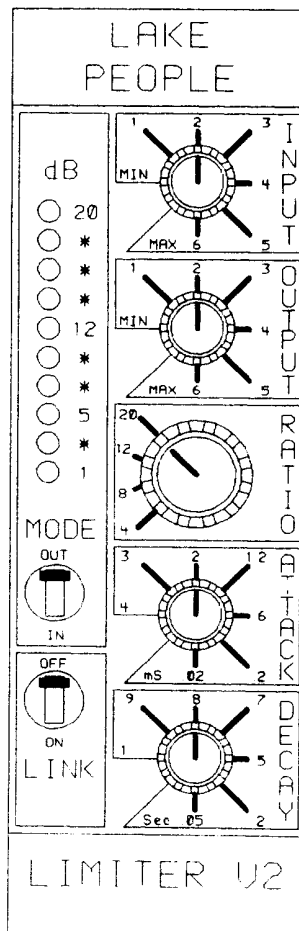


**Limiter V2
owner's manual**



LAKE PEOPLE

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L A K E P E O P L E

ROSGARTENSTRASSE 13 - D-7750 KONSTANZ - A TELEFON 0 7 5 3 1 / 2 4 4 2 8 - FAX 0 7 5 3 1 / 2 5 9 9 4

THE RACK SR 3

The rack is made of black, varnished sheet steel and fits into conventional 19"-racks, requiring one height unit. Also, it is prepared for free-standing operation. For this purpose, it is equipped with four rubber feet on the underside. The over-dimensioned power supply unit for the modules is integrated into the rack. Mains connection is established via a fixed EURO plug and cable. The mains switch can be found on the right side of the front panel. A LED indicates that the unit is ready for operation. The mains fuse is mounted on the rear wall of the rack, accessible from outside, and may only be replaced by a fuse of the same type. Three module plug-in positions in the rack SR 3 are available. All required connections are made via a mother PC Board inside the rack. The rear wall of the rack accomodates the connection jacks which are assigned to the respective modules.

Important: owing to the rack SR 3, the usually unbalanced outputs of the LAKE PEOPLE modules are electronically balanced. Therefore, it is necessary to use balanced connectors. The negative phase may not be short-circuited against ground.

INSERTING THE MODULES

Disconnect the unit from the mains! Check all pins of the 31-pin male connector(s) for proper adjustment and make sure that no pin is bent. Insert the module into the desired plug-in position of the rack and push it in without jamming it, until the front panel of the module is flush with the front side of the rack. Tighten the two screws on the left and right of the front panel. Now the module is ready for operation. All connections have been established via the mother board inside the rack.

For dismantling the modules, the same procedure, however, in reversed order, is required. Stereo modules may have additional interconnections. **THEREFORE, MOUNT AND DISMOUNT THESE MODULES AS ONE COMBINATION ONLY.**

SPECIFICATIONS SR 3

- Dimensions (WxHxD): 435/483 x 44 x 286 mm
- 17.1/19 x 1.7 x11.2 in
- Color: black
- Mains: 100 - 120 / 200 - 240 volts / 18 watts
- Weight: 2.7 kg
- Modules: 3 (max.)
- Connections: 9, phone jack or XLR

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THE RACK SR 9

The rack is made of stable and sturdy cast aluminium and fits into conventional 19"-racks, requiring three height units. Also, it is prepared for free-standing operation. For this purpose, the side frames accommodate hinged feet. The front feet may be locked at two different heights and thus also allow inclined set-up of the unit. The over-dimensioned power supply unit for the modules is mounted on the right side of the frame.

Mains connections is established on the rear wall of the rack via the enclosed mains cable with apparatus plug. The corresponding socket integrates the mains fuse which may only be replaced by a fuse of the same type. Two light-emitting diodes (LED) on the front of the power supply indicate that the two operation voltages are available. The rack offers a whole of nine module slots. All necessary connections are made via the mother PC Board inside the rack. The rear side of the mother board accommodates phone jacks which are assigned to the respective plug-in slots.

Important: the rack SR 9 meets VDE specifications. Thus, humming problems, due to earth loops may occur. In this case, a common ground point, connected to all shielded racks, will be a suitable countermeasure.

INSERTING THE MODULES

Disconnect the unit from the mains! Check all pins of the 31-pin male connector(s) for proper adjustment and make sure that no pin is bent. Exactly insert the PC Board of the module to be plugged in into the respective grooves of the upper and lower PC Board guides. Else, the pins might be bent, broken off or the PC Board might be damaged. Now insert the module, until the front panel is flush with the rack. Mount the neck screws on top and bottom and tighten them. Now, the module is ready for operation. All necessary connections have been established via the mother board inside the rack. For dismantling the modules the same procedure, however, in reversed order, is required. Stereo modules may only be mounted and dismantled in combined form.

SPECIFICATIONS SR 9

- Dimensions (WxHxD): 449/483 x 132 x 266 mm,
- 17.6/19 x 5.1 x 10.4 in
- Color: black, silver
- Mains: 100 - 120 / 200 - 240 volts / 50 watts
- Weight: 3.7 kg
- Modules: 9 (max.)
- Connections: 27 phone jacks

DESCRIPTION

Compressors and limiters are required if the dynamics of the program material is too broad for further efficient processing, or if the peak-to-peak amplitudes are too high for the units next in the equipment chain. The different names result from different kinds of dynamics restriction. The proportion of change between input and output signals is called compression RATIO. For instance, if an increase of the input signal by 8 dB is supposed to cause an increase of the output signal by 2 dB, this corresponds to a compression ratio of 4:1.

Since there is no general standard existing, amplifiers with compression ratios of up to 10:1 are referred to as compressors, amplifiers with higher compression ratios, however, as limiters. The LAKE PEOPLE LIMITER V 2 offers both compressor and limiter functions, since its compression ratio can be adjusted between 4:1 and 20:1.

Signal processing in this unit is accomplished by the use of select field-effect transistors of utmost quality and balance, employed as voltage-depending resistors. Due to the high technical quality of the LIMITER V 2, actually no additional distortions and noise are produced.

A stereo version of the LIMITER V 2 is also available. For the SR-9-version, the plug-in modules are mechanically linked. Each module still represents a fully functioning, independent mono device, however, the FETs of both modules are located on one chip; thus, best linearity and tracking characteristics of the two channels are achieved.

Only if the LINK switch is set to ON, will the two modules form a stereo unit. INPUT and OUTPUT controls are still independent, but ATTACK and DECAY controls of one channel affect the other one: the shorter attack and decay times govern the program material. The channel producing the highest amplitude maintains equal signal attenuation for both channels. In this manner, unwanted balance shifting within the stereo image is avoided.

The LIMITER V 2 may also be hooked up with the DEESSER V 4 to form a stereo unit.

APPLICATION

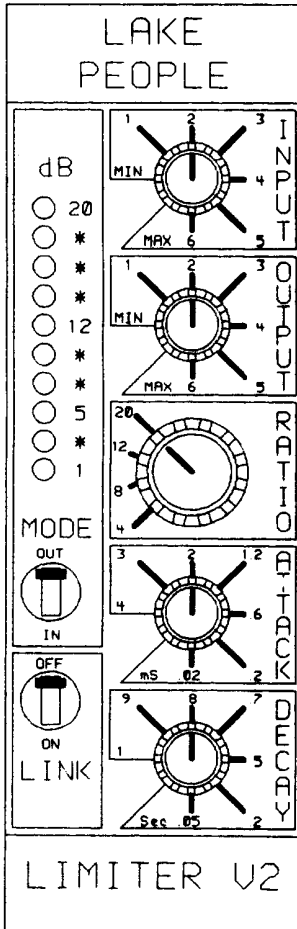
Owing to all relevant parameters of the LIMITER V 2 being variable, it offers sufficient flexibility for use in all phases of sound engineering. It will be useful for recording individual tracks but also for the reproduction of the entire program material.

The LIMITER V 2 finds application in the field of studio production, may be used as automatic gain control or as protection against excessive amplitudes, for instance, for PA equipment.

There is no "correct" setting of the controls. The user will have to experiment to find out the proper settings for the various applications. Experience will show that the dynamic parameters ATTACK and DECAY have more influence on the character of the program material than the static parameters COMPRESSION RATIO and THRESHOLD (INPUT).

Limiters V2 owner's manual

THE CONTROLS



- INPUT:** infinitely variable for adaption of the limiter's input sensitivity. At the same time, this control determines the threshold level.
- OUTPUT:** infinitely variable for adaption of the output voltage to the subsequent units.
- RATIO:** four lock-in settings for individual adaption of the compression ratio.
- ATTACK:** infinitely variable attack time from 0.02 to 4 ms. Right-stop position corresponds to shortest attack time.
- DECAY:** infinitely variable decay time from 0.05 to 1 s. Right-stop position corresponds to shortest decay time.
- LED DISPLAY:** indicates attenuation of the input signal in ten steps ranging from 1 to 20 dB.
- MODE:** for looping the limiter into the signal path.
- LINK:** for electrical connection of two limiters to form one stereo unit.

SPECIFICATIONS:

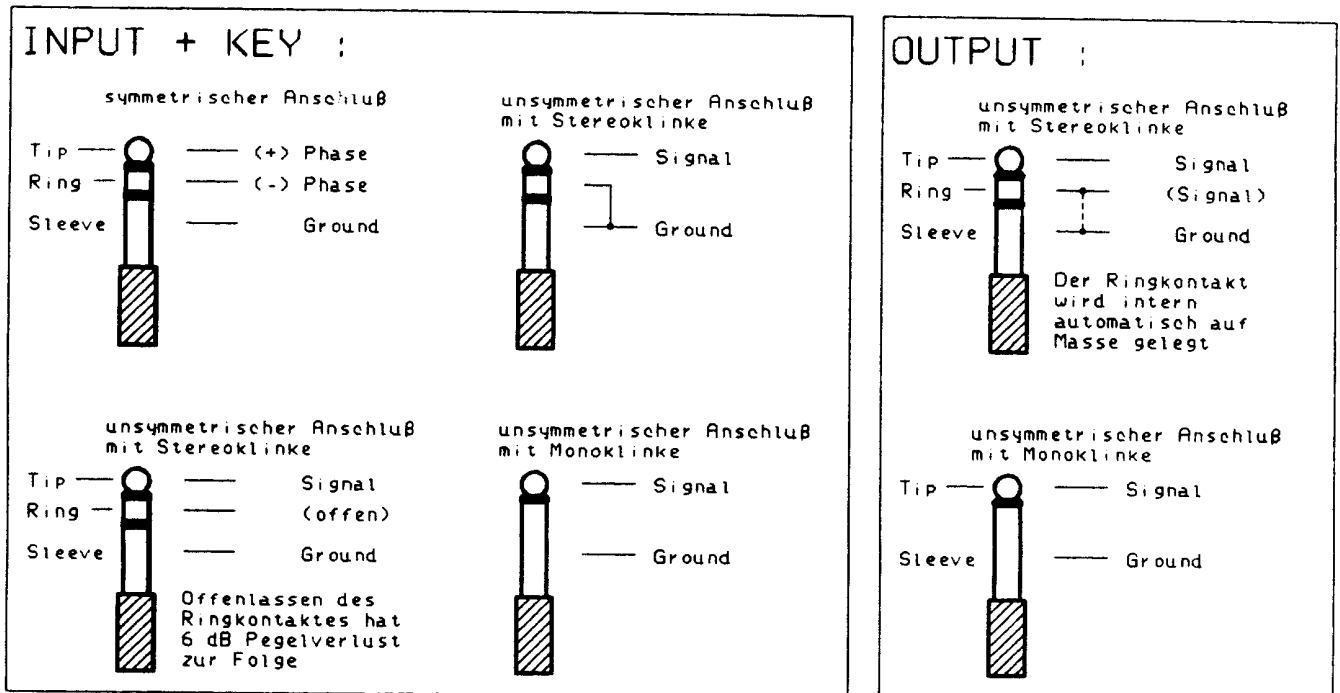
- **INPUT:** electronically balanced.
- **IMPEDANCE:** 20 kohms bal., 10 kohms unbalanced.
- **MAX. INPUT LEVEL:** < +21 dBm
- **MAX. GAIN:** 40 dB
- **FREQUENCY RESPONSE:** 20 Hz - 30 kHz ± 0.5 dB
- **OUTPUT:** unbalanced
- **MAX. OUTPUT LEVEL:** > +21 dBm / $R_L \geq 600$ ohms
- **DISTORTIONS:** < 0,5%, depending on ATTACK and DECAY.
- **S/N (Gain = 1)** > 80 dB / IHF-A > 87 dB
- **ATTACK TIME:** 20 - 400 ms
- **DECAY TIME:** 50 - 1,000 ms
- **CONNECTIONS:** 31-pin male connector
- **SUPPLY VOLTAGE:** ± 18 volts, max. 100 mA
- **DIMENSIONS (WxHxD):** 40,3/44 x 129 x 160/190 mm,
1.5/1.7 x 5.0 x 6.2/7.4 in

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31-PIN MALE CONNECTOR

PIN NO.		PIN NO.	
INPUT (+)	: 5	INPUT (-)	: 8
INPUT (GROUND)	: 6/7	OUTPUT	: 10
OUTPUT (GROUND)	: 9/10	VOLTAGE + 18V	: 13/19/31
VOLTAGE - 18V	: 14/21	VOLTAGE (GROUND)	: 12/18/20/29/30

CONNECTION



Connections from and to other units are established on the rear of the module enclosure. The jacks assigned to each LIMITER V 2 are designated IN and OUT and KEY. Connection should be in accordance with the previous diagram for versions with phone jacks. The input is electronically balanced, however, also unbalanced connectors may be used. The output is unbalanced.

In combination with rack SR 3, the output will be electronically balanced. Please observe that the negative phase of the signal is not connected to ground.

COMPRESSION RATIO

A more moderate form of compression is accomplished with ratios of up to 8:1. The restriction of the program material's dynamic range is hardly audible. More drastic results are achieved using compression ratios of 12:1 and 20:1. The output signal is heavily limited and can not exceed a certain level desired. Dynamics is restricted distinctly, high signal peaks are minimized.

INPUT (THRESHOLD)

In contrast to other units of this kind, the threshold level of the LIMITER V 2 is determined by the INPUT control. The output amplitude of subsequent equipment is adjusted with the OUTPUT control.

If high peaks are allowed to exceed the threshold level occasionally, the program material will not be changed substantially. However, clipping problems caused by such peaks will be eliminated. The result will be an increase in volume because it is possible to raise the signal level and the peaks will cause no distortions.

If the input level is adjusted such that the average signal level constantly exceeds the threshold level, virtually the entire program material will be compressed. A LED chain indicates the degree of compression of the music signal.

ATTACK

High frequencies with high peak amplitudes can be limited or compressed with short attack times exclusively. In this case only, overshooting and resulting clipping will be minimized. However, instruments with a percussive character may be changed in their musical quality due to short attack times.

A longer attack time allows the first segment of a short amplitude to pass through the limiter without control. The limiter reduces the gain after the adjusted attack time only. Thus, a longer attack time may endow some instruments - drums, bass, piano, guitar - with a certain 'punch' - if adjusted carefully.

An attack time setting in the last third of the scale will be a good starting point for experiments with mixed program material.

DECAY

This control should also be adjusted differently for different program material. Provided an optimum setting has been found, the limiter will guarantee a quick response to dynamic changes and will avoid annoying effects such as "pumping" and "breathing".

If the decay time is too short, the limiter will set the gain reduction to the minimum value, each time the signal falls below the threshold level. With low-frequency solo parts - drums and bass, for instance - this may occur between single chords or beats. Thus, background parts that are lower in volume and noise could be modulated.

If the decay is too long, it might happen that a quieter signal following an abruptly ending loud signal directly will be compressed as well.

Here also, the decay time depends on the program material and should be found out by way of experiment. Again, a good starting point will be the last third of the decay scale.

REMARKS ON THE CONNECTION

Weak signals must be amplified before they are applied to the unit. Only signals above the threshold level can be used for gain reduction.

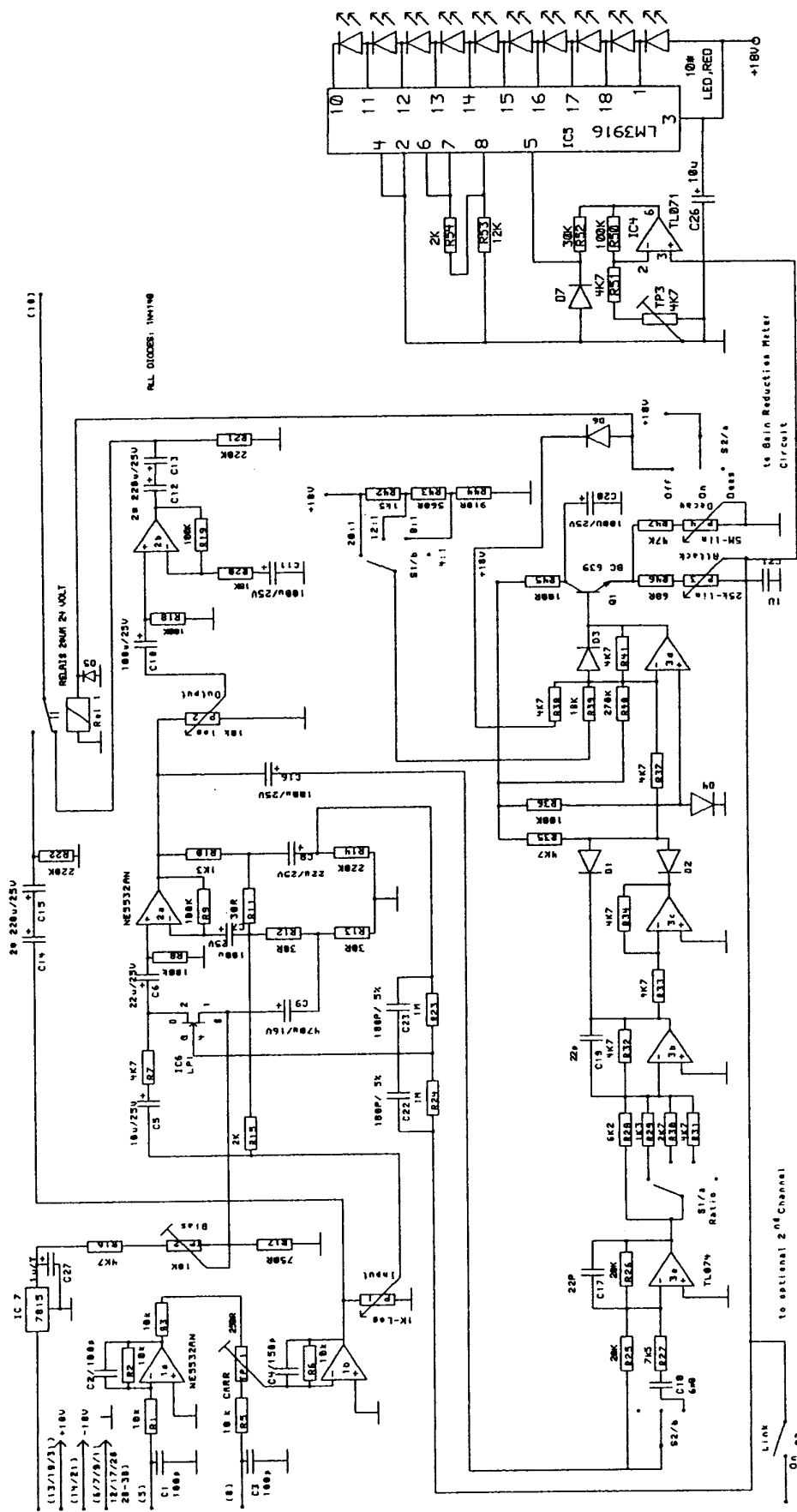
Example: in setting 4:1 (compression ratio), the lowest threshold level is -30 dB. If the signal routed to the input is at -20 dB, the INPUT control must be set to maximum to achieve a compression of maximally 10 dB.

This means the unit should be driven with a sufficient signal level to guarantee adequate functioning. Thus, it is also ensured that the unit uses its optimum operation range and there is no additional noise generated.

The proper looping-in position (for instance, before or after the tone control) greatly depends on the desired effect and should be determined in the respective real situation.


On using higher limitations, the noise of the input signal may be increased considerably, i.e. become audible. Use of a noise gate before the limiter may be helpful in most cases.

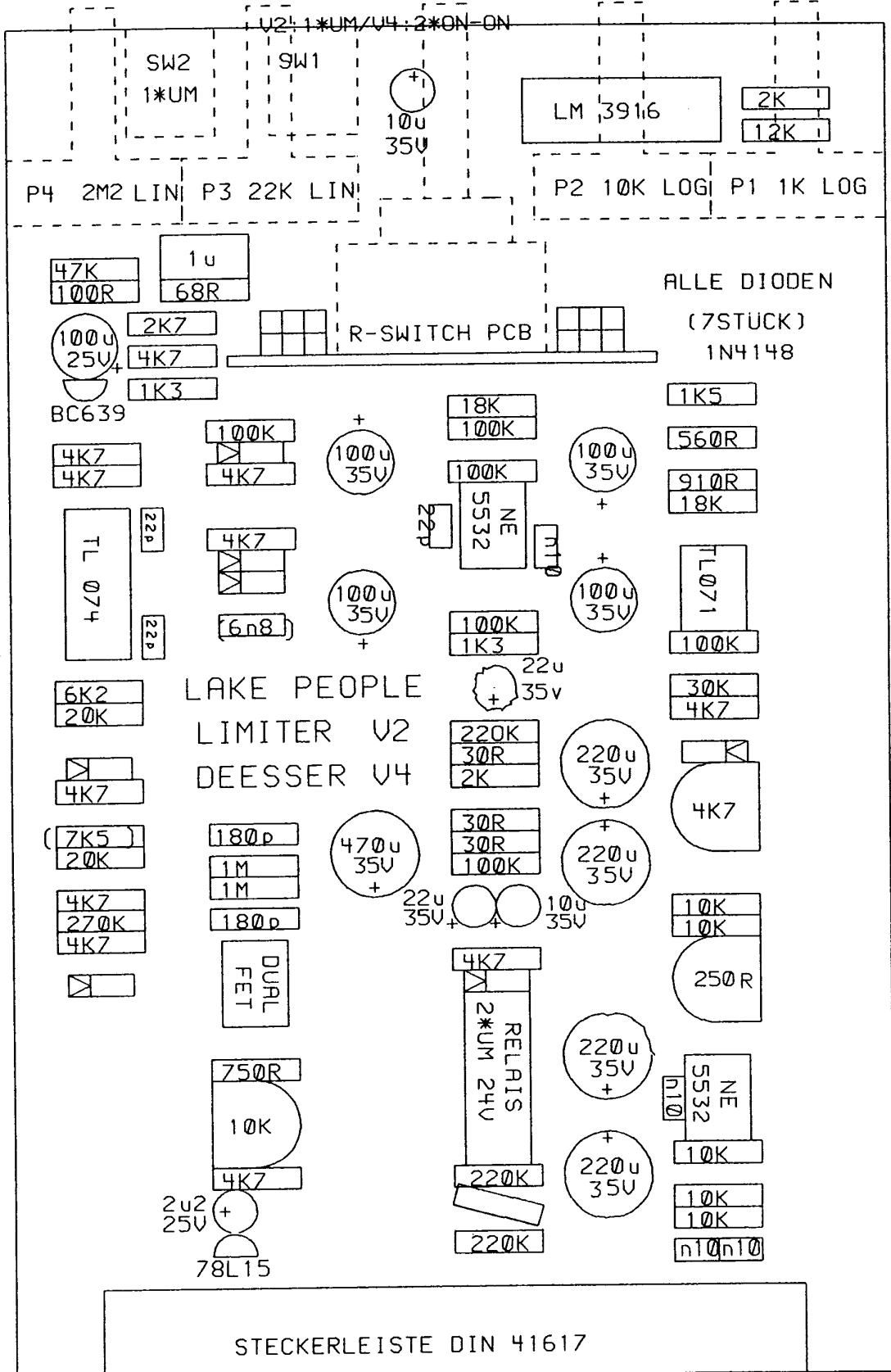
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LAKE PEOPLE
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 SCHALTPLAN
 UNI COMP V2/V4

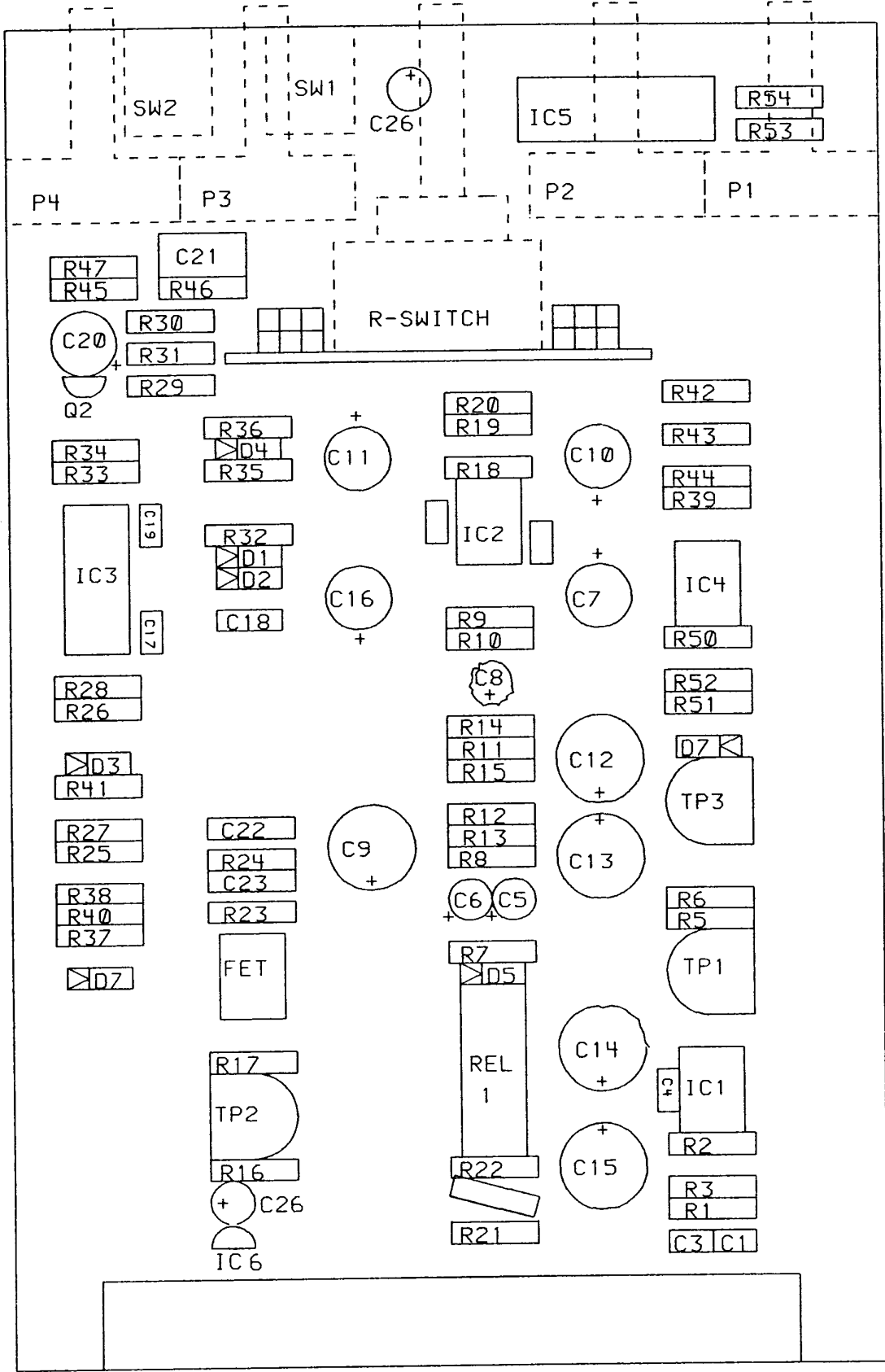
Designed by: FR + Be. Version: 2.0
 Date: 07.09.90
 File: SP V24.021/2 MODIFICATIONS: NONE
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	Version: 2.0	Modifications: NONE
Designed by: FR + Be.	File: BEST v24 02/12	Page 1 of 2



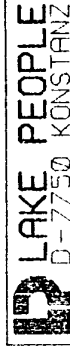
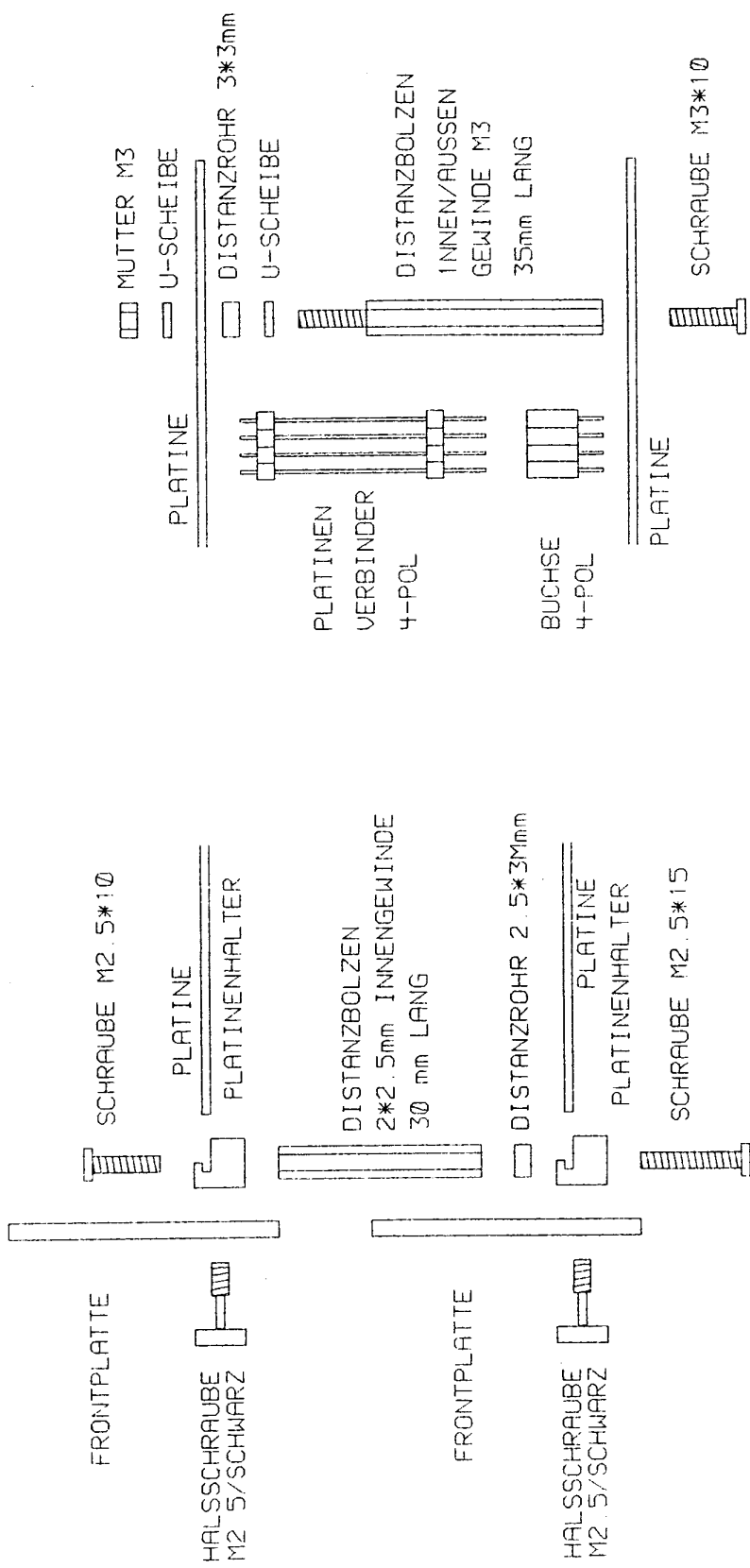
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LAKE PEOPLE
 D-7750 KONSTANZ
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 Version: #2.0.
 Date: 10.09.90
 Modifications: NONE
 File: BEST v2402/3
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MONTAGE DER STEREOVERSIONEN LIMITER V2/ DEESSER V4



LIMITER V2
DEESSER V4

Designed by: F. REIM Version: 1 Date: 24.09.90

Modifications: REC---V24.011

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