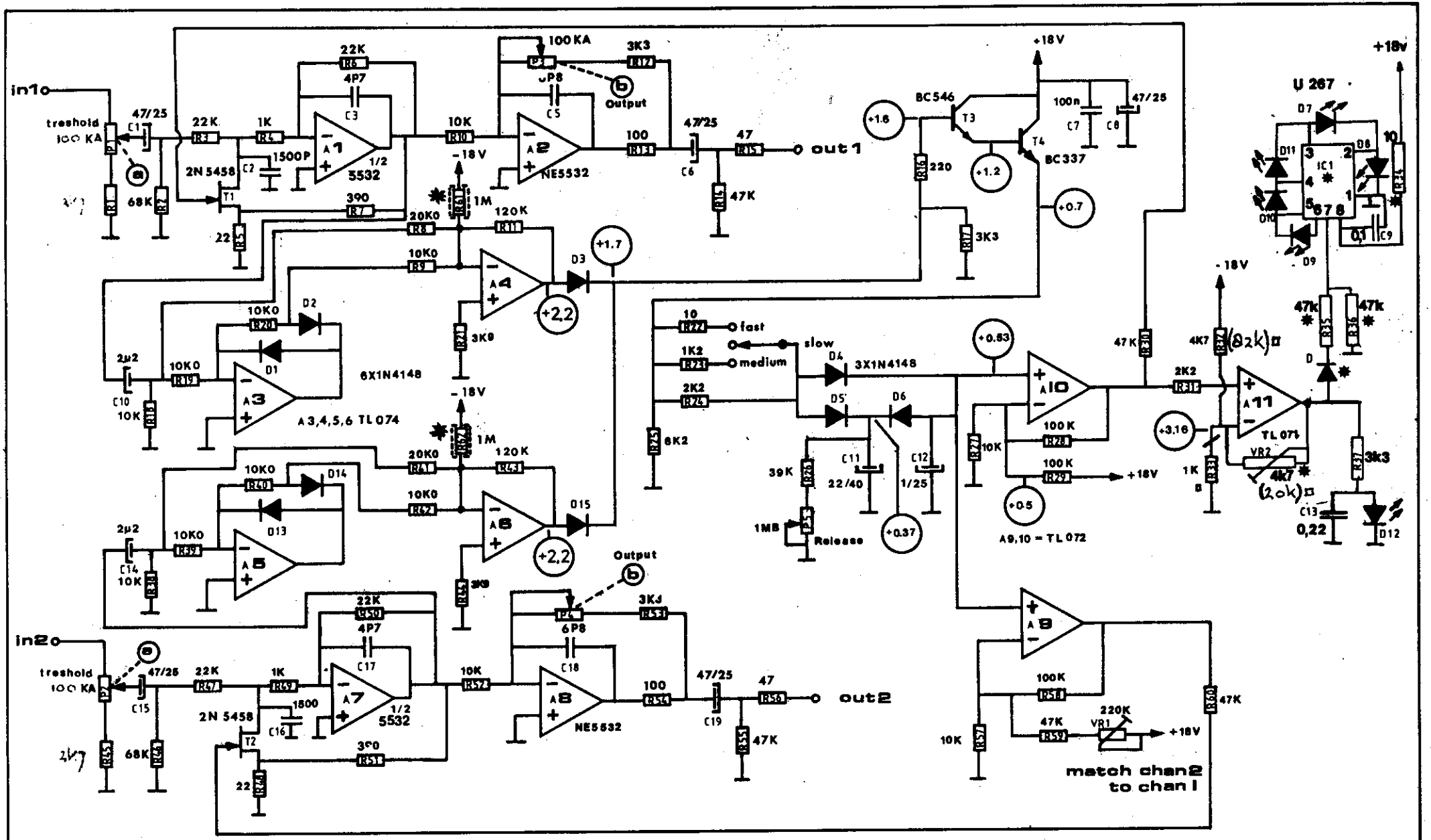
  Now connect left to right again, then + 20 dB inputlevel, disconnect right input, meter goes back about 0.5 dB.

  Now connect left to right, then o dB inputlevel, disconnect left and right, meter goes up about 0,4 dB. Now the channels are matched.

  Put in, in the right channel only signal 0 dB and measure at right channel-output.Search for the limiting level (LED lightens).

  Put in 10 dB more - outputlevel max. about 0,5 dB up.

  Put in 20 dB more - outputlevel max. about 0,5 dB up.



						D&R	DATE: 14-2 '84
✱ : Only for test purposes		O : dc-value with ✱ inplace and no input signals applied.			¤ ✱ = 19-inch	STEREO LIMITER - 6	
Treshold : 0 db Output : 0 db	ATTACK:	SLOW: 4 ms / + 20 db - 14 ms / + 1 db MEDIUM: 2 ms / + 20 db - 7 ms / + 1 db FAST : 200 µs / + 20 db - 650 us / + 1 db	RELEASE: (max.)	+10 db LIMITING 2 sec +20 db LIMITING 5 sec	RELEASE: (min)	+10 db LIMITING +20 db LIMITING 220 msec	DESIGN : J.de Vries DRAWING: P.Wilcke

ELECTRONICA B.V.

produktie en ontwikkeling van
geluidsmengpanelen en accessoires

Date: 27-11-1987 R & D department

PARTLIST : STEREO LIMITER 9.5' (19')

index nr.9

PartNr	Value	Notes	ArtNr
R1	2 k 7	5%	0734
R2	68 k	5%	0751
R3	22 k	5%	0745
R4	1 k	5%	0729
R5	22 E	5%	0709
R6	22 k	5%	0745
R7	390 E	5%	0724
R8	20 k 0	1%	0856
R9	10 k 0	1%	0848
R10	10 k	5%	0741
R11	120 k	5%	0754
R12	3 k 3	5%	0735
R13	100 E	5%	0714
R14	47 k	5%	0749
R15	47 E	5%	0713
R16	220 E	5%	0721
R17	3 k 3	5%	0735
R18	10 k	5%	0741
R19	10 k 0	1%	0848
R20	10 k 0	1%	0848
R21	3 k 9	5%	0736
R22	10 E	5%	0705
R23	1 k 2	5%	0730
R24	2 k 2	5%	0733
R25	8 k 2	5%	0749
R26	39 k	5%	0748
R27	10 k	5%	0741
R28	100 k	5%	0753
R29	100 k	5%	0753
R30	47 k	5%	0749
R31	2 k 2	5%	0733
R32	4 k 7	5% 9.5' only	0737
R32	82 k	5% 19' only	0715
R33	1 k	5% 19' only	0729
R34	10 E	5% 19' only	0705
R35	47 k	5% 19' only	0749
R36	47 k	5% 19' only	0749
R37	3 k 3	5% 9.5' only	0735
R38	10 k	5%	0741
R39	10 k 0	1%	0848
R40	10 k 0	1%	0848
R41	20 k 0	1%	0856
R42	10 k 0	1%	0848
R43	120 k	5%	0754
R44	3 k 9	5%	0736
R45	2 k 7	5%	0734
R46	68 k	5%	0751

R47	22 k	5%	0745
R48	22 E	5%	0709
R49	1 k	5%	0729
R50	22 k	5%	0745
R51	390 E	5%	0724
R52	10 k	5%	0741
R53	3 k 3	5%	0735
R54	100 E	5%	0717
R55	47 k	5%	0749
R56	47 E	5%	0713
R57	10 k	5%	0741
R58	100 k	5%	0753
R59	90 k 9	1%	0799
R60	47 k	5%	0749
R61	1 M	5% only for test	0765
R62	1 M	5% only for test	0765
C1	47/25	rad	0287
C2	1500 p	ker	0238
C3	4 p 7	ker	0209
C4	----		
C5	6 p 8	ker	0211
C6	47/25	rad	0287
C7	0.1/63	ker	0241
C8	47/25	rad	0287
C9	0.1/63	ker 19' only	0241
C10	2.2/63	rad	0280
C11	22/40	rad	0285
C12	1/63	rad	0279
C13	0.22 u	poly R5 9.5'only	0264
C14	2.2/63	rad	0280
C15	47/25	rad	0287
C16	1500 p	ker	0238
C17	4 p 7	ker	0209
C18	6 p 8	ker	0211
C19	47/25	rad	0287
C300	470/40	ax	0295
C301	470/40	ax	0295
C302	47/25	rad	0287
C303	47/25	rad	0287
C304	0.1/63	ker	0241
C305	0.1/63	ker	0241
D1	1N4148	sgn	0342
D2	1N4148	sgn	0342
D3	1N4148	sgn	0342
D4	1N4148	sgn	0342
D5	1N4148	sgn	0342
D6	1N4148	sgn	0342
D7	LED 3mm rd	19' only	0387
D9	LED 3mm rd	19' only	0387
D10	LED 3mm rd	19' only	0387
D11	LED 3mm rd	19' only	0387
D12	LED 3mm rd	9.5'only	0387
D13	1N4148	sgn	0342
D14	1N4148	sgn	0342
D15	1N4148	sgn	0342
D16	1N4148	sgn 19' only	0342
D300	1N4003	rct	0343
D301	1N4003	rct	0343
T1	2N5458	FET gain	0338
	(opm: de FET's dienen gepaart te worden)		
T2	2N5458	FET gain	0338
T3	BC 546	NPN	0328
T4	BC 337	NPN	0328
A1,7	NE5532	lownoise opamp	0307
A2,8	NE5532	lownoise opamp	0307
A3,4,5,6	TL 074	hi fet opamp	0305

A1	TL071	bifet opamp	0322
IC300	7810	pos.reg.	0322
IC301	7910	neg.reg.	0323
IC1	U 267	log LED 5 19'only	0312
P1	100 k A st	pot12.5 co	0113
P2	100 k A st	pot12.5	0113
P3	1 M B	pot12.5	0093
VR1	22 k	10 turn long	0161
VR2	22 k	10 turn long 19' only	0161
S1	2 x 2 switch BBM	FOX	0400
S2	7103	toggle mri	0411
J1	break jack	CLIFF	0432
J2	break jack	CLIFF	0432
J3	break jack	CLIFF	0432
J4	break jack	CLIFF	0432
TR300	trafo 2x18V	print	0502
B300	B80C1000	bridge-rect.	0345
FS300	160mA slow	fuse	0699
		fuse-holder	0675
S300	115/230V	print switch	0083

PRODUCT SAFETY

The product you just have received or unpacked is manufactured with safety in mind and it is double checked in the test department for reliability in its "high voltage section".

CAUTION

* never open your equipment yourself, there are no users serviceable parts inside, therefore we strongly advice not to open the unit yourself.
* opening the unit is only allowed to trained and qualified service engineers, who are fully aware of the fact that it can be dangereous to service a mains powered unit.
* always do EARTH the unit
* only make use of the product in a way as is described in the manufacturers brochures and manuals, do never use it for other purposes then intended by the manufacturer.
* never use this equipment in an envirement with high a high humidity and never expose it to water.
* do not use this equipment in rain/snow or equivalent type of weather.
* check your mains cord regularly and see if it is in a safe condition with properly connected mains plugs on one side and securely tightened in the equipment on the other side.
* return your product yearly to your dealer to give it a safety check up.
* the hazard of an electrical shock can be avoided by carefully following the above mentioned rules.

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 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 vica 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 dangereous. Well the first feeling of current is a tingle at 0.001 amp of current. The current between 0.1 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. A typical resistance between one hand to the other in a "dry" condition could be well over 100.000 ohm. If you are playing on stage your body is perspiring pofusely 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 systems hum, it will create a very hazardeous 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 careful 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 inmediately.

ALWAYS KEEP THE ABOVE MENTIONED ONFORMATION IN MIND WHEN USING ELECTRICALLY POWERED EQUIPMENT.