System9
PATTERN SEQUENCER
Version 1.5

Operation Manual

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Re
Rack Extension
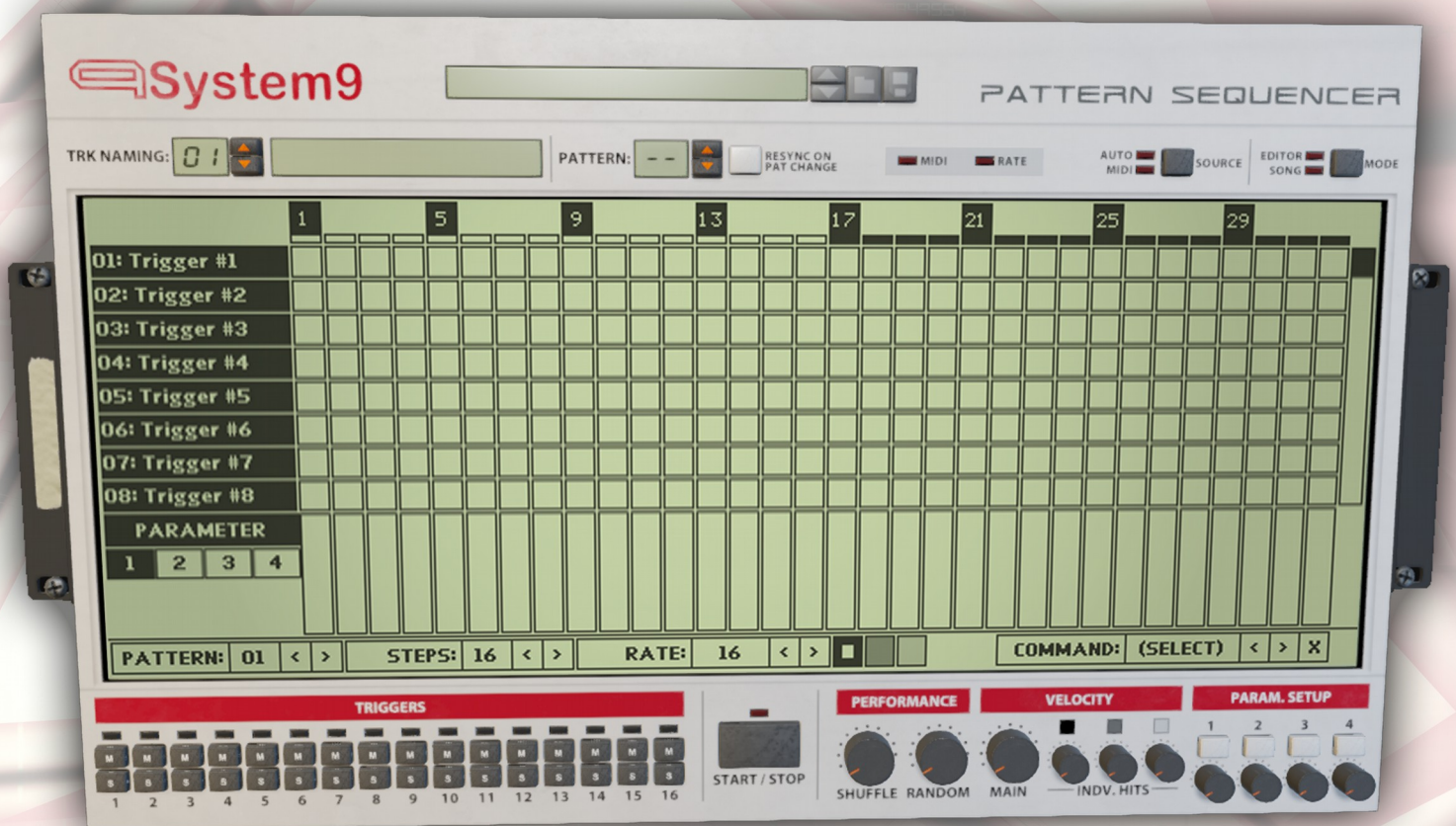
1. Welcome to System 9 Pattern Sequencer

We would like to welcome you to our new Rack Extension, System 9! A multi pattern sequencer for the Reason Rack!

About a year ago, in early 2014, we introduced Mercury 4 Voice Polyphonic arpeggiator, a device that opened new ways for composers to "animate" their chords and inspired them to make beautiful new music. In 2015 Quadelectra returns with Mercury's trigger sequencer counterpart.

System 9 aims to be a very helpful assistant, for every musician who needs a flexible way to arrange their beats, create interesting sequencing patterns, beat offset effects etc.

We hope you enjoy using your new System 9 device.

1.1. Why System 9?

Quadelectra System 9 is the first multiple pattern sequencer for Reason. Yes "multiple pattern"! This means that you can create up to 16 different patterns, and sequence them using either Reason's automation, or even your MIDI keyboard!

Quadelectra System 9 uses Reason's SDK 2.0 custom displays, to achieve a variety of functions, that were previously unavailable, with the SDK 1.0. The first and foremost function is the device's Pattern Editor which, of course, is used to compose patterns.

2. Working With System 9 Pattern Sequencer

As mentioned before in its full name, System 9 works with the use of patterns.

A pattern is an independent "piece" of music (or better yet rhythm), that can be triggered by either the host's automation, or a MIDI event. By triggering patterns one after the other you have a very flexible way of constructing beats in your track.

Since System 9's sequencer references to the same pattern, no matter how many times you use it, making a change to that pattern will reflect to all the times it is played within your song.

Pattern sequencing resembles a lot to Reason's "Blocks" function, where pieces of an arrangement assemble the final track. System 9 allows you to employ this functionality for all of its connected target devices. These can be any device that supports gate triggering, drum machines, drum modules, or even synthesizers.
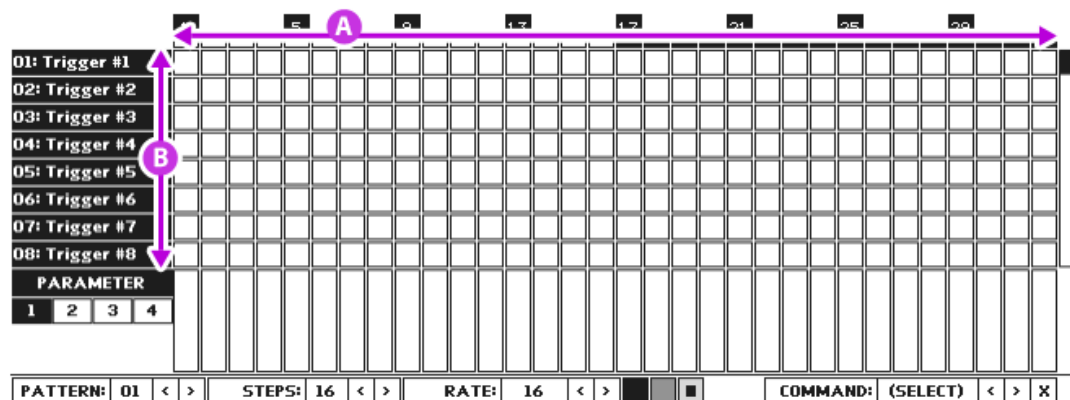
fig.2.a: The Pattern Editor screen.

Pattern composition is performed by enabling or disabling step cells, inside a matrix, where the horizontal axis is divided in 32 equal time segments *(A)*, and the vertical axis consists of 16 available CV trigger targets *(B)*. By adding a "hit" -clicking a blank step- inside this matrix, you tell the sequencer to activate a CV "current" on a specified vertical trigger and time segment whenever the current pattern is played. The trigger targets are connected using the CV trigger output attachments, at the back of the device.

A System 9 pattern consists of **16 available triggers**, **32 steps per trigger**, plus **4 Independent Curve Parameters** -again 32 steps each.

The curve parameters work in a similar manner to the Matrix or Mercury equivalents. You can assign them in any modulation CV Input target you wish, using the 4 designated CV Parameter Outputs at the back.

Let's see a more detailed schematic of the pattern editor, and identify the various regions, from which it's compartmented:
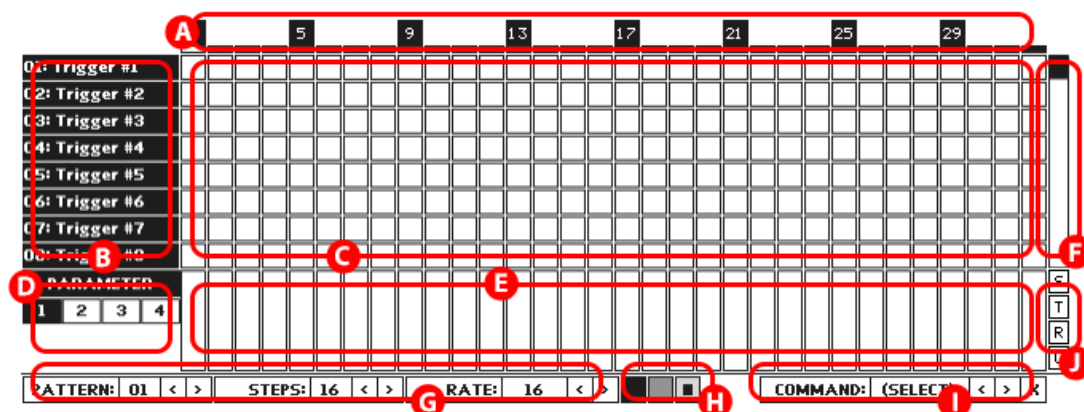

fig.2.b: The Pattern Editor regions

A) **Step Measure Strip:** The measure strip, provides visual feedback about the pattern step size, and the timing division of the pattern.

B) **Trigger Name Column:** This column shows the trigger names, for all triggers. Note that only 8 triggers can be visible at a time. You use the scrollbar ("F") to scroll through all 16 triggers.

C) **Step Designer Matrix:** The step matrix is where you "design" your pattern. You do this by clicking step-cells on or off. There are three types of hits, deferring in velocity strength, to chose from. To chose between these types of steps you click-select the desired from the step palette (See "H").

D) **Curve Parameter Switches:** To switch between the four independent parameters of each pattern, you click the switches marked 1-4 under the "PARAMETER" label at the bottom left of the editor screen. Note that the polarity and the effect scale of each parameter is further defined by the "Parameter Setup" section, discussed in chapter 3.10.

E) **Curve Parameter Steps:** This is a row of gradable value steps. You alter the amount of each parameter step by either clicking or dragging the mouse pointer, pretty much like the Curve functionality in Reason's Matrix.

F) **Scroll Track:** Since only 8 trigger rows are visible at the display the scroll track is used to scroll through the entire range of triggers. You can click, or drag the scrollbar to chose the desired range.

G) **Pattern & Pattern Info:** This region consists of three spinner controls, that alter the edited pattern and its generic properties.

   a. **Pattern:** You can select which pattern you edit by clicking the left-right spinner of the display next to "PATTERN" textbox. As mentioned before there are 16 available patterns.

   b. **Steps:** Use the step control to define the number of steps, your pattern uses. Each pattern can have a different pattern size.

   c. **Rate:** The rate control should be used to set the time period for each step. Values should be interpreted as 1/x where x is the number indicated by the control. For example 16 means one-sixteenth (1/16).

   A pattern's total playing time is defined as [rate] x [step count].

H) **Step Hit Palette:** You have the ability to draw three different steps, in terms of velocity strength, in the step matrix. To chose which one you want to draw, you should click one of the three blocks on the step hit palette.

   Note that hit strength types are common for all patterns, yet they are customizable, automatable and can be set in the "Velocity" section (See 3.9).

I) **Pattern Commands:** You can apply a set of commands to each pattern or even commands between patterns. To select the command you wish to apply, click the Left & Right arrows next to the "Command" control, and then click on the "X" button to execute. Further discussion on commands, can be found at section 2.4.

J) **Parameter Presets:** In version 1.5 you can initialize a parameter using one of the four available presets.

   a. **S (Sine):** Initializes the parameter values to a sinewave.

   b. **T (Triangle):** Initializes the parameter to a triangle.

c. **R (Ramp):** Initializes the parameter to a down-ramp

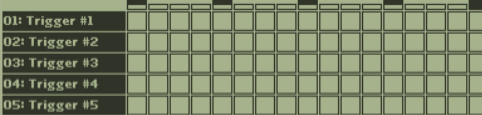d. **U (U-curve):** Initializes the parameter to a Unipolar Curve.

Initialization will affect only the parameter steps between the start and the pattern length. The preset itself will try to fit its entire shape to the given length.

2.1. Changing Trigger Names

Since triggers can be connected to various CV trigger targets (and not necessarily coming from one machine). naming them helps to have a clear picture on what goes where, in your pattern editor.
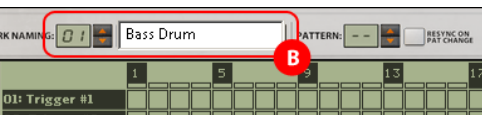
To name a trigger do the following:

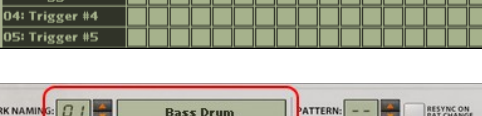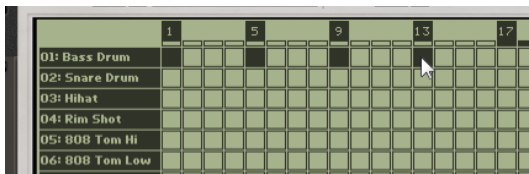|		
A		Use the up-down spinner, next to "TRK NAME" (Track Name) to select the trigger you wish to name. Then click on the name LCD display on the right of the spinner.
B		Type the new name for the trigger and hit enter (Tip: Use something distinctive).
C		The name changes in both, the name LCD display, and the step matrix trigger column.
D		Repeat the procedure as needed.

2.2. Working With the Step Sequencer

The main feature that you'll use the most when designing / composing patterns is the step designer. In order to enter step-cell events, proceed as follows:
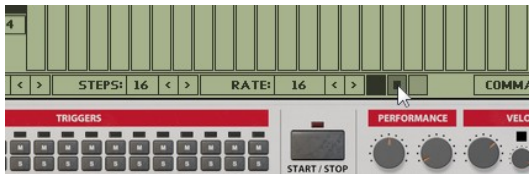
A Draw a set of desired steps by clicking on the appropriate step cells. Clicking an already set step, unsets it.

(Tip: The Measure Strip at the top, can help you a lot, in finding the beats of each bar).

B To change a drum hit, go to the "Step Palette" and click, the desired step.

C Continue plotting the rest of your beat, using the new step hit you've selected.

Again; you can unset a previously set step by clicking on it.

Note that by default, the step hits, are -in a sense- "shade-coded". Meaning that the black ones are the strongest, and the rest are degraded by 33% each. Sticking to this rule, is not required, since you can adjust each step hit to whatever value you like, using the knobs in the "Velocity" section (See Chapter 3.10).

2.3. Working With Curve Parameters

Curve parameters, are useful for creating synchronous modulation changes to external device parameters, using their modulation CV Inputs.

For example you can use a curve parameter to modulate the cutoff frequency of a filter that filters your drums, according to the pattern step being played.
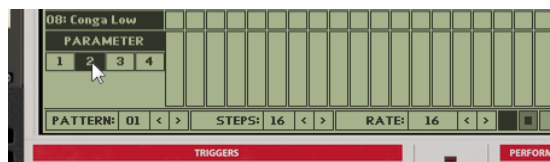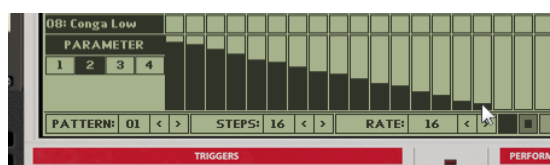
To work with curve parameters:

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A
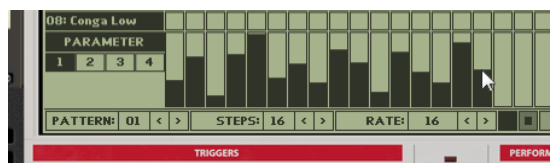
Click or drag the mouse pointer over the Curve Parameter Row steps, to draw a curve pattern.

B

You can switch between parameters by clicking the selector switches 1-4 under the "PARAMETER" label.

C

Here's another example of a freehand drawn, ramp down curve pattern.

D
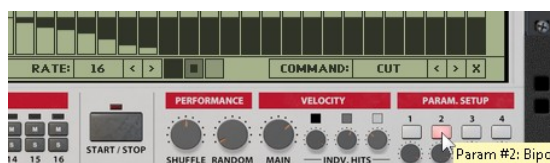
You can switch a pattern in either unipolar (default) or bipolar mode, by clicking the appropriate "Bipolar Switch" button.

E
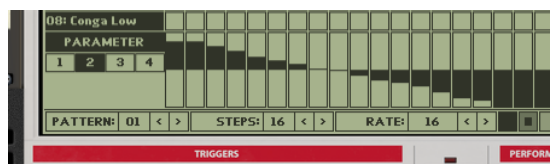
The Pattern Editor acknowledges the change and redraws the parameter representation in the appropriate range.

2.4. Pattern Functions

Quadelectra System 9 Provides a set of functions for manipulating patterns. Depending on the function, patterns are affected partially or as a whole.

To select and execute a function do as follows:

A

Use the arrow keys to navigate through the command menu.

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When the desired command appears click the "X" (Execute) button to execute it.

System 9 supports 8 different commands:

1. **(NONE):** No command is selected or executed.

2. **CUT:** Inserts the current pattern data to the pattern buffer for further use, and then clears the pattern. Use this function if you intent to move the data of one pattern to another, using the paste command.

3. **COPY:** Inserts the current pattern data to the pattern buffer, for further use. Use this function if you intent to copy data from one pattern to another, using the paste command.

4. **PASTE:** Pastes a previously Cut or Copied pattern, to the currently selected pattern number.

5. **SH. LEFT (Shift Left):** Shifts a pattern one step to the left. Shifting occurs only to the events inside the playable part of the pattern (i.e. from the first step to the step indicated by "STEP" count control). After shifting, the first step's data are moved to the last active step of the pattern. Steps higher than the pattern's step count remain unaffected.

6. **SH. RIGHT (Shift Right):** Shifts a pattern one step to the right. Shifting occurs only to the events inside the playable part of the pattern (i.e. from the first step to the step indicated by "STEP" count control). After shifting, the last active step's data are moved to the first step of the pattern. Steps higher than the pattern's step count remain unaffected.

7. **REVERSE:** Reverses the steps of the pattern, so that the first step becomes last, the second becomes the one before the last, etc. The reverse procedure occurs only in the active steps of a pattern (i.e. from the first step to the step indicated by "STEP" count control). Steps higher than the pattern's step count remain unaffected.

8. **INV PMT:** Inverts the value for each step of current parameter on the current pattern. On unipolar parameters the step values are converted to their complement-of-one. In bipolar parameters, the

values are toggled from negative to positive and vice-versa.

9. **RANDOM:** Randomizes the entire pattern. This includes all step-cells and all parameter values of the pattern.

10. **CLEAR:** Clears the entire pattern data. This affects all the steps and the data of the pattern.

2.5. Song Modes, Pattern Sources And Synchronization

System 9 Multiple Pattern Sequencer, operates in 2 different modes. Each is suited for a specific operation. A switch located at the top right of the device determines the operation mode. These are the two modes are supported:

1. **Song Mode:** When in song mode, the device "obeys" to pattern change events from MIDI or automation. This is the "formal" operation mode of the System 9 Device, since its used for sequencing patterns in an arrangement.

2. **Editor Mode:** Device is locked to the currently edited pattern. Possible changes to the pattern number from automation or MIDI are ignored. You use the edit mode to audit the currently edited pattern, either by starting playback from System 9, or Reason.

When in "Song Mode" there are two sources you can use to change and sequence patterns. These are:

1. **Auto (Automation) Source:** The device will use the dedicated "Song Pattern Selection" host automation parameter to select the pattern to playback. The selection range contains 17 possible values, where numbers 1-16 are the possible pattern numbers, and 0 is silence.
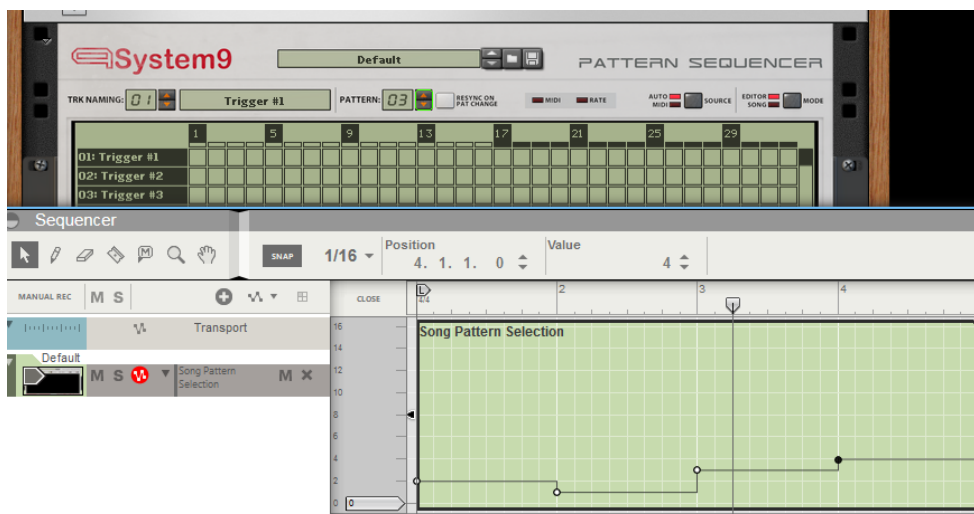
2. **MIDI Source:** Under MIDI Mode the device will use MIDI key events to trigger patterns. White keys from C3 (36) to D5 (62) will trigger patterns from 1-16 respectively. If multiple keys are pressed the one with the higher priority will be preferred.

   See APPENDIX II for more details on MIDI key triggers.

2.6. Muting & Soloing Triggers

You can solo a specific, or mute a number of triggers in real-time.

This function is very helpful when you want to pay close attention to specific tracks on your pattern without the distraction of the rest.

Also muting and soloing are automatable, which means of course that you can use it as part of you track. Muting and un-muting hi hats, the bass drum, percussion etc.

To mute, un-mute or solo a track do the following:
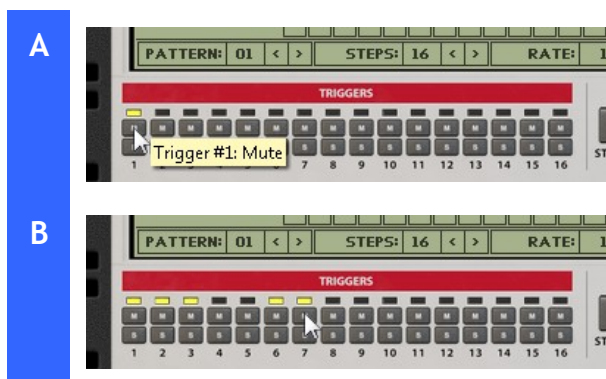
| A | | At the "Triggers" section, on the bottom left of the device, click the "M" button on the desired trigger you wish to mute. |
| B | | You can repeat this process for as many triggers as you want. |

To solo a trigger, click on the "S" button on the desired track you wish to solo.
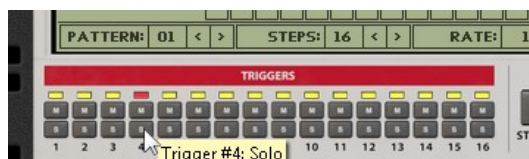
Relative & Absolute Modes: Since version 1.5 we added an "Absolute Mode" for muting and soloing, in order to settle the misinterpreted -legacy- "Relative Mode" of version 1.0 (which actually was a bad implementation on our side and could lead to complex situations).

The new "Absolute Mode" is more comprehensive -especially for automation, and offers multiple soloing.

NOTE: You can still use the legacy "Relative Mode" if needed, by flipping the corresponding switch at the Rear Panel of the Device. See Chapter 4.2 for more information.

NOTE: In relative (legacy) mode solo works only for a single trigger. Soloing another trigger, will mute the previous. When un-soloing a trigger, the previous mute configuration -the triggers you may have previously muted- is restored.

3. Front Panel

Below is an outline of the System 9 Front Panel, identifying the main areas of the device. Most of the functionality on these regions has been discussed in the previous chapter, so we urge you to read it thoroughly, as well, if you haven't done so, yet.
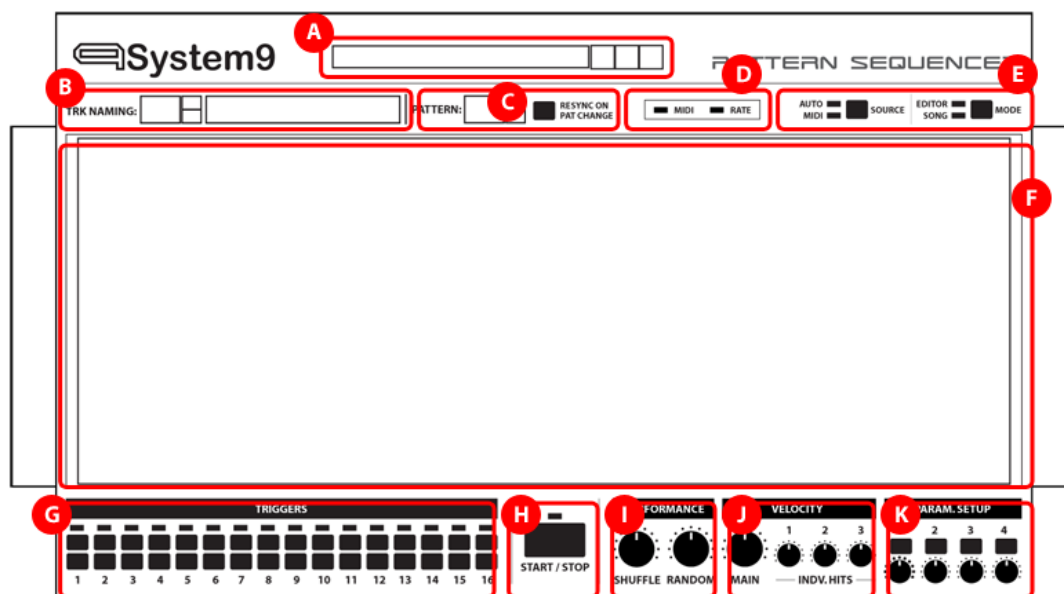
fig.3.a: The front panel outline, and the various sections.

There are 10 main areas from which the front panel is compartmented.

These areas are discussed right below.

3.1. Patch Browser (A)

This is the standard patch browser found in other Reason devices. As expected you can browse, load or save System 9 patches through it.

3.2. Trigger Naming (B)

Trigger naming provides a mechanism to rename the trigger names of the controlled target devices from within the System 9 pattern editor.

There are two controls used in this section:

1. **Up-Down Spinner & Display:** Use the up-down spinner and display to select which trigger you wish to rename.

2. **LCD Name Textbox:** Click on the LCD text box to rename the trigger you have selected.

See Chapter 2.1 Changing Trigger Names

3.3. Pattern Options (C)

The pattern options expose two controls:

3. **Pattern Number Display & Spinner**: This spinner and display are the visual representation of the "Song Pattern Selection" Automation. The displayed pattern is always the one selected by that parameter.

   Note that when using MIDI pattern source, or Edit Mode this indication does not reflect any pattern changes.

4. **Resync On Pattern Change Switch:** When this switch is enabled, played back patterns will always start from the first step upon change. If disabled, each pattern will start on the succeeding step, according to pattern rate and step count.

3.4. Notification LEDs (D)

This section provides visual feedback for the current pattern rate, and MIDI events. There are two LEDs that indicate these activities:

1. **MIDI LED:** The led lits up upon any MIDI key press or release.

2. **Rate LED:** This led flashes whenever a step changes.

3.5. Operation Mode & Song Source (E)

The device operates in two modes. The "Mode" switch allows the user to select the desired one. The two modes are:

1. **Song Mode:** The "formal" mode of the device, that allows pattern sequencing, for your track.

2. **Editor Mode:** This is suitable for editing your pattern data, since it ignores any pattern change events, and plays back only the currently edited pattern.

While in song mode, you have the ability to select between two available event sources to control pattern changes. The "Source" (Pattern Source) switch enables you to select the desired source.

1. **Auto (Automation):** Pattern changes will be made using the host automation parameter "Song Pattern Selection". In this mode you can select between 16 possible values on the automation parameter, or the value '0' to "tell" System 9 to silence.

2. **MIDI:** Pattern changes will be made using MIDI key press and release events on your keyboard or Key Editor. In MIDI mode a pattern is heard for as long as you keep its mapped key pressed. If no MIDI keys are pressed the device remains silent. When multiple keys are pressed the highest key precedes and triggers its corresponding pattern.

3.6. Pattern Editor Screen (F)

The pattern editor LCD screen is where all the pattern editing takes place. From this screen you can perform all sorts of edits on the patterns, such as step editing and curve parameter editing. Or altering the rate and the step count of each pattern, run commands etc.

These topics are discussed further in section 2 ("Working With System 9 Sequencer")

3.7. Trigger Options (G)

Trigger Options is where you get visual feedback of all trigger activity and you can mute or solo specific triggers. While you can mute any number of triggers, you can solo only one.

The controls on this section are vertically split up in to 16 subdivisions, each one corresponding to one trigger.

Each section has:

1. **Multicolor LED:** This multicolor led will flash in green each time a trigger is activated, to provide a visual feedback on the current trigger activity. Furthermore it will lit constantly to yellow, in case the specified trigger is muted, or in red if the trigger is soloed.

2. **M Switch (Mute):** Click on this switch to enable / disable mute state on a specified trigger. Muted triggers do not provide visual feedback, as their activity is ignored.

3. **S Switch (Solo):** Click the solo switch to select a single trigger to solo. When a trigger is soloed, all others will automatically enter the

mute state. The soloed led flashes off instantly, to provide a visual feedback of the soloed trigger's activity.

All mute and solo switches are automatable, so you can add mute and solo actions as part of your song.

Soloing and muting is further discussed in section 2.6 ("Muting & Soloing Triggers").

3.8. Sequencer Start / Stop (H)

Quadelectra System 9 sequencer can run either as master or as a slave.

The host (Reason) is responsible for each of these states. This means that while Reason is playing, System 9 will always behave as slave to the host's track settings.

When Reason transport is stopped, you can use System 9 in master mode, which means that you can start or stop playback, by pressing the "Start / Stop" button. The LED above the "Start / Stop" button will always lit when the device is playing either as master or as slave.

Hitting "Play" on Reason, while System 9 is playing will cause it to immediately turn to slave mode.

Wrapping it all up, there are two controls in this section:

1. **Start / Stop Button:** When in master mode (with Reason transport stopped), you use this button to start and stop sequencer playback.

   When in slave mode (Reason transport playing) this button has no effect.

2. **Status LED:** This led is located immediately above the "Start / Stop" Button. It will always reflect the playback status. Lit if the sequencer is playing, or unlit if the sequencer is stopped.

3.9. Performance (I)

Performance Controls affect properties related to the way System 9 sequencer processes its timing events. There are two knobs that manage these settings:

1. **Shuffle:** The shuffle (or swing) knob adds a syncopated feel to the sequencer playback. At 50% there is no effect. But turning the knob

clockwise or counter-clockwise to values less or more than 50% will either tighten (pull back in time) or loosen up (push forward in time) "even" sequencer steps.

The result is a syncopated feel to the pattern's groove.

2. **Random:** The random (or humanize) knob adds a random delay to each step event, thus adding a human, imperfection and feel to the currently played pattern.

   Value is presented as a percentage of the available length between steps. Therefore the random delay cannot be higher than the time span of a single step.

3.10. Velocity (J)

The "Velocity" section gives you control over the various hit velocities used by the step sequencer.

In particular there are four different knobs:

1. **Main:** This knob controls the overall value for all trigger velocities.

2. **Hit #1 Velocity (Black):** The knob controls the velocity of the Strong Hit, appearing as a black step cell on the matrix.

3. **Hit #2 Velocity (Dark Gray):** The knob controls the velocity of the Medium Hit, appearing as a dark grayed step cell on the matrix.

4. **Hit #3 Velocity (Light Gray):** The knob controls the velocity of the Weak Hit, appearing as a light grayed step cell on the matrix.

All knobs range from 0 to 127. This means that although by default "shade-coding" reflects to the strength of the hits, you can change this rule entirely.

All velocity hit settings are automatable, so that hit velocity changes can be changed and recorded as a part of your track.

3.11. Parameter Setup (K)

The "Parameter Setup" section gives you overall control over the curve parameters from all patterns. Vertically this section is split up in to four different subsections, each one corresponding to one of the four custom parameters.

For shaping each parameter, there are two available controls.

1. **Bipolar Switch:** When enabled, this switch changes the polarity of the selected parameter to bipolar. When disabled, the parameter conforms to the unipolar value range.

   Note that, for your convenience, the pattern editor reflects the polarity change, in the pattern curve.

2. **Scaling Knob:** The scaling knob, adjusts the actual modulation amount that will pass through, to the CV output of each parameter. This knob snaps in the middle where no amount passes through to the CV output. Scaling appears as a bi-directional percentage amount (i.e a range from -100% to +100%).

   A positive amount of scaling works as expected: A multiplicand of the parameter values from the pattern editor, of the given parameter.

   However when scaling is set to a negative value, it works differently in respect to the parameter's polarity mode:

   a. On a bipolar parameter: Negative scaling will reverse the polarity and multiply the signal by the absolute percentage value.

   b. On a unipolar parameter: Negative scaling will calculate a complement of one for each step value, and then multiply it by the absolute scaling value.

4. Back Panel

System9 back panel has two main regions of interest as the outline below shows:
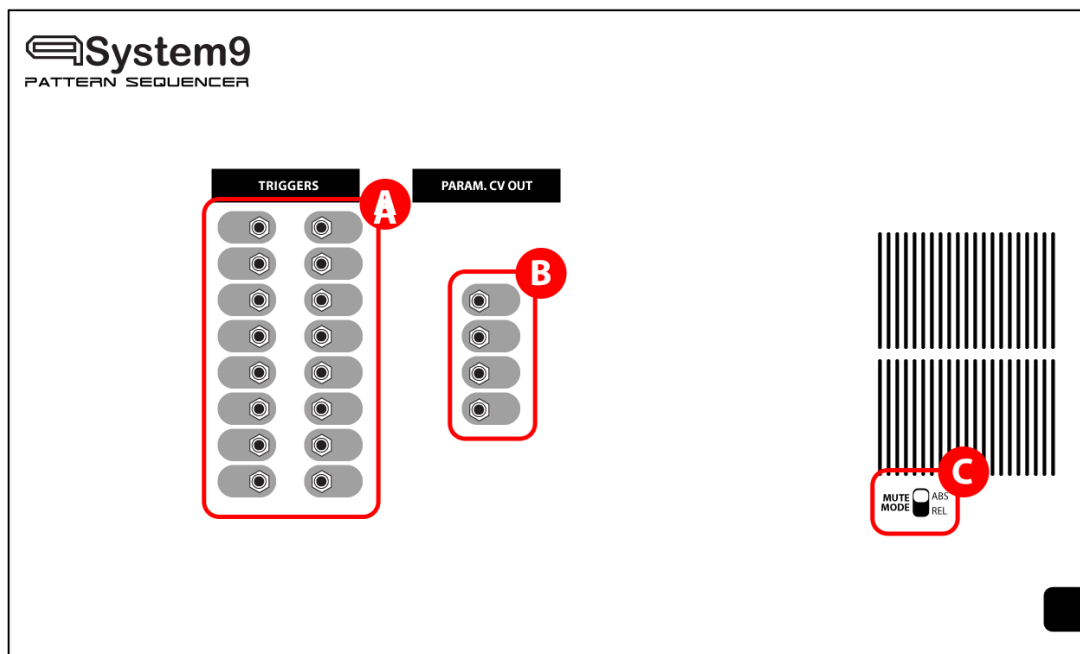
4.1. Trigger CV Gate Outputs (A)

As mentioned before, System9 provides a set of 16 independent triggers that can be connected to any reason instrument, that supports Gate input CV signals. These are the 16 CV trigger outputs on which you connect the target device(s).

4.2. Parameter CV Outputs (B)

The four custom parameters, that System 9 provides for all patterns, transmit their CV signals from these four Parameter CV outputs.

4.2. Mute / Solo Automation Mode (C)

The "Mute Mode" switch is a new addition in version 1.5, and it aims to straighten and fix the issues caused by the previous implementation for muting and soloing tracks which could become very complex especially in cases where automation was introduced to the device.

The switch has two positions:

1. Absolute Mode: Absolute mode is the new solo / mute operation introduced in version 1.5. Its more comprehensive, and offers soloing for multiple channels. We encourage you to use this setting!

2. Relative Mode: This is the legacy mode from v1.0. You should use this only if you have have tracks that use automation created in version 1.0. We also suggest to port these automation settings to the Absolute Mode.

The difference between Relative and Absolute Mode, is that in Relative Mode, whenever you push a button you change (toggle) the mute / solo state in the mixer. Although this might seem harmless, when automation is introduced things can get complicated.

In future versions of System 9 This switch will be removed and the "Absolute Mode" will become the only way to handle and automate trigger mute and solo.

APPENDIX I: MIDI CC

MIDI CC	Parameter
16	Song Pattern Number
18	Pattern Source Select
80	Drum Hit: Master Level
81	Drum Hit: Strong Hit Level
82	Drum Hit: Medium Hit Level
83	Drum Hit: Weak Hit Level
91	Parameter #1: Scaling Knob
92	Parameter #2: Scaling Knob
93	Parameter #3: Scaling Knob
94	Parameter #4: Scaling Knob
128	Shuffle
129	Humanize
140	Trigger #1: Mute
141	Trigger #2: Mute
142	Trigger #3: Mute
143	Trigger #4: Mute
144	Trigger #5: Mute
145	Trigger #6: Mute
146	Trigger #7: Mute
147	Trigger #8: Mute
148	Trigger #9: Mute
149	Trigger #10: Mute

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150	Trigger #11: Mute
151	Trigger #12: Mute
152	Trigger #13: Mute
153	Trigger #14: Mute
154	Trigger #15: Mute
155	Trigger #16: Mute
160	Trigger #1: Solo
161	Trigger #2: Solo
162	Trigger #3: Solo
163	Trigger #4: Solo
164	Trigger #5: Solo
165	Trigger #6: Solo
166	Trigger #7: Solo
167	Trigger #8: Solo
168	Trigger #9: Solo
169	Trigger #10: Solo
170	Trigger #11: Solo
171	Trigger #12: Solo
172	Trigger #13: Solo
173	Trigger #14: Solo
174	Trigger #15: Mute
175	Trigger #16: Mute
180	Parameter #1: Bipolar Switch
181	Parameter #2: Bipolar Switch
182	Parameter #3: Bipolar Switch

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183	Parameter #4: Bipolar Switch

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APPENDIX II: MIDI Key Pattern Assignments

Key	Pattern
C1 (36)	Pattern #1
C#1 (37)	
D1 (38)	Pattern #2
D#1 (39)	
E1 (40)	Pattern #3
F1 (41)	Pattern #4
F#1 (42)	
G1 (43)	Pattern #5
G#1 (44)	
A1 (45)	Pattern #6
A#1 (46)	
B1 (47)	Pattern #7
C2 (48)	Pattern #8
C#2 (49)	
D2 (50)	Pattern #9
D#2 (51)	
E2 (52)	Pattern #10
F2 (53)	Pattern #11
F#2 (54)	
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G#2 (56)	
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