



# **Groove Detective**

## **OPERATION MANUAL**



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Groove Detective version 1.2.

Groove Detective MIDI version 1.2

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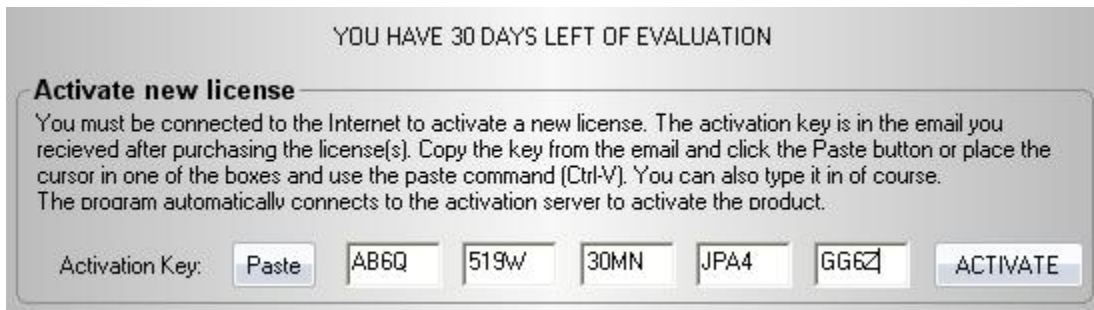
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## Installation and License

To install the program, run the downloaded “GrooveDetectiveSetup.exe” application. Groove Detective requires some additional system components to run, which in some rare cases may not be present on the machine. These are available for download on the “Download” page at [www.cpubproductions.com](http://www.cpubproductions.com).

The program comes with a built-in free 30 day trial.

After you have purchased a license, you will receive an Activation Key via email. Enter this key into the Activation Key fields in the “Activate new license” section and click Activate (you must be connected to the Internet for this process).



You should get a message confirming that your license has been activated.



See the section on [License Center](#) for more information on how to manage your license.

## Data folder

The main application files will be installed in the folder you chose during installation. These are the files you will never need to worry about.

Everything else will be placed in a DATA folder that is fixed at installation time. An option to change this location will be added in a future release.

This folder will be the home for the database that you will create, so it is important that you know where it is, so you can back it up. We'll say it again: **BACK UP** this database as part of your regular backup routine (it takes a lot of time to recreate it if you have a large loop collection).

On *Windows XP* this folder is usually

"\Documents and Settings\*<user name>*\Application Data\Groove Detective"

On *Windows Vista* and *Windows 7* it is usually

"\Users\*<user name>*\AppData\Roaming\Groove Detective"

If you can't find any of these locations, do a search on "Groove Detective" in Windows' Explorer.

The Data folder also contains all the sound files that the program uses, all of which you can substitute with your own or add to. Details of this are explored later in this manual.

# Introduction

If you're like most musicians, producers, hobbyists and others who use a computer to make music, you have probably collected (or will soon) a large number of audio loops, use of which has become so important in modern music-making. Chief among these are drum and percussion loops that can give a professional touch in the rhythm department.

But as your collection grows, so does an accompanying problem: how do you find that specific rhythm pattern, the 'groove', which you have in mind for the song you're writing or recording? Chances are 99.9% that you won't have taken the time to organize the loops yourself every time a new batch lands on your drive. Individual collections you buy are often quite sensibly organized into styles, tempo and so on, but always in self-contained folders apart from everything else you have. There is no agreed-upon system of doing this, so you still end up with the items you're interested in spread across dozens and hundreds of folders.

Out of our own growing frustration with this problem of having so many great musical resources available, but no effective means of accessing most of it, **Groove Detective** was conceived and, now, it's finally here!

In a nutshell, **Groove Detective** analyzes the sound of all the loops in your library and puts the resulting information into a database, which you can then search for rhythm patterns, sound similarity and more. Once you have found a loop you like in the search results, you can drag-and-drop it into a track in your DAW (Digital Audio Workstation) or, if the app doesn't support that, navigate to the specified folder and pick it up there.

How does GD let you provide the search data? You can read all about that in the manual, but if you know how to use a drum machine or equivalent, you will have no problem searching your loops with GD!

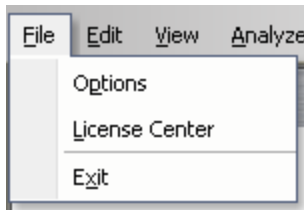
When you have the inspiration: don't dread having to listen to hundreds of loops before you give up and just go with the ones you've used so many times before and know where to find. Discover your collection – for the first time!

## Getting started

Welcome and thank you for trying or buying Groove Detective! The only software that lets you quickly find the groove you're looking for from thousands of loops.

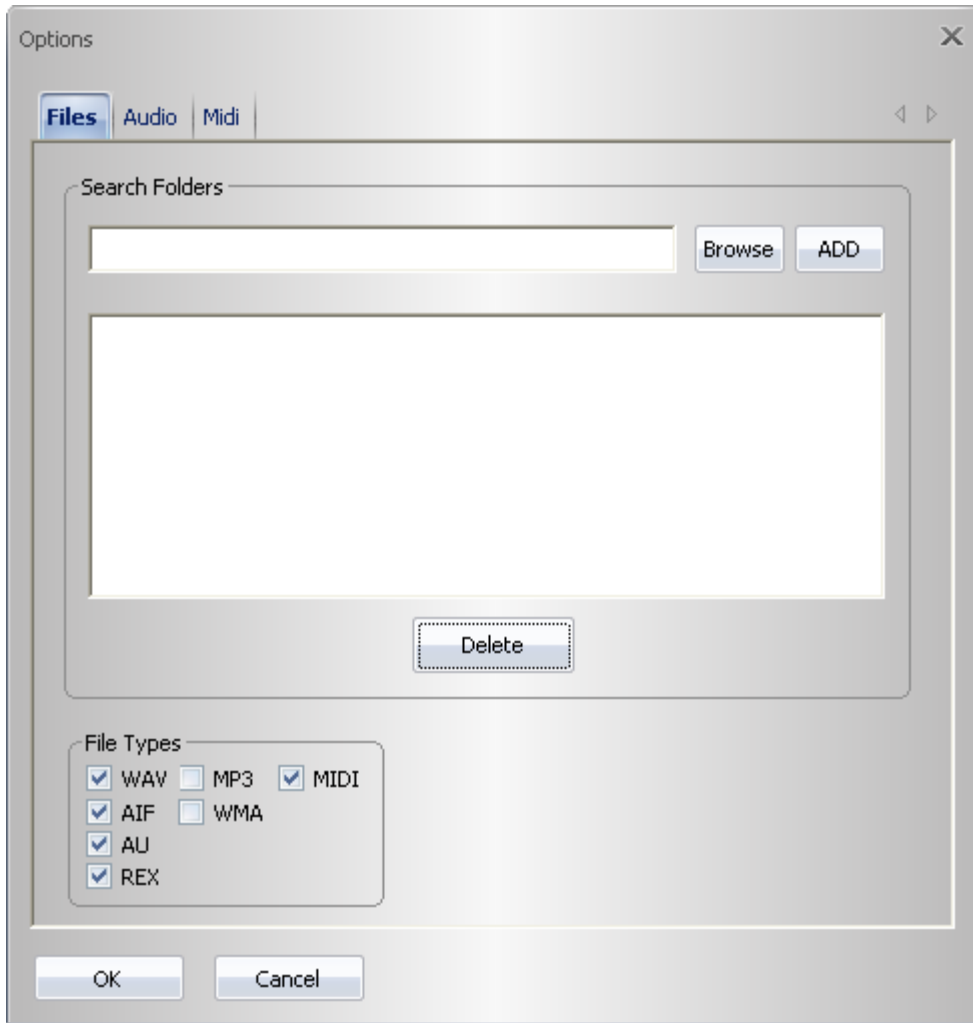
### Analyze

Before you can do anything with the program you have to analyze your loops and build a database for Groove Detective (GD) to work with. The first time you run the program you will see the following message:



First, you need to tell it where to find the loops you want in your database. Go to the **File/Options/Files** page.

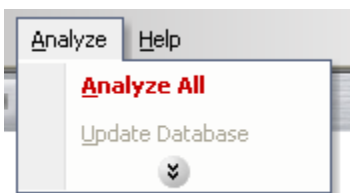




Check the file-types you want to include and use the **Browse** and **ADD** buttons to add folders to search in.

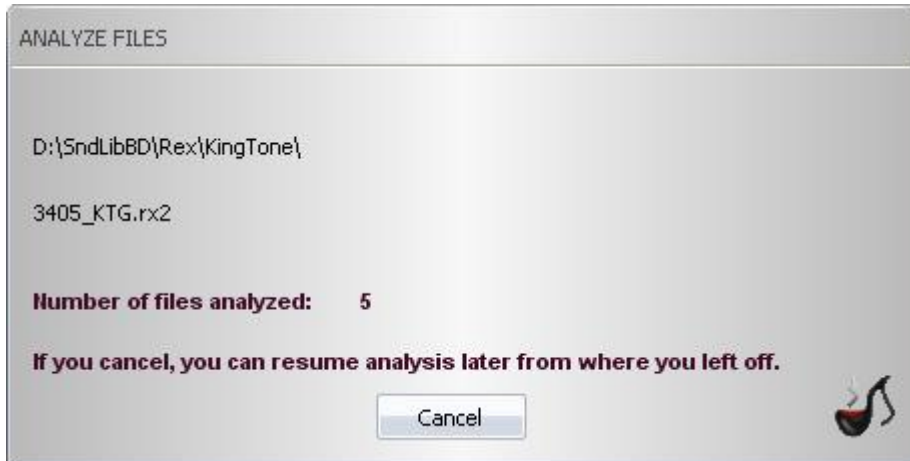



*Acid* files are included in the WAV type and *Apple Loops* are included in the AIF type.




Next, go to the **Analyze** menu and select **Analyze All**.

The analysis will start and you will see this status window for as long as GD is working on it:



 Analysis takes on average 1 second per file on a typical machine anno 2010. If you have thousands of loops and you included all of them in the search folders, this process can take many hours to complete. If you want to quickly try the various features of the program, make sure to start off with just a few hundred loops.

The analysis process is designed to use as much of the CPU as possible, so you shouldn't count on being able to use the computer for anything else while this is going on. Your best bet is to start it off as you close down for the day and then, hopefully, the next morning it will all be done.

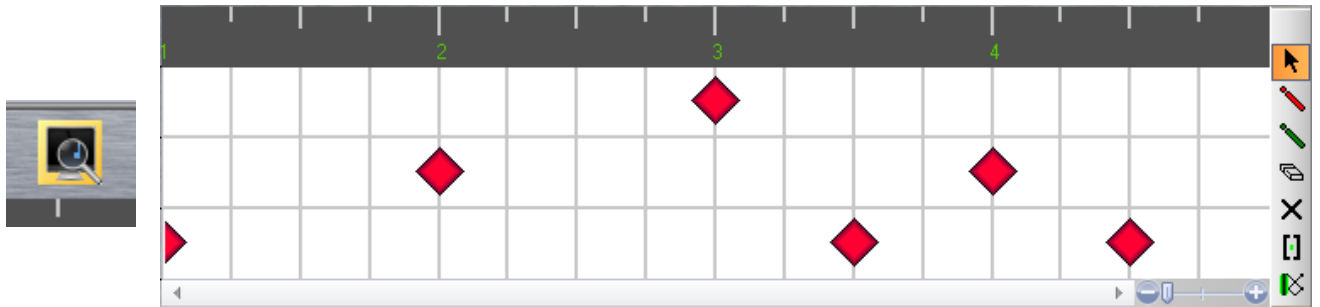
 If you have the MIDI only version of the program, then all of the above is not usually relevant. At least a 1000 Midi loops can be processed per a few seconds normally.

As it is stated on the status window, you can stop the analysis at any time and pick it up again later, without losing any data.

## Search

Once you have built the database, you can start searching for rhythm patterns using the sequencer-like pattern edit window. The full details of this sequencer are described below. For now, choose the **Match** (or “must have”) tool and place hits on the grid.





Use the playback buttons to audition your pattern.

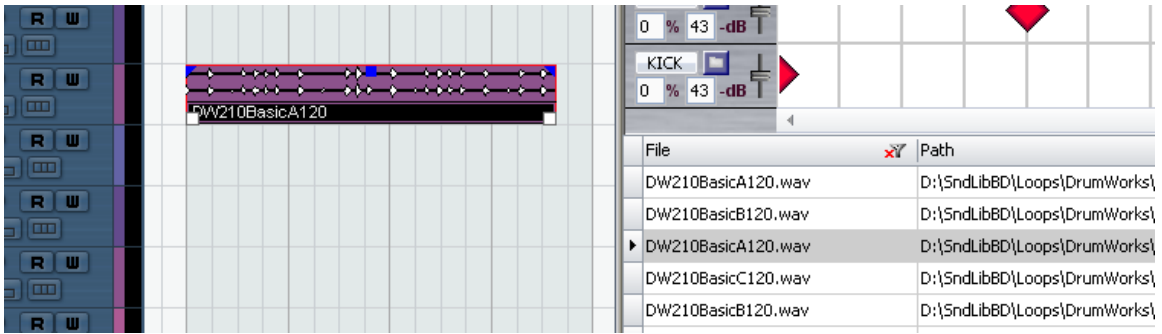
When you're satisfied, hit the **Search** button and see how many loops you have that match that pattern.

File	Path	Type	Tempo	Pitch	Rate
DW210BasicA120.wav	D:\SndLibBD\Loops\DrumWorks\	WAV	121.52	0.40	44,
DW210BasicB120.wav	D:\SndLibBD\Loops\DrumWorks\	WAV	120.90	0.42	44,
▶ DW210BasicA120.wav	D:\SndLibBD\Loops\DrumWorks\	WAV	121.52	0.40	44,
DW210BasicC120.wav	D:\SndLibBD\Loops\DrumWorks\	WAV	121.23	0.43	44,
DW210BasicB120.wav	D:\SndLibBD\Loops\DrumWorks\	WAV	120.90	0.42	44,
KA15A1HA1.wav	D:\SndLibBD\Loops\Similarity\DW210BasicA\	WAV	120.00	0.37	44,
KA45B2HB2.wav	D:\SndLibBD\Loops\Similarity\DW210BasicA\	WAV	120.00	0.53	44,
KB15B1HB1.wav	D:\SndLibBD\Loops\Similarity\DW210BasicA\	WAV	120.00	0.37	44,
KB25A3HA2.wav	D:\SndLibBD\Loops\Similarity\DW210BasicA\	WAV	120.00	0.47	44,
KB55B3HA5.wav	D:\SndLibBD\Loops\Similarity\DW210BasicA\	WAV	120.00	0.42	44,

## ...and play

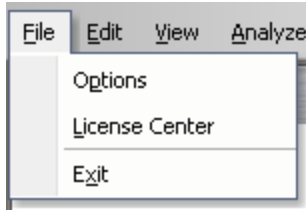
You can filter and sort this list in various ways. This is described in detail below. Audition the loops until you find one you want to use and then simply drag it into a track in your main DAW and you're good to go!

To drag, select either the file name or the file path and then use the standard OS dragging method.



# Operations

## Setting Options



Go to the File/Options menu item to open the Options dialog.

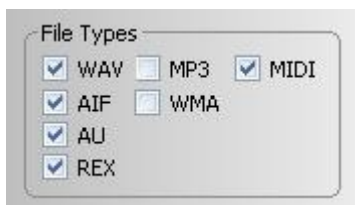
### Search Folders

Refer to the [Getting Started](#) section.

You can choose any path that appears in the browser, including network paths. When using the latter, make sure that no folder is the parent or child of another path you have added. This is checked for on local paths, but *not* on network paths, which could result in duplicated entries in your database.

### File Types

You can check any of the available file-types on or off for inclusion in the database analysis.



WAV: Any format, including ACID loops (Windows mostly)

AIF: Any format, including APPLE LOOPS (Apple mostly)

AU: Unix/Linux sound files, any format

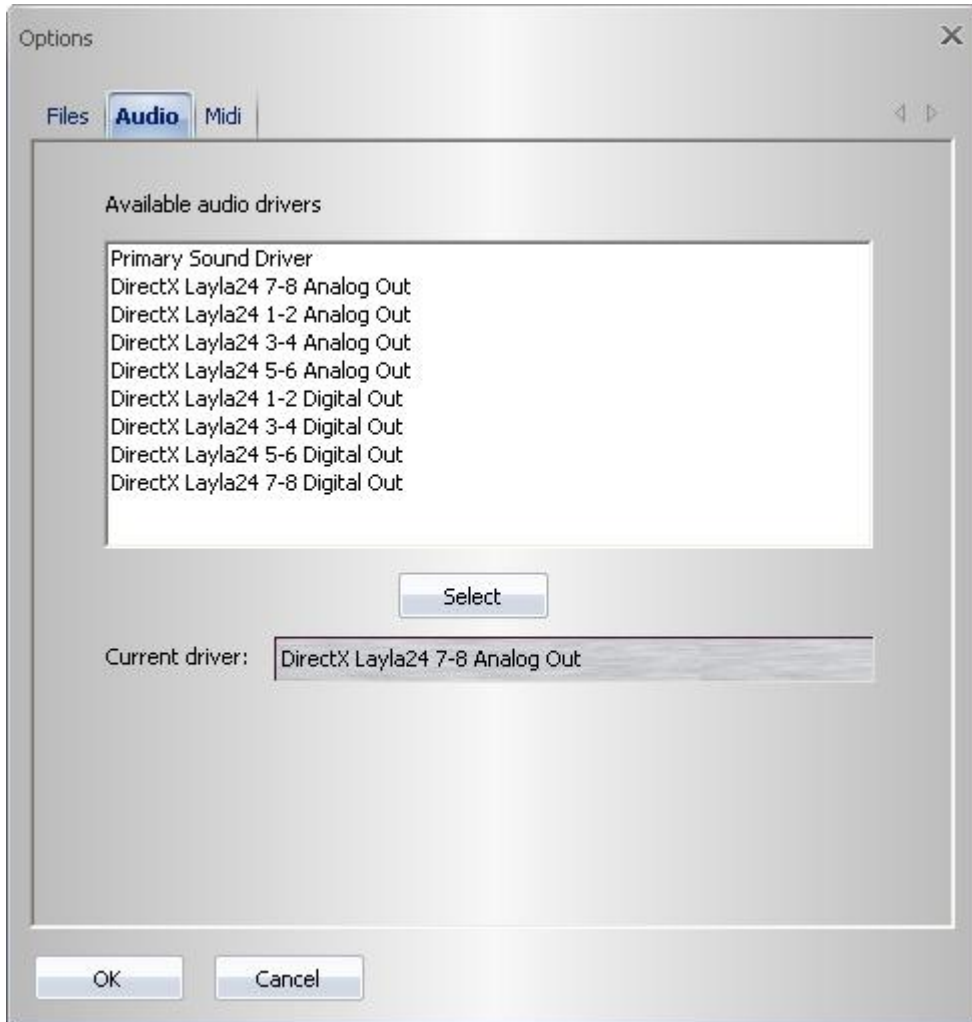
REX: REX, RX2 or RCY files, any format (Propellerheads)

MP3, WMA: Any format

MIDI: Standard Midi Files, type 0 or 1

## Audio

To set the available audio output options and your current driver, choose the **Audio** tab.

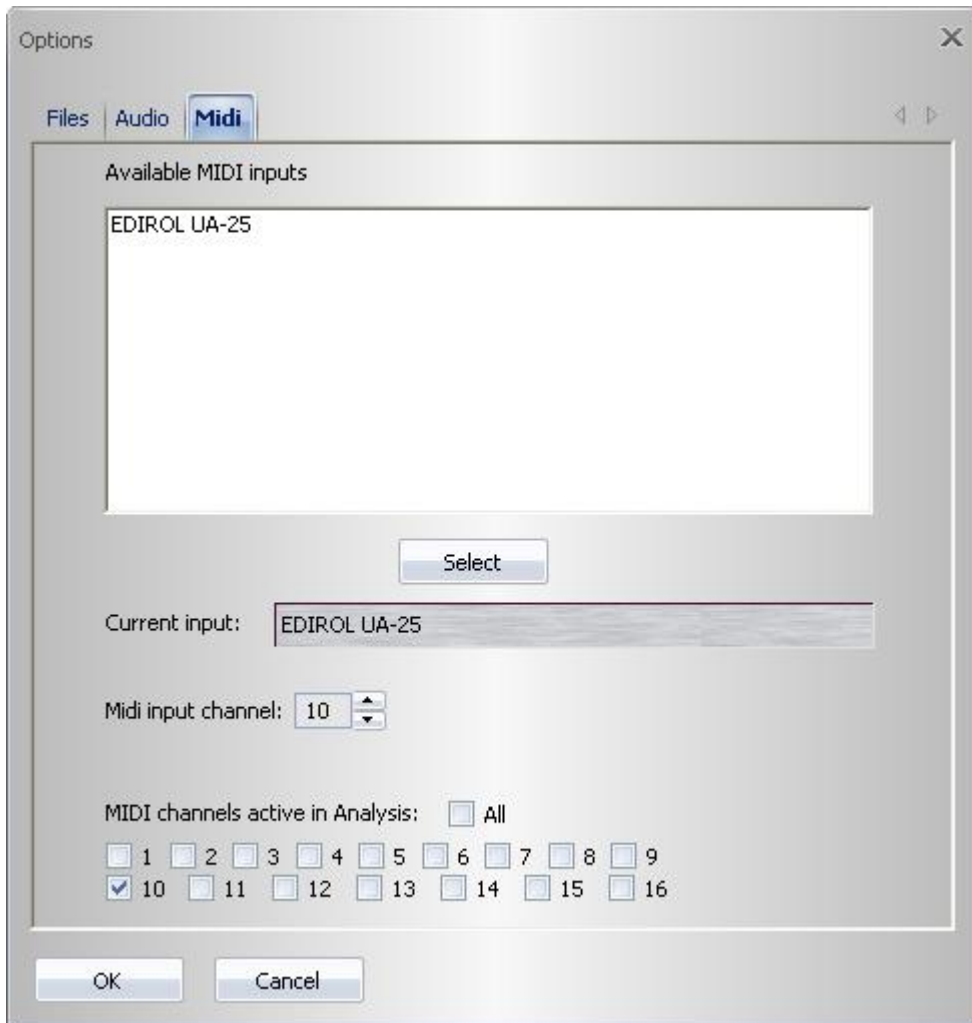


A list of available DirectX drivers will appear. Select the one you want and click on **Select** and that's it.

Currently, only DirectX is supported for audio (see [FAQ](#)).

## Midi

To set the available Midi input options, choose the **Midi** tab.



A list of available Midi inputs will be displayed. Click on the one you want and then click on **Select**.

**Midi input channel** : select channel for all live input.

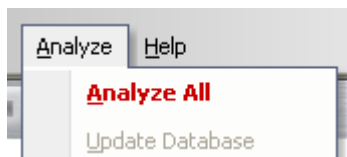
### Active in Analysis

Analysis database: When GD is analyzing your Midi loops, it will only look at tracks that have its Midi channel activated here. Click on the channels you want included or click **All** for every channel.



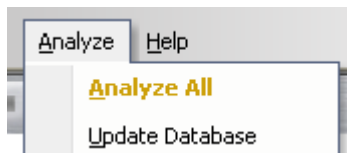
## Database and Analysis

You will get various messages as the program starts up if your database does not exist, it is not current or there is something wrong with it. These conditions are reflected in the Analysis Menu.



If the database for some reason disappears or becomes unusable, all searches will be disabled and the **Analyze/Analyze All** menu item will appear in **red**.

At this point your only option is to select this menu item and start a full analysis.



If, however, you have just added more stuff to your library, your existing database will still work fine, but it won't have all your newly acquired files in it. In this case, **Analyze All** will turn **yellow** and the **Update Database** item will be enabled. This will also happen if you have deleted or renamed files or folders or changed the folders structure in any way.

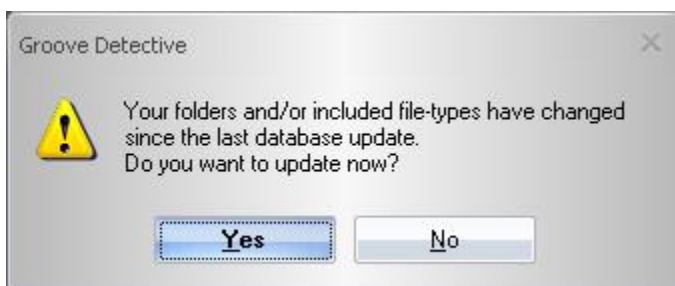
To make your database current, select **Update Database**, as that will only analyze the new additions to your search folders (and/or delete database entries) and leave everything else as is.



During an **Update** operation you may notice that some old files were analyzed again. Groove Detective does not keep a comprehensive ledger of everything that's in the search folders, so it always tries to err on the side of caution in cases where it's not clear whether something was new or not.

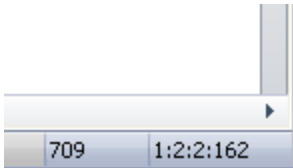


If some of your search folders are on a network path and that path is not currently available, you may get a notice that your database is not current. If you know this to be the case, you can safely ignore this message.



## Common GUI Elements

When the cursor is over the [Waveform](#) display or the [Pattern Edit](#) window, the absolute time and the relative bar position of the cursor will be displayed in the status bar at the bottom.



The number to the left shows time in milliseconds and the one to the right shows time in Bar : 4<sup>th</sup>-note : 16<sup>th</sup>-note : PPQ



For both of those windows, zoom and scrolling are available.

When you open a dialog for loading either a sound file, a Midi file or a Pattern file (.gdh files) that can be played, you will see an extra addition to the dialog that lets you audition the files as you browse.



The controls are, left to right:

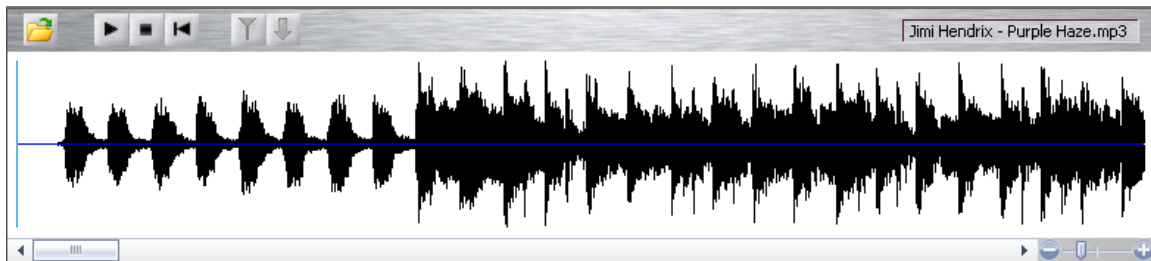
- **Auto Play.** If this is checked, any time you select a new file in the browser, it will start to play.
- **Play** button. Starts playing the currently selected file.
- **Stop** button. Stops playing the currently selected file.
- **Volume** slider.
- **Load Bar #.** This is only active when loading a Midi file. Since the Pattern Editor can only hold one bar at a time, you have to tell it which one to load.

When auditioning Midi files, sometimes nothing will happen when you click **Play**. This occurs when the Midi file has no drum hits on the Midi channels you specified on the **Options** page.

## Waveform Display

The Waveform Display serves many different functions. At its core, it is just another display of a sound-file.

Click on the **File Open** button and load any supported file-type.

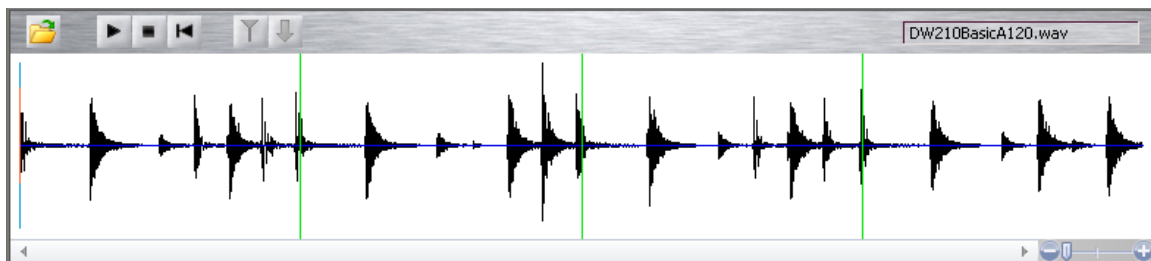


Use the transport buttons to play, stop and rewind. Use the zoom-control to the right to drill into the details of the waveform and use the scroll-bar and the left mouse-button to position the view and play-cursor.

You can start and stop playback with the right mouse button any time the cursor is over the waveform. If a bar is selected then playback will always start from the beginning of the selection. Otherwise, it will start from the position of the cursor.

When you load a sound file, the program is going to make an educated guess as to whether it is a fully mixed song or a loop or sound segment that could be used in a production situation.

If it is deemed to be the latter and it can latch on to events of a percussive nature then it will analyze the waveform for hits and make an estimate of tempo and bar duration.



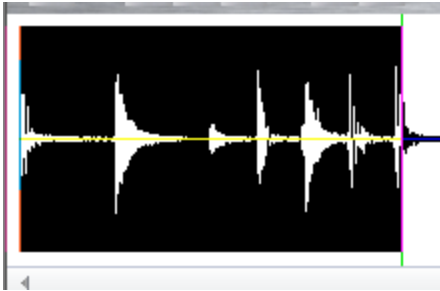
The green vertical lines are **Bar Lines** as determined by the analysis algorithm. This display serves two purposes:

1. You can use it to input hits to the Pattern Editor.

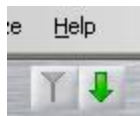
2. And at the same time, you can check that it's doing what you think it *should* be doing, figuring out the bar boundaries.

To transfer a bar to the Pattern Editor do this:

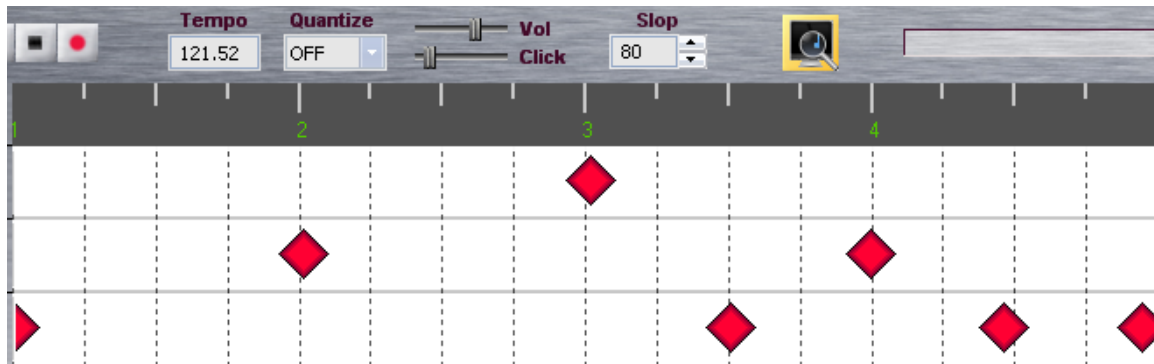
- Double-click inside one of the bars – it will be selected.



- Click the **SendTo** button, which will now have been activated and turned green.



The analysis of that particular bar will now be displayed in the Pattern Editor:



You have to set Quantize to OFF to get the actual reading of the analysis (more on this in the [Pattern Control](#) section).

If you think the analysis has made a mistake in figuring out the bar lines, there's a fix for that. This will only make a difference in the editor, **not** in the Database creation.

## Bar Edit

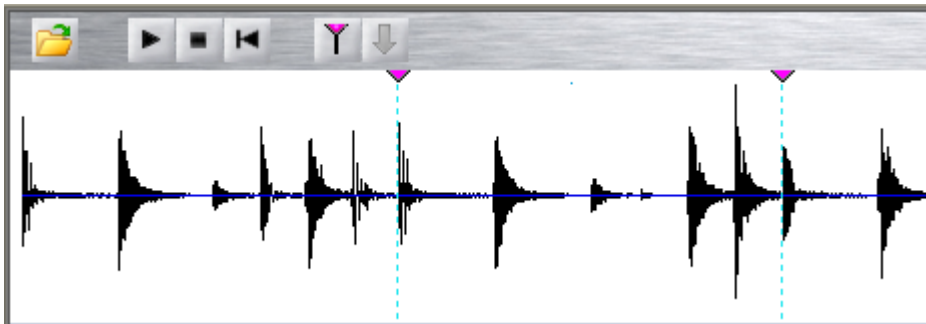


If you are not satisfied with where the bars were automatically placed, you can change them. Select **Remove Bar Line & Markers** on the **Edit** menu.

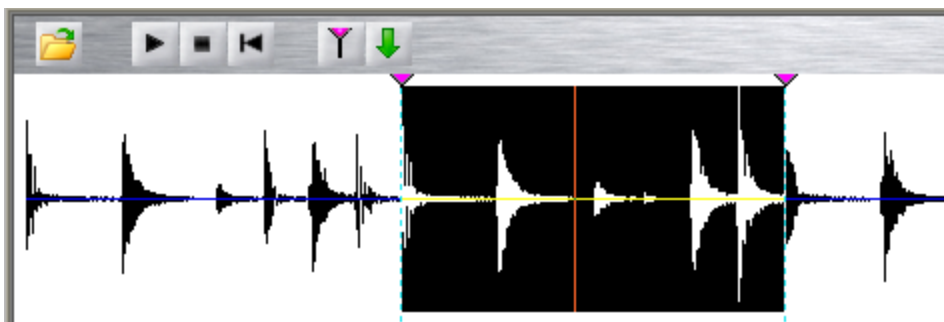


All automatically determined bar boundaries will be removed. At the same time the **Bar Marker Set** option will be activated.

Click on it to create a new Bar Marker. The Marker will follow the mouse around as long as it is over the waveform. To place the Marker: click the left-button.



You can double-click to select a bar, just as with the automatic bar lines:



Then proceed as in the above example.



If a loop contains only one bar, then **Send To** and **Bar Marker Set** will be activated automatically.

## Edit Bar Markers

You can move manually placed Bar Markers at any time. When the mouse hovers over the triangular handle, it will turn into a “Hand” cursor. Left-click and move the Marker to where you want it. If the resulting bars are either too short or too long according to the minimum and maximum tempo settings (fixed to 30 and 300 bpm currently), the marker will either not move or refuse to be placed.

## Pattern Editor

The Pattern Editor lets you create a pattern of drum hits, which will be the source for your loop searches. It contains exactly one bar with a time signature of 4/4. See the [FAQ](#) for further comments on this.

You can specify hits for three “instruments”: kick drum, snare drum and hi-hat. These designations are mostly meant as guidelines as the analysis is more generally focused on the frequency range, rather than identifying specific instruments. So, alternatively, you can think of them as low, mid and high frequency instruments, respectively.



When describing searches, the pattern in the editor is referred to as the “Target” and any patterns in the database are referred to as “Candidate”.

### Pattern Control Section

At the top of the Editor subwindow you will find the **Pattern Control** Section.



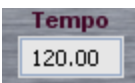
To load an existing Pattern or MIDI file, click on the **File Open** button. Pattern files have the extension “gdh” on a PC.



When there is something in the edit window, you can save it as a pattern file with the **File Save** button.

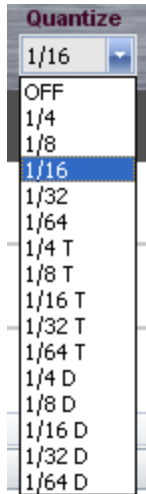


To play, stop and record, use the transport buttons. The Record function will be explained further [below](#).



To change the playback tempo, type it into the **Tempo** edit box, or select it and then use the mouse scroll wheel to change it in 0.5 increments.

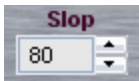
You can change the quantization grid by clicking on the **Quantize** drop-down menu.



The first option “OFF” turns all quantization off. Next, there are three groups of values. The first is ‘straight’, the second is ‘triplet’ (T) and the third is ‘dotted’ (D), i.e. the actual grid-value is duration + half of duration (as in dotted notes in a score).



Volume of the pattern playback and an accompanying click track can be set with the sliders. This volume slider is the master slider for all audio in Groove Detective.



The most important tool for the searches in this section is the **Slop** control. This determines how close in timing a potential loop candidate must be to the target pattern to be considered a match.

This value applies to all the hits in the pattern, unless otherwise specified. See description of [Slop Handles](#). This value specifies time in [PPQ](#), and if a candidate hit is within this interval ahead of or behind the target hit, it is considered to be a match.

You can set this value by either typing directly in the box, use the spin arrows in 1 increment or use the mouse scroll wheel in 5 increments.


Finally, when you’re ready to search, hit the **Search** button.




## The Edit Window

Before we describe the various editing tools, it’s important to first explain a central concept in how searches are carried out. Basically, the system allows you to work with two different types of hits: **Match** and **Don’t Care**.



 **Match** hits requires that a matching hit must be present in the candidate (within slop intervals) in order for the pattern as a whole to be a match.

 **Don't Care** hits you don't need, but will allow, in the candidate pattern. A hit in this position will match, as will the absence of a hit. This idea is further expanded with **Don't Care Regions** (more on this later). Together, these tools give you a great deal of freedom to specify 'fuzzy' patterns, when it's not important that you get *exactly* what you have in the editor.

The **Toolbar** on the right of the screen lets you select the various editing tools.



They are, from top to bottom, **Select, Match, Don't Care, Delete, Mute, Slop and DC Region.**

**Select** lets you focus on a hit for various editing operations (see [Selected Hits](#)).

The next two red and green drumstick tools let you place **Match** and **Don't Care** hits in the editor. If quantization is on, the hit will be placed on the nearest quantization grid line.

The **Delete** tool removes a hit from the editor.

The **Mute** tool stops a hit from sounding when you play the pattern and also prevents it from being visible in any search.



Muted, not selected **Match** hit



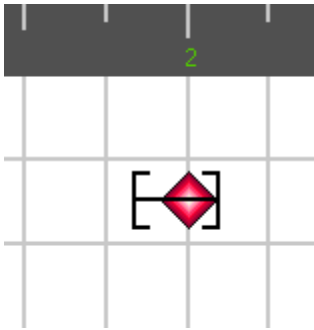
Muted, not selected **Don't Care** hit

The **Slop** tool lets you set a slop-interval for a specific hit (see [Slop Tool](#)).

The **DC Region** tool draws a region of time where 'anything goes' for a particular instrument (see [Don't Care Regions](#)).

### Slop Tool

If you need some hits to have a different slop value than the global one that is specified in the **Control Section**, you can do so with the **Slop** tool. Select the tool and click and hold the button down on a hit. Depending on where you clicked on it relative to the hit position, you can now drag the **Slop Handle** either to the left or right.



The exact position of a handle is continuously updated in the **Hit Info** panel to the left.

506	1:2:1:0
156	91 0

Right Slop Handle  
Left Slop Handle

These values are in PPQ units as it is for the global Slop value.

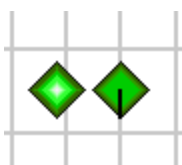
### The finer points of Slop Handles

If you are new to the program you can skip this section without losing much functionality. If you want to become an expert – read on.

There is a fixed limit on how wide you can set the slop-interval, either with the handles or the global control. This is currently set at 240 PPQ. There are some technical reasons for this limit, which may be removed in the future.

If you use a handle for only one side, the other side will then still use the global Slop value. The semantics of the slop is otherwise exactly the same as explained [above](#).

If two hits come close together, the display of the handles changes so as to avoid screen clutter:



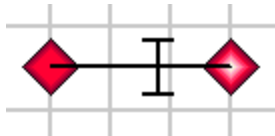
For a left handle and



for a right handle.

You can edit an existing handle at any time. Select the Slop tool and click and drag on the handle. The handle covers the time from hit position to the left or right end-bracket. If the handle is not shown on the time-line (illustrated above), you should zoom in until you see it. Otherwise, you will have to estimate where it is from the various time readouts.

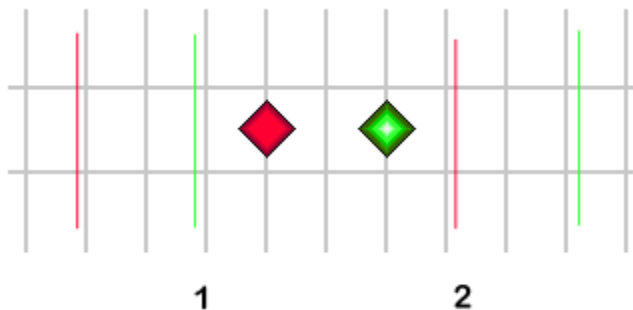
A slop-interval cannot contain another hit. So, in other words, you cannot drag a handle past the position of an existing hit or place a new hit within an existing slop-interval.



The same is true of the handles themselves - they are not allowed to overlap.

The reason for this is to remove all possible ambiguity about where the hits are supposed to be.

Consider two hits close together with no handles as in the following example. They will both use the global slop value, which has no restrictions. The slop boundaries are indicated in the corresponding colors.

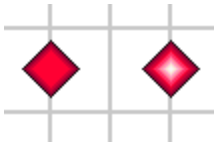


In the interval from 1 to 2 the slop boundaries overlap and the search algorithms interpret this in this way: *any* two hits (or in this case, one will do as well) in this interval will match, no matter what their relative timing is. With **Slop Handles** you can *force* separation between the two hits.

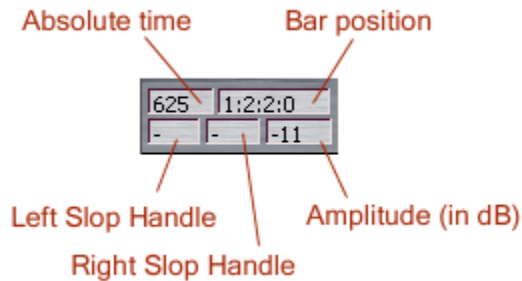
### Selected hits



You can select an existing hit with the **Arrow** tool.



When a hit is selected, it gets a white center. Information about this hit will appear in the **Hit Info** panel.



If a hit is selected you can do a few more things to it.

By using the mouse scroll wheel, you can raise or lower the amplitude of the hit for playback purposes.

You can nudge the hit backwards and forwards in time in small increments (5 PPQs) with the “-” and “+” keys on the *numeric* keypad. The regular keyboard +/- keys will *not* work.



You can move a hit by clicking and dragging it to a new position. The new hit position will show as a grayed hit as you move the mouse. The Quantization grid will *not* affect where you move the hit.

You cannot move the hit past one to the left or right of it or past any of the limitations as explained above ([Slop Handles](#)). Also, you cannot change its instrument designation (no up or down between the tracks).

## Don't Care Regions

In the [Instrument Section](#), clicking on the instrument button makes the program ignore all hits for that instrument when doing a search. This is indicated with a cross-hatch pattern filling up the lane.

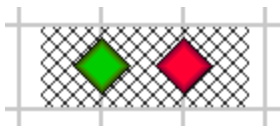
Don't Care Regions (DC Regions) takes this idea one step further and allows you to specify stretches of time where you don't want the matching algorithms to do any matching.



This facility can be extremely useful in many situations. Sometimes drummers play with a ‘flam-style’, i.e. they let the stick bounce lightly before or after the ‘real’ hit, creating a double or even triple hit for a single stroke. If you use the single hit tools you would not match those patterns unless you sprinkled a lot of DC hits around, a tedious and time-consuming process. The DC Region solves this problem by allowing any number of hits to pass through.

Another situation where this tool comes in handy is patterns with a prominent room slap-echo present. The analysis algorithms cannot always distinguish a real hit from its echo (at least not very quickly), so the pattern can end up with ‘ghost’ hits in the database. Use the DC Region to get around this problem.

Finally, use it just to experiment. Throw up some regions where you want to see something happening and see what comes back!

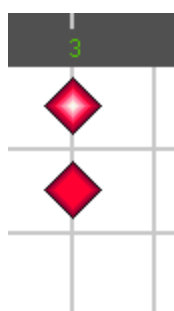


You can draw a region over existing hits. The hits will be ‘hidden’ by the region (just as with Instrument Mute).

*Edit Region:* Place the DC Region cursor inside an existing region, left-click and move.

*Delete Region:* Start the edit and then move the cursor past the beginning point to the left. The region will be deleted.

### Double/triple hits

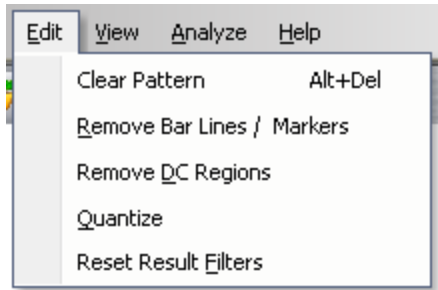


The analysis algorithms do not attempt to separate two hits that occur at the same time. In these cases, the hit with the lowest frequency center will be chosen as the hit.

If you present a double (or triple) hit to the search, the topmost hit(s) will be removed before proceeding with the search.

The hit in the **Hat** track (left) will not be visible to the database search.

## Edit menu



The following options are available from the **Edit Menu**.

**Clear Pattern** removes all the hits from the Pattern.

**Remove DC Regions** removes all DC Regions from the Pattern.

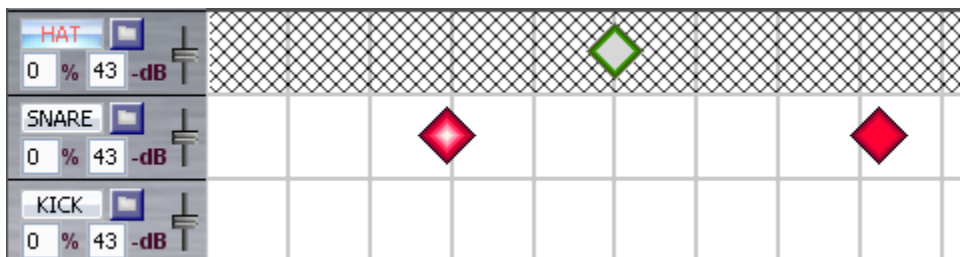
**Quantize** applies quantization to all the hits with the currently active setting in the quantize control.

## The Instrument Section


To the left of the edit area is the **Instrument Section** that is divided into the three instrument 'tracks'.

### Mute On - Off: Hat / Snare / Kick

You can turn any Instrument on and off with this button. When it's off, all the hits will not sound in playback nor will they have any effect on any search. For example when **HAT** is clicked the track will be muted like this:



### Volume Faders

 Individual instrument volume faders let you set the relative levels during playback

### Load new sounds (all instruments)

 Click on **Open File** for instrument

This option will let you browse for a new instrument sound. This sound will then be used in the pattern playback and also be the primary sound template for the similarity matching. See [Similarity](#).

A collection of kick, snare and hat sounds was included in the installation (see [Sound Sets](#)).

## Default Sounds

When the program starts it loads a set of default sounds from the Sounds folder located in the Data folder. If you want a different set of default sounds you can replace these files, but make sure that they are named exactly the same:

KickGD.wav

SnareGD.wav

HatGD.wav

ClickLo.wav

ClickHi.wav

Ideally they should be 16 bit, 44.1 KHz, mono files, but other formats will work too.

## Similarity



For each of the instruments you can set a percentage of how much you want the target sound to be similar to the corresponding instrument sound in the search results. At 0 % any sound will match and at 99% you want it to be as identical as possible.

Whatever sound you have loaded for that instrument track will serve as the template for the search matching algorithms.

In this example the snare needs to be matched with similar sounding snare hits at 42%, which would normally mean something like “somewhat similar”.

Note that this number is only meant as an approximation and may change precise meaning from sound to sound and search to search.

## Amplitude

 The last item in the **Instrument Section** is a set of **Amplitude Threshold** settings.

This defines a lower threshold when comparing hit amplitudes in the search. If a candidate hit has lower amplitude than this setting it will *not* be considered to be a match in the search. This lets you filter out loops with ‘ghost’ hits that don’t contribute to the groove you’re after.


This setting has no effect on **Don’t Care** hits.

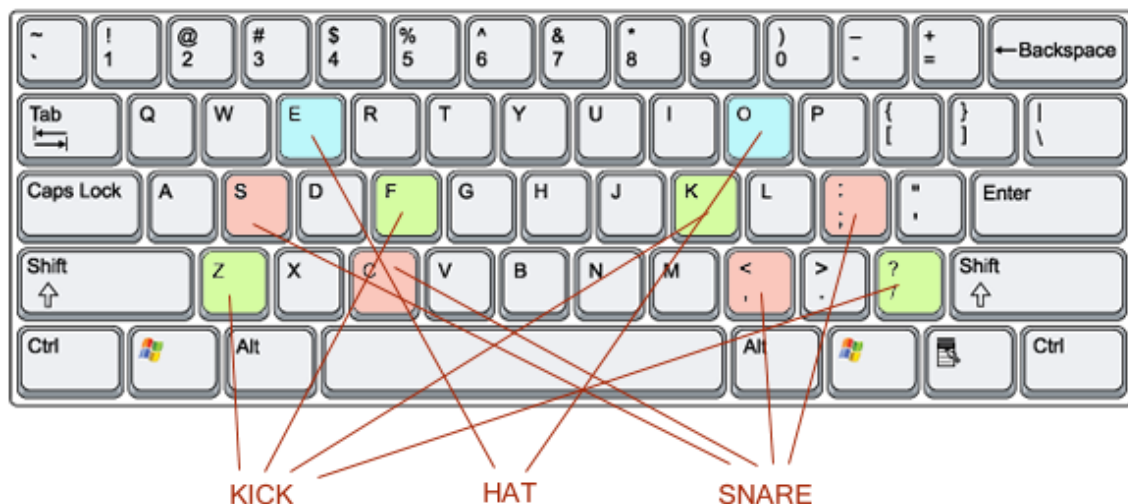
The default value of  $-43\text{dB}$  is a conservative starting point. It lets all but the most ephemeral hits through in the search.

## Recording

You can enter a pattern with live recording from Midi. The input device and channel is set in the **Options** dialog. The note-to-drum mapping follows a standard General Midi layout.

You can also use your computer’s keyboard to record. The current input method does not acquire keystrokes with a fixed latency, unfortunately, so your mileage using this feature may vary considerably. This will be fixed in a future release.

 To start recording, press the **Record** button and play your Midi controller or hit the assigned keys to place the hits in time.





## Search Results

At the bottom you will find the search results, if any, after you hit the **Search** button.

File	Path	Type	Tempo	Pitch	Rate
Shuffle HT 1.rx2	D:\SndLibBD\ReX\TotalReX\DrumStyles\Shuffle Half Time-120\	RX2	120.00	0.44	44,
Shuffle HT 9 Break.rx2	D:\SndLibBD\ReX\TotalReX\DrumStyles\Shuffle Half Time-120\	RX2	120.00	0.50	44,
Shuffle 13 Break.rx2	D:\SndLibBD\ReX\TotalReX\DrumStyles\Shuffle-120\	RX2	120.00	0.52	44,
Reggea 3-A.rx2	D:\SndLibBD\ReX\TotalReX\DrumStyles\Reggea-085\	RX2	85.00	0.46	44,
Reggea 3-B.rx2	D:\SndLibBD\ReX\TotalReX\DrumStyles\Reggea-085\	RX2	85.00	0.46	44,
009BIBX.REX	D:\SndLibBD\ReX\amg\B-BOXES\	REX	119.52	0.53	44,
Afro 1-A.rx2	D:\SndLibBD\ReX\TotalReX\DrumStyles\Afro-130\	RX2	130.00	0.50	44,
Afro 2-A.rx2	D:\SndLibBD\ReX\TotalReX\DrumStyles\Afro-130\	RX2	130.00	0.48	44,
Highlife 1-A.rx2	D:\SndLibBD\ReX\TotalReX\DrumStyles\Highlife-100\	RX2	100.00	0.46	44,
Highlife 1-B.rx2	D:\SndLibBD\ReX\TotalReX\DrumStyles\Highlife-100\	RX2	100.00	0.48	44,
Latin 01-A.rx2	D:\SndLibBD\ReX\TotalReX\DrumStyles\Latin-120\	RX2	120.00	0.45	44,
Latin 01-B.rx2	D:\SndLibBD\ReX\TotalReX\DrumStyles\Latin-120\	RX2	120.00	0.44	44,
Comparsa 04 Break.rx2	D:\SndLibBD\ReX\TotalReX\DrumStyles\Comparsa-145\	RX2	145.00	0.52	44,

You can audition any of these loops by using the associated **Play** and **Stop** buttons. To use them in your DAW you can click on either the **File** name or the **Path** and drag the loop into an appropriate place in that program (assuming it accepts dropped files, which most do).

The following information is displayed for each loop:

File	Path	Type	Tempo	Pitch	
Rate	Bits	Chan	Dur	Last modified	Bars

**File** is the loop's filename.

**Path** is where you'll find it in your system

**Type** is one of the file-types you have checked in the File Options (see [Search Folders](#)).

**Tempo** is the loop's tempo in BPM.

**Pitch** is a measure of the degree to which pitched sounds are present in the loop. This goes from a value of 0, no pitch detected, to 1, max pitched. ([Pitch and Instrumental](#) Loops)

**Rate** is the sample-rate of the audio.

**Bits** is the bit-depth of the audio.


**Chan** is the number of channels (1 or 2).

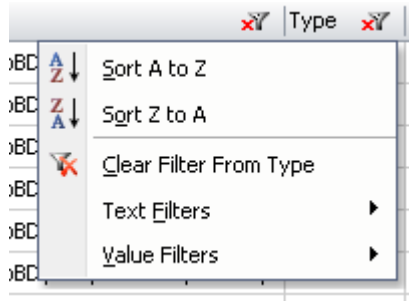
**Dur** is the duration in seconds.

**Last modified** is the date and time the file was last touched.

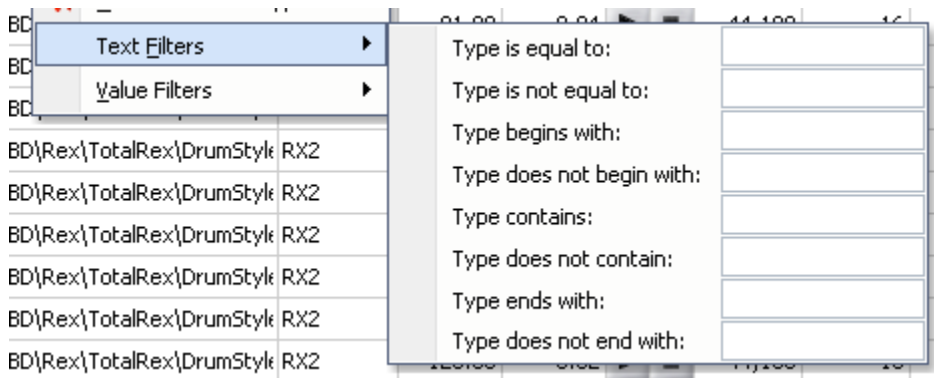
**Bars** is the number of bars/measures in the loop.

## Sort and filter

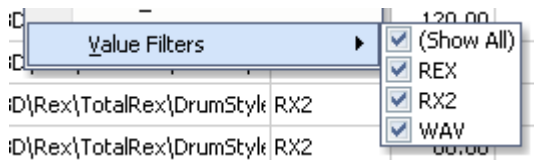
You can sort on any of these categories simply by clicking on the column header. Clicking repeatedly will switch between ascending and descending sort. You can further refine your results by using the **Filter** menu. 



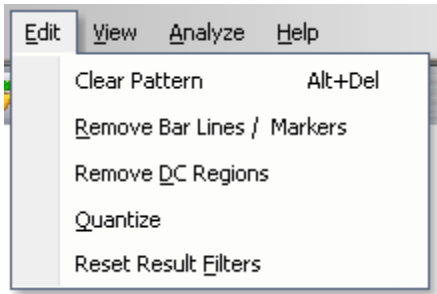
In the **Text Filters** sub-menu you can filter on text in various ways:



The **Value Filters** sub-menu will show you a list of all the different values that are currently present in that category and lets you check off which you want or don't want to see.



You can clear a category's filter by selecting **Clear Filter From ...** from the main **Filter** menu. To clear *all* the filters, go to the **Edit** menu and select **Reset Result Filters**.

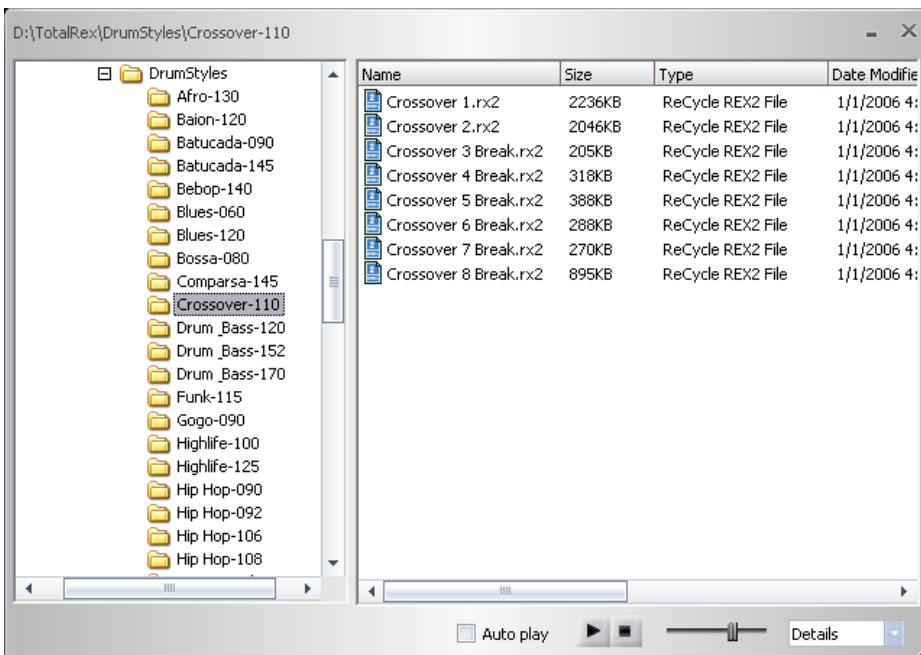


## Browse Path folder

When creating loop collections, almost all producers make up a healthy batch of useful variations on the basic rhythm for a particular groove and place all of these in the same folder for easy perusal. With GD you can take advantage of this practice. When your mouse is over the path column of a loop that you would like to explore more, click the right button and a custom browser will show all the loops that are in that same folder.

Crossover 1.rx2	D:\TotalRex\DrumStyles\Crossover-110\	RX2
48 099 full dr ptrn.rx2	D:\TotalRex\Grinding	RX2
53 100 full dr ptrn rx2	D:\TotalRex\Grinding Beats\Beats 46-63\	pv?

Click right button to open browser



This browser is *not* a dialog box. It will stay open until you close it or exit the app. You can have as many of these open as you want, experimenting with different combinations using the playback facilities.

## Pitch and instrumental loops

You are more than likely to have instrumental loops mingled in with your drums and percussion loops in your library. By 'instrumental' we mean loops containing musical segments with bass, piano, guitar, brass and any other melody-carrying instrument. Groove Detective tries to eliminate as many of these from the database as possible, as the focus here is solely on drums and percussion.

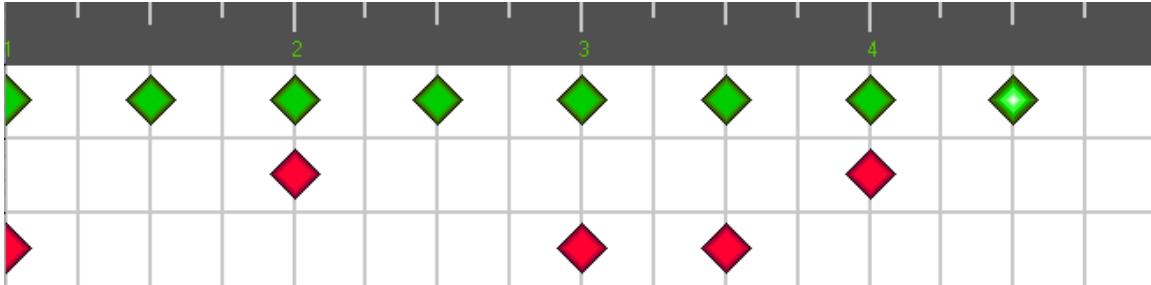
When GD analyzes the audio it computes a measure of how much pitch is present. It also tries to determine whether that 'pitchiness' is due to a pitched percussion instrument or if it is something else. Combining these results it will then exclude from the database any loops that is judged to *not* be a drum/percussion loop.

There is no way to make a perfect call on this since there is a large zone of ambiguity that even a human listener would have difficulty classifying. The approach taken by GD is a very relaxed one, which means that only the most obviously instrumental loops will be excluded. These are all listed in "log.txt" in the Data folder after you have completed analysis.

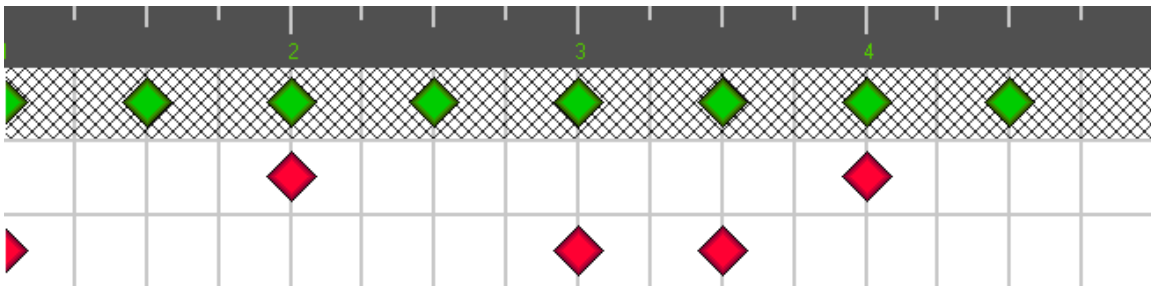
This also means that, in all likelihood, a number of actual instrumental loops will show up in your searches from time to time, but that's the nature of the beast. In a future version of Groove Detective we will provide some parameters to the user that can be used to change how tight the pitch restriction should be. For now, it is hard-coded into the program.

## Search Examples

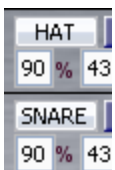
- A standard rock groove with 8<sup>th</sup>-note feel in the hi-hat:



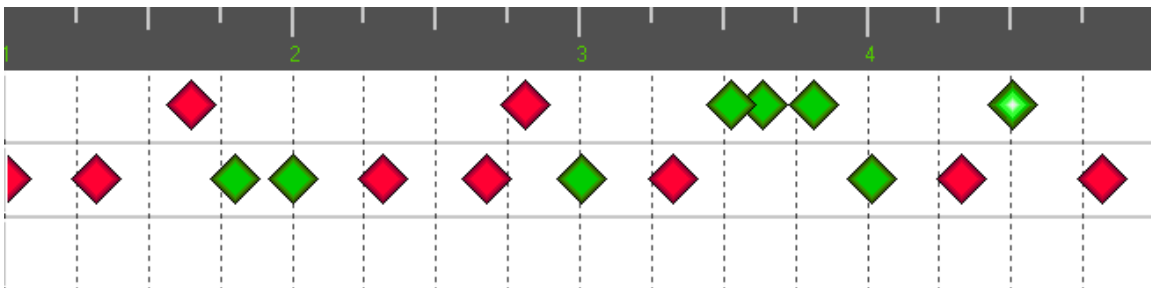
- The same, but with anything and everything allowed for the hi-hat:



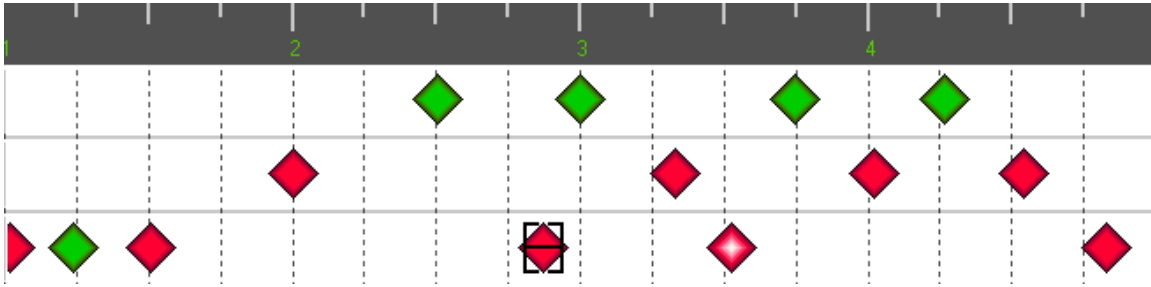
- A conga groove with no kick drum and a wide range of variations allowed.



Before searching, load the appropriate sounds into the snare and hat tracks, e.g. a mid-frequency full hit and a high non-pitched slap. Then set similarity to a high value (70-99).

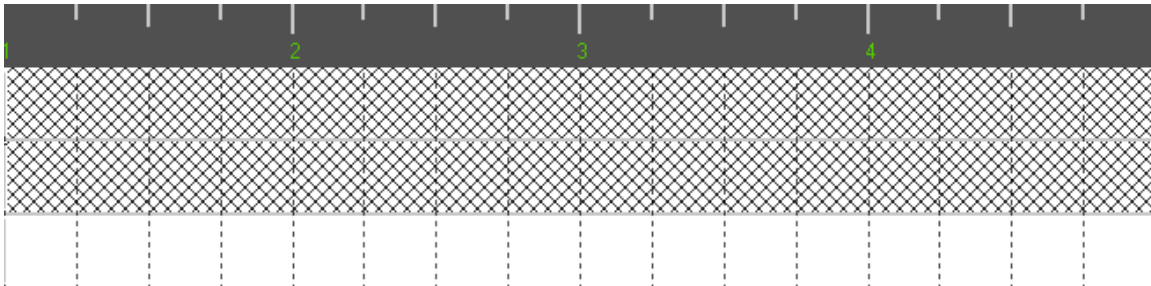


- Use the Slop Handles to restrict the search range for a particular hit to a narrow range.



- Find all loops with no kick drum in them.

WARNING! When you cast the net this wide you will get very little assistance from the database index system. You're basically asking it to look at almost everything you have, so a search like this could take a long time to complete.



- A strong "Four on the Floor" search. To make sure only very strong hits are considered; increase the **Amplitude Threshold** to a fairly high level.



## General hints and recommendations

When you're looking for acoustic drum loops played 'live', it is more often than not a good idea to disable **Hat** matching.



Unless the hihat is fairly high in the mix and played very distinctly, chances are good that the analysis will have missed hits here and there and your search can be thrown off track by irrelevant details in that department. Use the **Hat** when searching in MIDI files (no ambiguity there) or a specific high frequency percussion rhythm pattern.

When you have something specific in mind you probably want to start your search there, say something like this:

The screenshot shows a drum analysis software interface. At the top, there are three tracks: HAT, SNARE, and KICK, each with a volume knob set to 0% and a gain knob set to -43 dB. Below the tracks is a grid showing the analysis results. The HAT track is highlighted with a cross-hatch pattern. The SNARE track has two red diamond markers. The KICK track has four red diamond markers. Below the grid is a table of results:

File	Path	Type	Tempo	Pitch	Rate
1022GOTA.REX	D:\SndLib\REX\Gota\	REX	72.86	0.40	44,100
5804_KTG.rx2	D:\SndLib\REX\King Tone\6 - Rock Loops\	RX2	80.00	0.48	44,100
Beat-Kutz.rx2	D:\TotalRex\Koncept & Funktion Drum & Bass\Kit 172-So Real\	RX2	172.00	0.51	44,100
Hailin Beat.rx2	D:\TotalRex\Koncept & Funktion Drum & Bass\Kit 172-The Rolla\	RX2	172.00	0.38	44,100

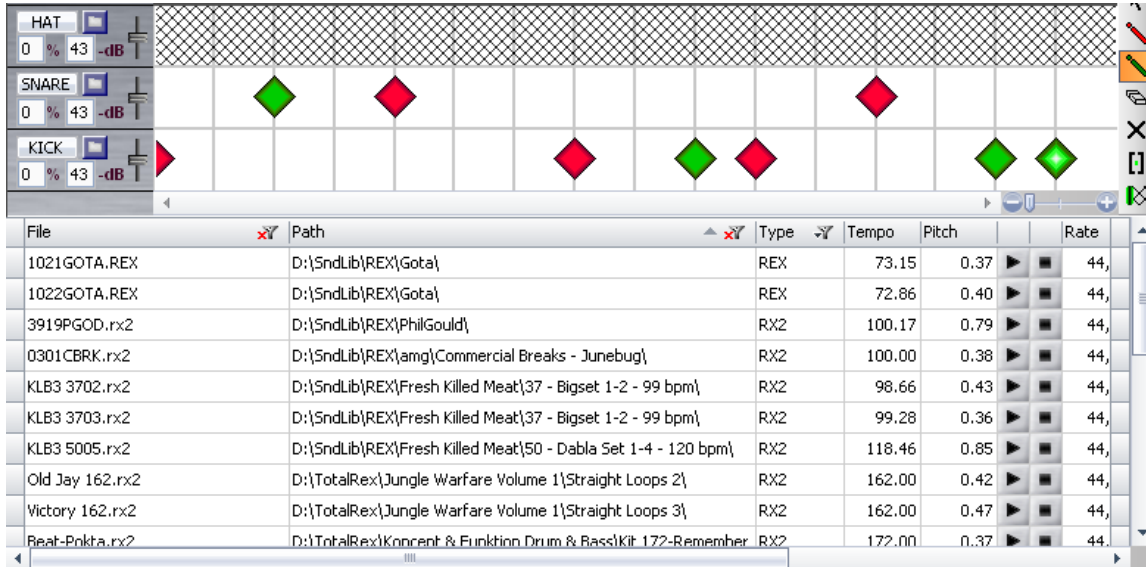
It gets a few matches, but you suspect there might be more of interest out there. Choose a hit you could think of as more of an accent hit and make it **Green**.

The screenshot shows the same drum analysis software interface as above. In this view, the third diamond marker in the KICK track is highlighted in green. The table of results is updated to show a larger set of matches:

File	Path	Type	Tempo	Pitch	Rate
1022GOTA.REX	D:\SndLib\REX\Gota\	REX	72.86	0.40	44,100
0301CBRK.rx2	D:\SndLib\REX\amg\Commercial Breaks - Junebug\	RX2	100.00	0.38	44,100
KLB3 3702.rx2	D:\SndLib\REX\Fresh Killed Meat\37 - Bigset 1-2 - 99 bpm\	RX2	98.66	0.43	44,100
KLB3 3703.rx2	D:\SndLib\REX\Fresh Killed Meat\37 - Bigset 1-2 - 99 bpm\	RX2	99.28	0.36	44,100
KLB3 5005.rx2	D:\SndLib\REX\Fresh Killed Meat\50 - Dabla Set 1-4 - 120 bpm\	RX2	118.46	0.85	44,100
Old Jay 162.rx2	D:\TotalRex\Jungle Warfare Volume 1\Straight Loops 2\	RX2	162.00	0.42	44,100
Victory 162.rx2	D:\TotalRex\Jungle Warfare Volume 1\Straight Loops 3\	RX2	162.00	0.47	44,100
Beat-Pokta.rx2	D:\TotalRex\Koncept & Funktion Drum & Bass\Kit 172-Remember	RX2	172.00	0.37	44,100
Pennon.rx2	D:\TotalRex\Total Drum & Bass\Drum Loops 160 3\	RX2	160.00	0.45	44,100
5804_KTG.rx2	D:\SndLib\REX\King Tone\6 - Rock Loops\	RX2	80.00	0.48	44,100

Making just *one* hit **Green** expands your results considerably in this case. If you could listen to all of these you'd find they are all still right on the money and maybe you're already done.

But what if you could bring in the fringes and the ones that were not analyzed correctly? Your best bet is to try a hit and miss strategy. Start sprinkling **Green** hits where you think they might act as accents or be just accidents. It doesn't take long to experiment and you might be surprised. Here is one such result:



File	Path	Type	Tempo	Pitch	Rate
1021GOTA.REX	D:\SndLib\REX\Gota\	REX	73.15	0.37	44,
1022GOTA.REX	D:\SndLib\REX\Gota\	REX	72.86	0.40	44,
3919PGOD.rx2	D:\SndLib\REX\PhilGould\	RX2	100.17	0.79	44,
0301CBRK.rx2	D:\SndLib\REX\amg\Commercial Breaks - Junebug\	RX2	100.00	0.38	44,
KLB3 3702.rx2	D:\SndLib\REX\Fresh Killed Meat\37 - Bigset 1-2 - 99 bpm\	RX2	98.66	0.43	44,
KLB3 3703.rx2	D:\SndLib\REX\Fresh Killed Meat\37 - Bigset 1-2 - 99 bpm\	RX2	99.28	0.36	44,
KLB3 5005.rx2	D:\SndLib\REX\Fresh Killed Meat\50 - Dabla Set 1-4 - 120 bpm\	RX2	118.46	0.85	44,
Old Jay 162.rx2	D:\TotalRex\Jungle Warfare Volume 1\Straight Loops 2\	RX2	162.00	0.42	44,
Victory 162.rx2	D:\TotalRex\Jungle Warfare Volume 1\Straight Loops 3\	RX2	162.00	0.47	44,
Beat-Pokta.rx2	D:\TotalRex\Koncent & Funkinn Drum & Bass\Kit 172-Remember	RX2	172.00	0.37	44,

By adding just 3 more **Green** hits, we found quite a few more loops that were pretty close to what we were looking for in the first place.

Finally, going even more out on a limb, replace some of the hits with **DC Regions** and see what happens.



File	Path	Type	Tempo	Pitch	Rate
Stuck On It.rx2	D:\TotalRex\Total Drum & Bass\Drum Loops 165 5\	RX2	165.00	0.81	44,
1021GOTA.REX	D:\SndLib\REX\Gota\	REX	73.15	0.37	44,
Steady Eddy 1.rx2	D:\TotalRex\Total Drum & Bass\Drum Loops 165 5\	RX2	165.00	0.38	44,
1022GOTA.REX	D:\SndLib\REX\Gota\	REX	72.86	0.40	44,
6022GOTA.REX	D:\SndLib\REX\Gota\	REX	109.17	0.43	44,
3919PGOD.rx2	D:\SndLib\REX\PhilGould\	RX2	100.17	0.79	44,
Mercury.rx2	D:\TotalRex\Total Drum & Bass\Drum Loops 160 3\	RX2	160.00	0.47	44,
Flick Knives 1.rx2	D:\TotalRex\Total Drum & Bass\Drum Loops 165 2\	RX2	165.00	0.81	44,
Steady Away.rx2	D:\TotalRex\Total Hip Hop\Drum Loops 080\	RX2	80.00	0.37	44,
Easy Variation.rx2	D:\TotalRex\Total Hip Hop\Drum Loops 085\	RX2	85.00	0.37	44,

In this case, we got a large number of extra candidates, many of which will no doubt be of no interest in the current context. Remember to use the **Amplitude Threshold** and **Similarity** tools to trim a large result list back down!

### Double/half tempo

An area that the analysis can have problems with (and humans too), is to determine exactly what beat-division constitutes a quarter-note and hence, a full measure. As an alternative to what *you* think it is, try to double or halve the tempo and space the hits accordingly so that the pattern sounds identical. You might get some more search hits this way.

## Theory

Groove Detective uses sophisticated, state-of-the-art analysis algorithms to achieve its results. This does not in any way mean that it makes any claim to be 100% correct, however. It is not possible, even in theory, to be that accurate.

Consider a short burst of white noise audio used as percussion. What is it? Your brain will interpret that sound according to where it fits into previous memory, but there cannot be any objective instrument classification of it, by definition.

There are countless variations on this conundrum in the audio world and GD does not pretend to have solutions for all of them. You should also bear in mind that, for this release, most of the attention has been focused on traditional, acoustic drum kits. The further away from this the individual sounds get, the more likely you are to encounter errors. This is also true for heavy signal processing, like reverb, echo, compression etc.

While still trying to be as objectively correct as possible, the main goal of GD is not transcription accuracy, but *usability*. Even if you miss some loops you should have seen or got some that were clearly wrong in your search results, the point of having this tool is to be able to get to at least a significant chunk of your library that would otherwise lie fallow.

When you have the inspiration for some new music flowing and you need a good-sounding backbone to support it, punch your sense of it into GD and you'll have something going within 30 seconds instead of getting 30 minutes of frustration moping around folders trying to remember where you once found something similar. In addition, you might also accidentally stumble on a variation you might not otherwise have thought of. Serendipity rules!

## Keyboard shortcuts

NumPad	*	Start record
NumPad	0	Stop play/record (pattern only)
NumPad	-	Nudge back
NumPad	+	Nudge forward
	Space	Start pattern play / stop (any) playback
Alt +	Del	Clear pattern
Alt +	S	Search
	F1	Arrow tool
	F2	Match tool
	F3	Don't Care tool
	F4	Delete tool
	F5	Mute tool
	F6	Slop tool
	DEL	Delete selected hit

# FAQ

## What is PPQ?

PPQ is an acronym for “Pulses Per Quarter-note” and has been the standard way of specifying the time resolution of MIDI-sequencers since the early days. As the name implies, it is independent of absolute time – whatever you designate as a Quarter Note will be further subdivided into PPQs and that will be your smallest unit of time. Of course, you can increase the tempo and alter the time signature so that this will exceed any hardware capability you have, but that’s another story.

In Groove Detective, PPQ is set to 960, which is a fairly universal setting for MIDI these days. Certainly, in the context of what you would ever want to do with GD, we seriously doubt you would ever need a finer resolution than that.

## Why only one bar in the Editor?

Think of an 8 bar pattern you might want to look for where each bar is different. No? Think of a 4 bar pattern – that’s probably your own song or you’re a studio session drummer. In cases like these, one is most likely looking for just one, very specific loop. However, GD is not set up to do these kinds of exact searches that you would otherwise find in commercial database systems (like banks). The overriding goal here is to generate a collection of candidates that might fit the need of the moment and having this kind of specificity runs counter to that.

You *could*, however, make a case for a 2 bar pattern and that is certainly something we will look into as we move forward.

## Why only DirectX audio?

We thought long and hard on the issue of including audio drivers like ASIO in this version. The main reason we didn’t was that we didn’t feel it added any value to the program.

Groove Detective is not meant to be part of the sound production chain. It is meant to sit on the sideline and be a helper when the need arises. As such, it should have a non-intrusive sound-device policy and DirectX delivers on that issue very well. We are open to other opinions on this though....

## Sound sets

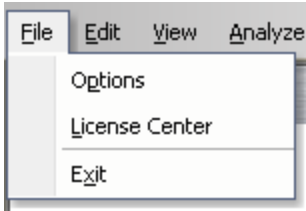
A small collection of sounds has been included with the installation. They are all in the Sounds folder in the [Data folder](#).

The sound files in that folder itself are the default sounds for the **Pattern Editor** as described in [Default Sounds](#).

In the MIDI subfolder are all the sounds used for MIDI playback in the program. These are all GM numbered/named and can be replaced as described for the Default Sounds.

In the Kick, Hat, Snare and Perc subfolders are some examples of sounds that might aid you in searching for that specific feel you're thinking of (see [Similarity](#)).

# License Center



The licensing system has been designed to provide the user with the maximum flexibility in how to run the program. When you purchase a license for Groove Detective you get the right to run that program on any computer, anywhere in the world, at any time. The **License Center** is here to make that process as painless as possible.

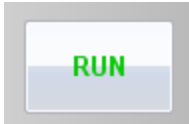
After you have successfully activated the program, you can access the **License Center** anytime from the **File** menu:

The LC dialog comes up:

A screenshot of the 'LICENSE CENTER' dialog box. The dialog has a title bar and a main area with three sections: 'Activate new license', 'Automatic license transfer', and 'Manual license transfer'.  
1. 'Activate new license': Includes instructions on how to activate a new license using an activation key. It features a 'Paste' button, a text input field, and an 'ACTIVATE' button.  
2. 'Automatic license transfer': Includes instructions on automatic transfer. It features a 'Use Registry' checkbox (checked), a 'TRANSFER' button, and a 'Registry (optional)' section with 'Save' and 'Remove' buttons.  
3. 'Manual license transfer': Includes instructions on manual transfer. It features 'Transfer OUT' and 'Transfer IN' buttons, and input fields for 'Registration ID of destination' and 'License Key'.  
At the bottom, there is a 'Registration ID of this machine' field with the value '04WEWHYTKH2P6HMN', a 'BUY LICENSE' button, and a 'RUN' button. A small icon of a wine glass is also visible.

## Activate new license

This is described at the beginning of this manual, [page 5](#).



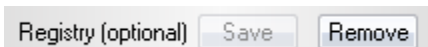
## Activation Key

The *Activation Key* is the key used for activating the program and it is also used for transferring licenses between machines (both need to be online, see below).

When you first activated the license, you may have noticed that the **Save** (to Registry) button became active:



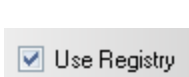
This option allows you to save the *Activation Key* to a hidden location in the Registry, so you don't have to hunt for it in your email box or a file somewhere every time you need to transfer the license. This location is extremely difficult to find, but not impossible, so unless you are very paranoid about someone else snooping around on your computer and copying the Key, we recommend using this option. If you didn't save it during activation, you can do so at any time. Just paste it into any of the two Activation Key edit fields and click **Save**. If, for any reason, you wish to remove it from the Registry, click on the **Remove** button:



## Automatic license transfer

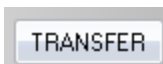
When both machines to be transferred from and to are connected to the Internet, the easiest way to do the transfer is to use this method.

If you had previously saved the *Activation Key* to the Registry, you will have the option of reading the Key from there when transferring out. Make sure the checkbox has a check-mark to use it.



Alternatively, paste or type the Key in. When the Key is available, the **Transfer** button will be enabled.

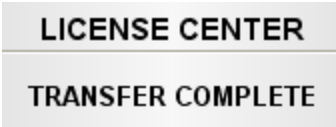
Click on it to transfer the license out (assuming it was on that machine to begin with).



You'll know that the transfer is going to go OUT if the **RUN** button is currently shown:



If the transfer was successful you will get the following message: "TRANSFER COMPLETE".



Also, since this machine now no longer has a valid license to run, the **RUN** button will have turned into an **EXIT** button:



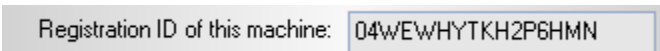
Your only options now are to exit the program or transfer the license back in.

On the second, destination machine, run Groove Detective. It will come up with the License Center displayed. Unless it is still in the 30 day evaluation period, it will have the same **Exit** button. Paste or type in the *Activation Key* (or use the Registry) and click **Transfer**. You should see the "TRANSFER COMPLETE" message and **EXIT** turn into **RUN**.

## Manual license transfer

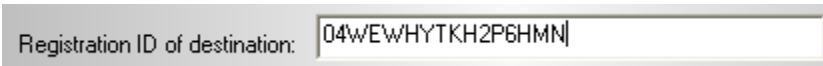
If, for some reason, the Internet is not available on both machines, it is possible to transfer the license by "paper and pen".

First, get the *Registration ID* of the target machine. You will find this ID string near the bottom of the LC dialog.



### On the source machine:

Type or paste in the *Registration ID* string of the machine you are transferring to:



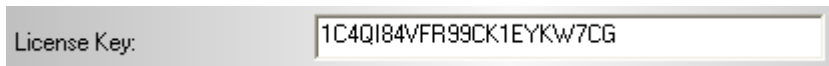
The **Transfer OUT** button will be enabled. Click on it to transfer out.



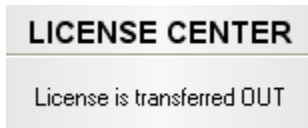
This will generate a new *License Key* that can be used on the destination machine. It is crucial that this string is copied before closing down the LC. You will get this warning:



Click OK and copy the *License Key* to a file or a piece of paper.



The license has now been effectively removed from the source machine.

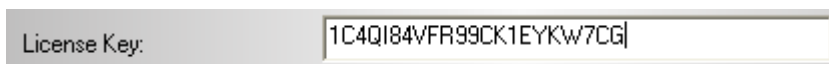


The **RUN** button has turned into **EXIT**:



### On the destination machine

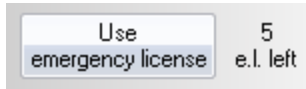
Paste or type in the License Key:



The "Transfer IN" button will be enabled:  
Click on it to complete the process.



## Emergency License



In addition to the regular license, Groove Detective also provides 5 emergency licenses, good for 7 days each, in case something goes wrong with the transfer process. This can happen if the activation server goes down in the time between transfer OUT and transfer IN. (Servers have scheduled downtime for maintenance on a regular basis, so this is not an unlikely scenario.)

If a license has been transferred out, the “Use emergency license” button will be enabled.

Click on it to activate a license for 7 days.