# RAVE-O-LUTION 309
# AUDIO-EXPANSION

QUASIMIDI

RAVE-O-LUTION 309

ANALOG-EMULATION-SYNTHESIS BY QUASIMIDI

# Contents:

## Warranty Conditions:

To comply with the warranty conditions we ask you to observe the following warnings:

- Do not expose the Audio Expansion Board to high temperatures.
- Keep the board away from high humidity.
- Do not touch the card's sockets or contacts.
- Protect the board and IC from electrostatic discharge.
- Operate the board only in the RAVE-O-LUTION 309.

QUASIMIDI does not assume responsibility for damage resulting from mishandling or improper installation procedures. This product is under warranty from the factory for a period of 6 months.

## Introduction:

Congratulations on the purchase of the Audio I/O Expansion. This package will increase the functionality of your Rave-O-Lution 309 tremendously. The following new features are at your disposal after installation:

1.) 2 additional polyphonic audio outputs.

2.) 2 additional audio inputs for treatment of external sound sources using two complete A.E.S. Synthesizers.

3.) Numerous new functions have been added to the operating system, which will make creating music with your 309 more flexible and intuitive.

Before you can start taking advantage of these new features, you will have to install the I/O Expansion. Please adhere to the installation procedures described in this manual. There are plenty of pictures to clarify matters. If you don't understand any of the explanations of the new functions we recommend consulting your original 309 manual.

Important! These installation instructions are not meant to be a replacement for the 309 Manual. To get the most out of this update, you must have an understanding of how the RAVE-O-LUTION 309 functions.

## Help with technical problems:

If you are still experiencing problems, even after reading the manual, please call the customer service department during regular office hours (see rear cover). If you do not feel capable of handling the installation yourself, our distributor or one of the authorized dealers (see rear cover) will be happy to provide installation service. Please let them know ahead of time, as it will help to cut down on unnecessary delays.

**CAUTION!! FOLLOW THESE INSTRUCTIONS TO PREVENT FIRE, ELECTRIC SHOCK OR PERSONAL INJURY.**

* Before installing the Audio-Expansion, make sure to read the following instructions and the 309 Owner's Manual.
* Do not open the 309 before disconnecting the AC-Adaptor.
* Use care when handling the Audio-Expansion and the included IC's. All chips are sensitive to electrostatic charges. Please follow the instructions in this installation guide carefully to avoid damaging the IC's and the expansion board.

Included in the package, besides this manual, are following items:



- 6 countersunk Phillips screws
- 4 plastic nuts
- 4 small thread screws
- 4 washers
- 1 EPROM with OS 2.0 in anti-static foam material
- I/O-Board incl. Cable
- IC removing tool
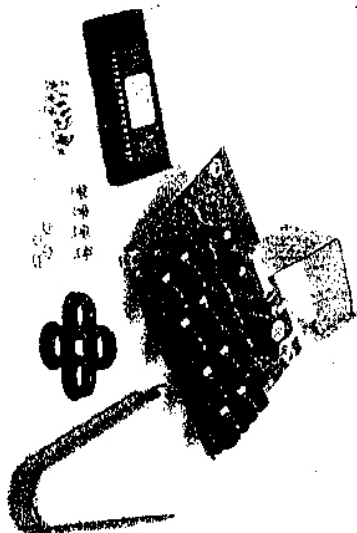
Check to see all the items listed above are included in the package. In addition to the above listed tool you will need: a Phillips screwdriver to remove the screws and a soft cloth or the Styrofoam of the 309's shipping box to place the instrument.

ATTENTION: BEFORE DOING ANYTHING, BACK-UP ANY VALUABLE USER-MOTIFS AND SOUND DATA, BECAUSE THIS PROCEDURE REQUIRES RE-INITIALIZATION OF THE 309's MEMORY.

IMPORTANT: The included IC and Expansion-board are sensitive to electrostatic charges. This procedure requires that you periodically "Ground" yourself, by touching a grounded object such as a water pipe or a grounded piece of equipment. Grounding yourself prevents the static charge in your body from damaging the sensitive IC and Expansion-board.

### Installation of the OS-EPROM:

a.) To start the installation, be sure to disconnect the AC-adaptor

b.) Place the 309 with the bottom side up on a soft cloth. To place the 309 in a safe position it is better to use the Styrofoam of the shipping box.

c.) Remove the six screws of the small bottom plate.

d.) Here you see three IC-sockets. The OS is located in the middle and labeled: QM-309, OS X.xx. Before exchanging the IC notice the shape of the chip. To avoid polarity mistakes, the IC is marked with a notch on one end. The notch of the new IC must be oriented in the same direction as the IC that is removed. Installing the chip backwards will destroy them. For this reason pay careful attention to the polarity.

e.) Using the IC tool, remove the chip. To remove the IC from the socket, place the IC tool at the both ends of the IC. Be careful to place it directly under the IC, not under the socket. Pull carefully, alternating from the left and right sides, and remove the chip. Once removed, place the old chip on the backside of the foam material.
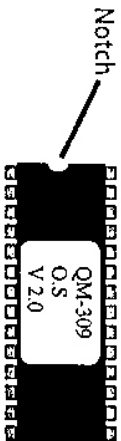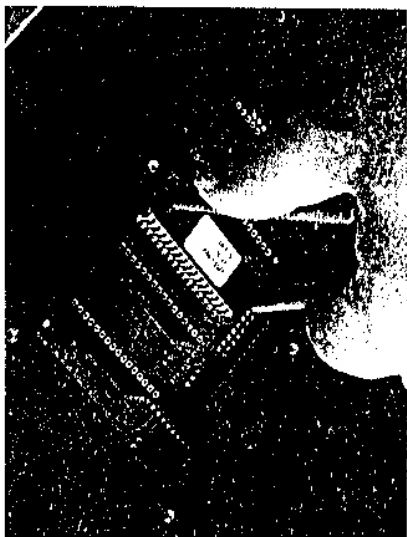


Notch

EPROM with Operating System



Don't forget to "Ground" yourself now. Insert the new IC into the socket. Pay attention to the polarity (notch!) and make sure that all the IC's pins fit the socket.
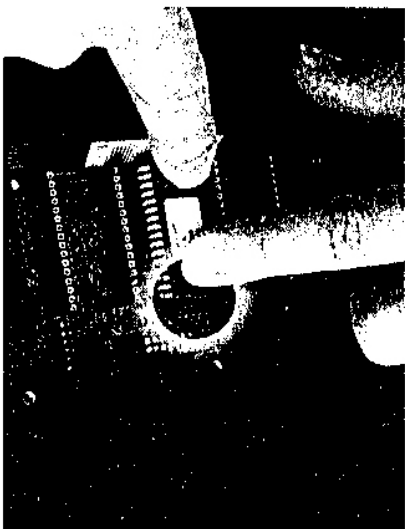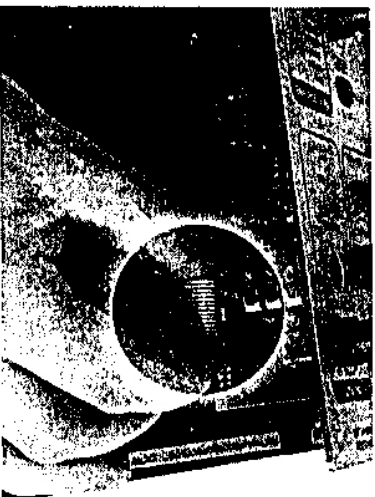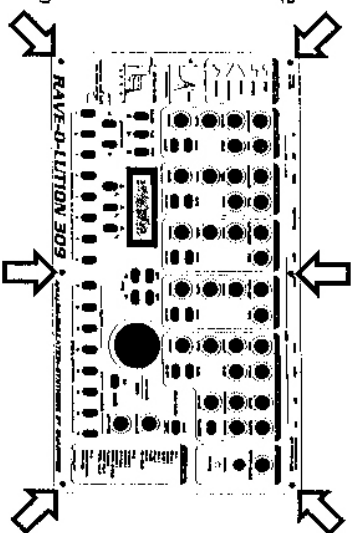
First, press the IC into the socket gently, then double-check the polarity and the positions of all pins a second time. If everything is OK, carefully press the IC into the socket until fully seated.

f.) Screw the small bottom plate onto the 309 body.

## Installation of I/O-Board:

1.) Remove the 6 screws from the Frontpanel of the 309.

*The arrows show the position of the screws.*

2.) Carefully lift the Frontpanel. Don't you forget the position of the cable on the right handed volume-knob-board (red marked cable). Remove the cable from the volume-knob-board carefully. It is very important to fix the cable at the same position later on.

3.) Turn the Frontpanel counter-clockwise to 90° as shown on the picture. To avoid the damage of the contacts place a cardboard between the Frontpanel and the 309's body.
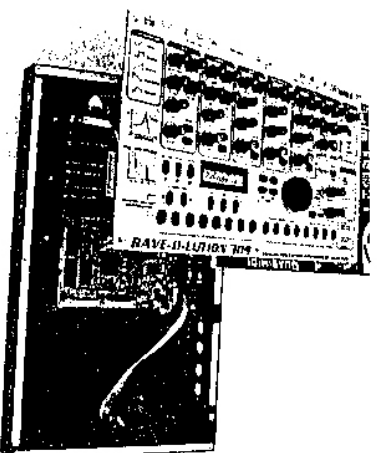
4.) Remove the screws from the outside of the body. These screws fix the metal sheet where the I/O-Expansion will be placed.
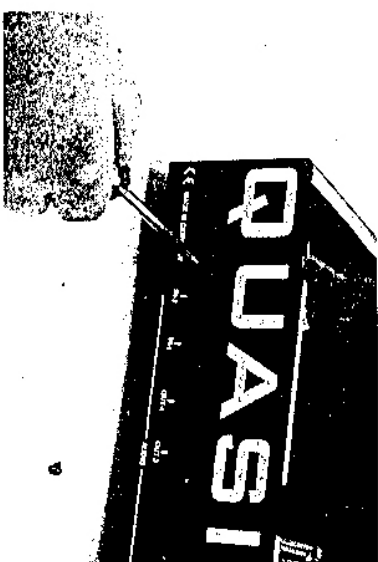
5.) Place the jacks of the I/O-Board through the 4 holes.
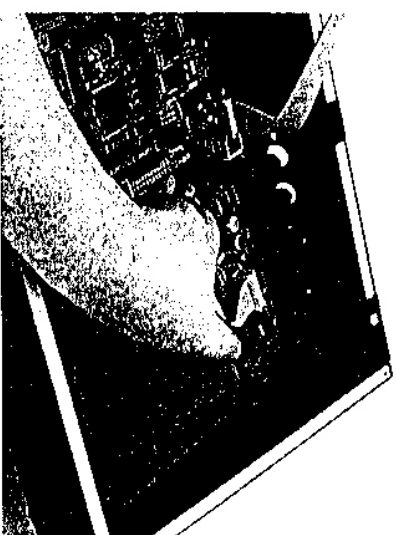
6.) Fix the Board with the included 4 screws. To optimize the attaching don't forget to put the 4 washers under the screws.

*The arrows show the position of the screws and the washers.*
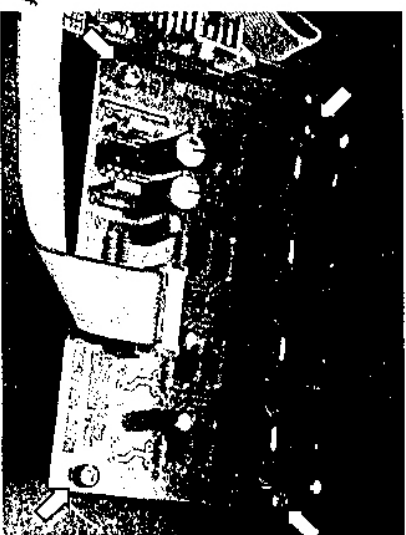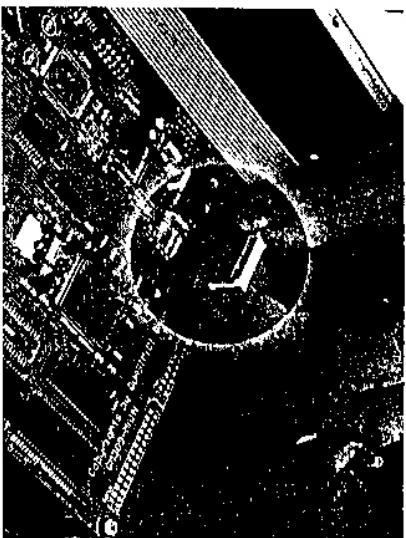
7.) Now the attached cable on the I/O-Board must be connected with the Mainboard of the 309. There is just one way to connect the cable with the "AUDIOEXP" named connector on the Mainboard because it is already pre-bent.

8.) In this step you have to fix the 4 jacks of the I/O-Board with the included 4 plastic nuts. Please attach the nuts with your fingers only. Don't use a plier. Otherwise the nuts and jacks may be damaged.

9.) Put the Frontpanel into installation position and lean it back carefully.

Attach the cable of the volume-knob board to its connector. Ensure the correct position of the cable (see step no. 2).
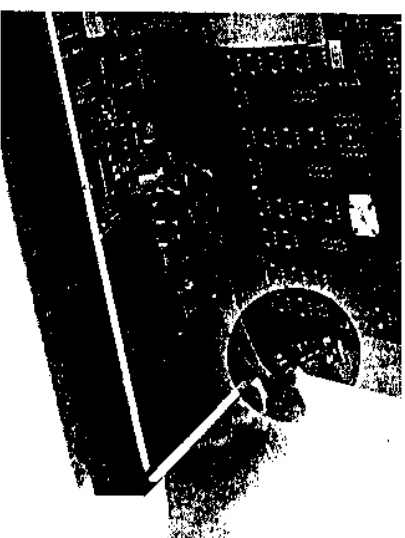
10.) Check again the correct fitting of all cables. Now put the Frontpanel onto the body. Take care that there is no cable stucked between the Frontpanel and the body. Fix the Frontpanel crosswise with the 6 screws.

**Attention:** Don't tighten the screws too hard! The screws and the body of the 309 could be damaged!

### Initialization of the 309:

After changing the OS of the 309 it is necessary to initialize the instrument. Otherwise the I/O-Expansion will not be recognized. With the 309 turned off, press and hold the "WRITE"-Button of the 309 while you switch the power on. The display will show: INITIALIZE ALL? To confirm press button F1. Don't worry, this may take some seconds. Now your 309 is ready for operation and you can reload the backup.

### Treatment of external sound sources via the audio inputs of the 309:

Some of the 309 users may not be totally aware of what can be done having the audio inputs access a synthesizer. Below, you will find a few examples, which you will be able to modify to fit your own needs.

First of all you need a sound source. Use a CD player or a Tape Deck. These units provide the "Line-Level" required for the 309. Connect the outputs of your unit (usually indicated by "Line-Out" or "Output") with the Inputs 1 or 2 of the 309. Insert a CD or a Cassette in your unit and hit Play. You now should be able to hear the music of your sound source via the main-outputs or the headphone output of the 309 (on initialized units).



*The picture shows how to connect an external sound source to the audio-inputs of the 309.*
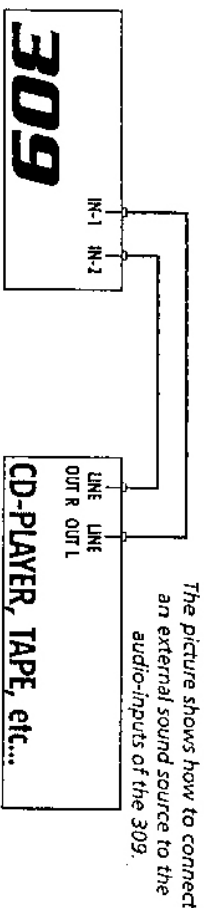
Hold down the F3 button, under the display, and turn the CUTOFF pot in the BASS-LEAD-SYNTHESIZER section. You'll hear the sound of the external audio signal getting brighter or darker. This process is generally referred to as filtering. As a next step hold down the F3 button and turn the RESONANCE pot slowly to the right. The audio signal will get brighter, as certain frequencies are emphasized. As you advance the pot, the filter will start to self-oscillate. Try a combination of the CUTOFF and RESONANCE pots. Depending on the source-material used, this can generate some really interesting effects.

Of course you can use any number of other sound sources as well: Synthesizers, samplers, radios, DAT-recorders, turn-tables (in connection with a pre-amp or a DJ Mixer), a microphone (in connection with a pre-amp), a mixer or basically anything that produces audio with a pre-amp gain stage.

## Editing of the Input Sections:

For each of the two Audio Inputs IN-1 and IN-2 you have a complete A.E.S. synthesis section available. This means, you can treat (affect) the external sound-sources with the same parameters, which previously were only for internal use on your instrument. As there are no separate pots on the front panel for the inputs, the following will show you how to access these new parameters.

As a 309 Owner we assume you are familiar with accessing the pots, of the BASS-LEAD-SYNTHESIZER (for sound editing purposes), via the SELECT buttons of the individual instrument sections. The same applies with the audio inputs. Here the F1-F3 buttons found under the display serve as SELECT buttons. F1 can be used for the selection of IN-1, the F2 button for the selection of IN-2. Using F3 you can select simultaneous use of In-1 and IN-2. This is particularly useful for the treatment of stereo signals coming from a CD Player for instance.

specifics about the Edit Menus of the Audio Inputs:
here are two ways to access the Edit Menu of the audio inputs. The first one you already know. Push the EDIT button to the right of the Display. You are now in the ELECT EDIT Menu. Push the right PAGE button. When you reach page 5 of the menu, the display will show:

```
Select Edit  <5|
_[Ex1][Ex2][1&2]
```

pen the menu [Ex1] by pushing the F1 button. The display should show the ollowing menu page:

```
Edit  Ext1-Sound
<6> Wav:        ---
```

ou can achieve the same result by double clicking the F1 button while in the main enu. This step will open the Edit Menu for Input 1 directly. The same procedure orks with buttons F2 and F3. Double clicking F2 opens the Edit Menu for Input 2 d double clicking F3 opens the Edit menu affecting both inputs simultaneously tereo mode).
ow push the left PAGE button until the display shows menu page 2:

```
Edit Mix T: Ext1
|1> Mixlevel:100
```

n this page it is possible to adjust the level of the external sound source in relation the internal sounds of the 309. You can also adjust this parameter with the level t of the BASS-LEAD Section, while holding down the F1 button.

---

Push the right PAGE button to get to the next menu page:

```
Edit Mix T: Ext1
<2> Pan:    OUT2
```

Here you can set the pan position for the sound-source on IN-1. You will now find another new feature of the expansion card, which also affects the MIX menu of the other Instrument sections. When panning an instrument or your external sound source all the way left, the sound will output only via OUT 2 (LEFT) of the 309. If you pan all the way right you will get to OUT 1, OUT 3 and OUT 4. OUT 1 outputs the sound only on the RIGHT channel of the stereo-sum. OUT 3 and OUT 4 are the new individual outputs, which the Audio Expansion provides you with. You will find a more detailed explanation of the Individual outputs in the section "Assignment of Individual Outs" in this manual.

On page 3 and 4 of the Menu you will find the effect sends:

```
Edit Mix T: Ext1
<3> Fx1Send:    0
```

```
Edit Mix T: Ext1
<4> Fx2Send:    0
```

Here you can adjust, how much of the external sound-source is being sent into the effect sections FX 1 and FX 2 of the 309.
Caution: These parameters are not accessible, when the external sound sources are being routed to one of the individual outputs OUT3 or OUT 4. These are dry outputs.
On page 5 of the menu you will find another new, usable feature:

```
Edit Mix T: Ext1
<5> Trigg: NoTrg
```

In this basic setting the signal of the external sound-source is being sent through the filter and amplifier (VCA) of the 309. Turning the EDIT-VALUE dial, you will be able to chose from the individual instrument sections of the 309 among other options. This selection will serve to have the external sound signal triggered by the rhythm of a sequencer track of the 309. This will create the so-called "Gater-Effect". You can choose a different trigger track for each individual input. It is of course essential to have the sequencer of the 309 running to make this effect operational. When the external sound source is being triggered by a sequencer track you additionally have the envelope curves (EG) of the 309 available for further

## Assignement of individual Outputs

treatment of the sounds. With the setting "Midi" you are able to send a Trigger-Sequence from an external sequencer. When the system channel of the 309 is set to 1 (Edit System), Input 1 is being triggered on Midi Channel 6 and Input2 on Midi Channel 7. Using two different Sequences, the independent triggering of both inputs allows the creation of very complex Gater effects.

The menu pages 6-26 contain all the parameters, which are also provided by the BASS-LEAD-SYNTHESIZER section. After installation of the Audio Expansion you lose access to the parameters on pages 6, 19, 20 and 24. To make these parameters functional you will also need to install the Synthesizer Expansion card (available soon!).

Double clicking the F3 button calls up this display:

```
Edit Ext1 & Ext2
|1> MixLevel:100
```

In principle everything in this menu functions in the same fashion as in the EDIT menus for the outputs 1 and 2. The difference is that this menu has the additional feature of a Stereo mode, which allows you to operate both inputs simultaneously. The only change is in the Parameter "Pan". The factory preset provides for the stereo signal of an external sound source to be automatically routed to the stereo-outputs of the 309. This means the stereo signal is being maintained. When you change the parameter "Pan" in this menu, the panning of Ext 1 and Ext 2 is being changed concurrently in opposite directions. This means Ext 1 and Ext 2 assume always opposing panning values i.e. R>60 for Ext 1 & Ext 2 results in R>60 for Ext1 and L<60 for Ext2.

## Assignement of individual Outputs:

The feature especially valued by Professionals in an instrument like the 309 are additional Outputs. The 309 Audio Expansion provides 2 additional ones. Using those you can send the sound of a section "dry" to a channel on your Mixer. "Dry" means that the sound of the individual out cannot be treated with the internal effects of the 309. Individual Outputs are best utilized to treat a specific sound of the Synthesizer or the drum computer with external effect units. As the Individual outputs of the 309 are polyphonic, it is also possible to assign 2 or more sections (for instance Snare and HiHat) to one Individual Out. To assign an instrument to an individual output, go to the Mix menu of the according section (in our example KICK). Select page 3 using the EDIT-VALUE Dial, which contains the Parameter "Pan":

```
Edit Mix T: Kick
<3> Pan:    >C<
```

## New functions of the WRITE-Menu

Turning the EDIT-VALUE Dial fully to the right makes OUT4 appear:

```
Edit Mix T: Kick
<3> Pan:    OUT4
```

Now the Kick is only sent out via OUT4. Turning back the EDIT VALUE Dial one step, you will see OUT 3. Once an instrument has been assigned to one of the individual outs, this assignment is maintained even after a pattern or song change. It is not necessary to store the selection you made.

By turning back the EDIT VALUE Dial one more step you reach OUT1 (RIGHT). OUT1 only outputs the sound on the right channel of the stereo sum. When panning the instrument all the way left, the sound is being sent out only via OUT2 (LEFT) of the 309. This way it is possible to use the stereo sum of the 309 as well as (togetherwith) two additional individual outputs. It is important though to have the FX-Sends of the instruments routed through OUT1 and 2 set to 0, as the effects signal is always routed in equal proportion to the stereo sum.

## New functions of the WRITE-Menu:

With this Upgrade 2.0 the operating system for the 309 is being augmented by four new functions.

You will find the first one on page 10 of the WRITE menu:

```
<18> Send All?
[Ok]
```

When confirming this function with the F1 button, all of the data stored in the buffer (sounds, user-motifs and songs) will be sent to Midi-Out.

On page 11 of the WRITE Menu you'll find another new function:

```
<11> Copy Motif?
[Ok]
```

This function allows you to copy user motifs and to store them on a different memory location. The copy function is particularly useful, to create variations of an already existing motif. Push [ok] to initiate the copying process. The display will show:

```
Copy Kick-Mtf 0
[ok] [cancel]
```

On this page you can select the motif you'd like to copy. The selection is made via the EDIT VALUE Dial. Using the select buttons you can also select the instrument

# New functions of the WRITE-Menu:

section you'd like to copy a motif from. Once you have selected the motif to be copied confirm [ok]. Using [cancel] you can abort the copying process. Once you have selected [ok] you will see the following display message:

```
to  Kick-Motif 0
    [ok] [cancel]
```

Now you can select the memory location to which you'd like to copy the motif to. Empty storage locations are indicated via a little star in the display:

```
to  Kick*Motif 1
    [ok] [cancel]
```

Once you confirm [ok] the motif is being stored in the new location. Using [cancel] you can stop the copying process. It is also possible to copy Motifs from one section to another (i.e. Kick to Hi Hat).

The third functions can be found on page 12:

```
<12> Clear Seq?
     [ok]
```

When pushing [ok] you will be asked to confirm once more:

```
Clear Seq, Sure?
[ok] [cancel]
```

If you confirm by pushing the F1 button, all songs, user motifs and user patters will be erased! Sounds created by you will not be affected by this function. Selecting [cancel] will abort the erasing process.

The final new function can be found on page 13 of the WRITE menu:

```
<13> Init Ext?
     [ok]
```

Confirming [ok], the Mix and Sound parameters of the Audio inputs are being reset to factory settings (throughput of a stereo-signal without triggering).

---

# New Sequencer functions:

We have used the systems upgrade 2.0 to implement a few changes, which will improve the sequencer. They are:

## Realtime-Loop-Recording:

The most important innovation can be found in the Drumgrid. You'd best try this new function with a completely initialized pattern (Init Patt. on page 5 of the Write Menu). Go to the Edit-Pattern-Menu and call up the Drumgrid. The first new feature is that you are able to access the different sections via the SELECT button without leaving the drum grid. This is very practical and time saving. The clincher though is the new Real-time-Loop-Record-Mode. You can use this function by pushing the RECORD button when the DRUMGRID is open. Now you can program a new rhythm pattern in real-time using the keypad-buttons. Contrary to the conventional realtime-recording here the pattern is looped, enabling you to make the real-time recording in multiple passes. Additionally the realtime-recording is always automatically being quantized. The newly added notes are immediately being displayed in the Drumgrid. Push the RECORD button just once to return from Realtime-Loop-Record Mode to the normal Drumgrid mode. You will realize very quickly that this new combination of Drumgrid programming and real-time recording can lead to new and creative results.

## Song-Position-Pointer (SPP):

At the special request of many 309 owners, especially fans of external synchronization, the 309 is now able to receive Song-Position-Pointer (SPP) information. SPP is additional information contained in Midi-Clock. It makes it unnecessary to always have to start at the beginning of the song to start synchronization when using the 309 as a slave of an external sequencer.

## Trackmode Internal and External (I+E):

In the Mix-Menu on page 6 you will find a new setting for the parameter "Trackmode".

```
Edit Mix T: Kick
<6| TrckMode:I+E
```

Up until now you had to select whether the internal sequencer of the 309 should output the currently selected instrument section (Mode=INT) or addresses a selected external Midi Instrument via MIDI-Out (Mode=EXT). Now, with the selection of I+E you have the option of using both options simultaneously.