PSYCLONE

Dual Rotary Speaker

v1.0.1

Produced, Coded and Designed by Matt Black

AVAILABLE IN THE propellerhead shop

www.jiggery-pokery.com

Re Rack Extension

Psyclone Dual Rotary Speaker

Inspired by the rotary speaker simulation created for our *Combo B3T*, we now present it as a dedicated effect.

What is a rotary speaker?

A rotary speaker is, simply, a speaker that fires into a rotating cone, creating a dynamic chorus/tremolo effect. A cabinet may contain one or two speakers, each firing into their own rotating cone or scoop.

The classic Leslie models—122 or 145—have two speakers, a 15" to handle bass and a 2" for the treble, with a crossover point between them at 800 Hz; this means frequencies below 800 Hz are the bass frequencies sent to the Rotor, frequencies higher than 800 Hz are treble frequencies sent to the Horn. The bass speaker is known as the "rotor", the treble speaker is typically called the "horn". The cones these speakers fire into spin in opposite directions, at different speeds. Together with microphone placement, these create a number of different harmonic effects on audio sent through them:

- The most obvious effect is the tremolo, the rise and fall of the sound level as the rotors face towards and away from the microphones (amplitude modulation)
- As the direction of the sound waves change in relation to the microphone/listener there is a Doppler effect (frequency modulation/vibrato)
- The cabinet will have its own particular internal reverberation characteristic, which also creates a chorusing effect

For rotary speakers with two speed settings, Slow, also known as "chorale" or "chorus", is typically around 40rpm; Fast, aka "tremolo", is around 340rpm.

Invented in 1939 by Don Leslie, the rotary speaker is mostly synonymous with the sound of Hammond organs, but is often also used by guitarists, and makes a great effect on piano too ("Echoes").

While Leslie eventually marketed his speaker as the Vibratone, the moniker "Leslie" quickly stuck, and by the 1950s his rotary speakers were sold under his own name. The Vibratone name would be resurrected in the late 1960s by CBS/Fender.

Psyclone overview

Psyclone makes it easy for you to control and shape the rotary sound to your needs, whether it's adding more distortion, reducing the chorusing or reverb, or turning the dual rotors into a single rotor setup, such as the Leslie 125 or Fender Vibratone. The main controls for the rotors and amp are on the front panel. An additional "Advanced Cabinet" page with extra chorus adjustments are hidden behind the speaker grille.

A number of presets are available from the patch selector for both dual and single rotor setups. Single rotors are ideal for the transistor organs of our wonderful Combo range of Rack Extensions.

Rotary Controls

Bypass/On/Off Switch

Your common-or-garden bypass switch.

Run

This will turn the rotary effect off and on. Normally leave this "On", but you can switch this to "Off" if you want to quickly disable all rotary effects yet leave the amp section enabled.

Speed

This is the most important control, and is a traditional three-mode switch. In the low position, the speed of the rotors will be "Slow" (chorale), and in the high position it will be "Fast" (tremolo). In the middle position, "Brake", it stops the rotary movement. Having **Run** "On" but with the brake applied creates a stereo but still static sound. The stereo width here partly depends on the angle of the rotors at the point they stopped, which is just unpredictable enough to impart some useful randomness into braked output. It's a useful trick: just because it is a rotary speaker, does not mean it has to rotate!

"Mod Wheel Mode"

Skipping past the "Belt" section for a paragraph or three, you can switch the **Speed** knob to "Mod Wheel" by enabling the **Mod Wheel Speed Override** button. If the *Psyclone* device is the active track in the sequencer, you can now use your Mod Wheel to adjust the Speed ("Brake" covers the middle third of the range). This is useful for recording **Speed** quickly from your controller [1].

Likewise, if you enable "Mod Wheel" for the device in a Combinator, as shown here, you can control the speed with a modwheel ***and*** play the instrument at the same time! (Beware you may have to *un*tick Mod.W. for the instrument *if* that has an active effect applied, which our *Combo Compact* here doesn't).

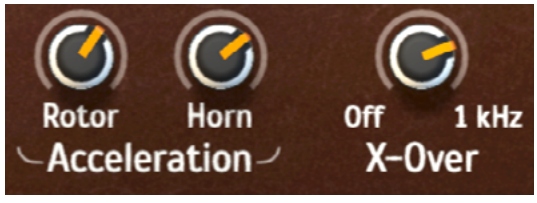
You'll notice that in Mod Wheel Mode, the main **Speed** knob changes to a cream colour to help indicate the different control mode, although unfortunately this can't be done on the folded view.

[1] Having a standard property value allows us to store that value in presets and song files. If you switch to "Mod Wheel" mode, remember that it will always default to zero (i.e. "Slow") unless you have recorded and saved modulation wheel automation for the device in the active file.

Belt

The speed of the rotors can be adjusted using the **Pulley Select** selector. The middle position is the default; press "High" to increase the speed slightly over the default, or press "Low" to reduce it slightly from the default. Press "Mid" to return to the default value. The individual belts for the Rotor and Horn can also be disabled or enabled as required. Indeed, a common modification for Hammond organ performers was to disable the rotation of the Rotor. Here we can simply switch **Rotor Belt** or **Horn Belt** off.

Acceleration



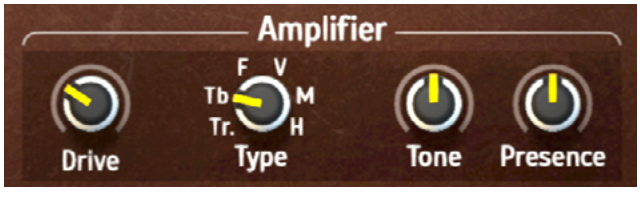
These two knobs adjust the speed at which the Rotor and Horn respectively reach a new **Speed** from current one (or from the Brake position). Higher values are faster to reach the new speed.

X-Over

You can tweak the crossover point between the Rotor and Horn by adjusting the **X-Over**. Normally you can leave this at the traditional 800 Hz default value, but in particular for single rotors set this to "Off" to route the full frequency range to only the Horn. In this scenario we recommend that **Mic Height** is to maximum, otherwise you may notice a drop in levels as there's no audio through the Rotor (i.e. you'd be balancing the **Height** towards silence at lower values).

Amp Section

This section sets up the amp.



Drive

Increase this to add distortion to the signal.

Type

A six-mode selector.

- **Tr:** Transistor, useful for solid-state amp emulation
- **Tb:** Classic tube mode for standard Leslie emulation
- **F:** A bright amp
- **V:** A lively amp
- **M:** A hot amp
- **H:** M with brown trousers

Tone / Presence

Adjust lower-mid frequency body (**Tone**) and upper-mid brightness (**Presence**).

Microphone Section

There are three controls for positioning the microphone. Two are available for basic setups:

Width

This controls the stereo width, as if placing two microphones either side of the cabinet and moving them closer to create a narrower stereo field. Reduce the **Width** for a narrower stereo field.

Height

Where you have a two rotor setup, this adjusts the balance between the lower Rotor (bass tones) and upper Horn (high frequencies). Again, note that for single rotor setups (**X-Over** "Off") we recommend setting this control to maximum.

An additional microphone control, also with a white knob, is available in the "Advanced Cabinet" editor:

Distance

The closer the mic is to the cabinet the more pronounced the tremolo effect. Increasing the **Distance** smooths out the effect so that tremolo effect is less exaggerated and feels more natural. Minimise this setting to emphasize the tremolo.

Master Section

Dry/Wet

Our favourite knob controls the amount of the Dry input and the Rotary effect signal into the output. In typical use this will be fully wet, but apply to taste as required.

Rotary Gain

Use this control to trim or boost the level of the Rotary effect into the Wet signal. This may be useful to compensate for dramatic changes in level due to adjustments of **Drive** and **Type** in the Amp section.

Advanced Cabinet

Hidden away inside the unit are some useful controls you can use to further tweak the emulation. Open up the cabinet to access these advanced controls by clicking the **Advanced Cabinet** button at the top right of the speaker grills. Other than **Mic Distance**, already described above, we have:

Size

Increase or reduce the size of the cabinet.

Scoop

This will boost or reduce the low frequencies.

Damp

Increase this to temper high frequencies. Typically there will be no need for frequencies over 10kHz; even 6kHz may suffice.

Reflect

You can adjust the amount of internal chorusing by tweaking this parameter.

Reverb

This is a simple switch providing the following options:

- **— :** This disables the internal reverb entirely, so you can apply your own reverbs pre- or post-*Psyclone*, or leave it dry
- **C+R**: Cabinet (internal reverb) and Room reverb together for the fullest sound
- **Cab**: Cabinet (internal reverb) only. Less full than the "C+R" option, with less decay than using the "Rm" option alone
- **Rm**: Room reverb only, this is also less full than "C+R", but provides slightly more decay than using the "Cab" selection

Rotary MW Instrument Template [TMA-4]

A simple Combinator with an instrument plus a *Psyclone* pre-set to "Mod Wheel Mode" is included in your download, and is available via the *Psyclone* sub-folder in the global Rack Extensions folder of the Reason patch browser.

Simply replace the example NN-XT instrument inside this Combinator with your preferred sound source and you can quickly play any instrument with your modulation wheel already set to adjust the **Rotary Speed**.

You can drag this patch into your browser's "Favourites" list for quick access!

The 25 presets are duplicated in the "Mod Wheel Mode Defaults" folder with the "Mod Wheel Mode" already enabled, so you should browse this sub-folder if you prefer using this mode, and without having to constantly re-engage it when changing presets. Do remember that all of these [MW] patches will default to "Slow" unless the your controller's (or the respective Combinator's) modulation wheel is first re-set to the maximum position.

The "Rotary MW Instrument Template" also includes a TMA-4 Commentator (which you can download free from the Propellerhead shop) which offers some handy usage reminders; however it is not required for the patch to work, and can be safely deleted.

Cyclone Compact

Both **Run** and **Speed** controls are available in the folded view. The latter will update according to whether "Mod Wheel Mode" is active or not, but due to limitations outside of our control we are unable to change the indicative knob colour as we can on the front.

Back Panel Connections

Run and **Speed** can be controlled via bipolar CV inputs. Remember that "Brake" is the middle state of **Speed**, so use a square/pulse wave type or direct CV values of -1 and 1 if you want to switch directly between only Slow and Fast.

Microphone positions can also be adjusted via external signals.

Remote Mapping

```
//Remote Map template for       Effects          Jiggery-Pokery Sound: Psyclone Dual Rotary Speaker
Scope   Jiggery Pokery    com.jiggerypokery.Psyclone
//      Control Surface Item      KeyRemotable Item
//Map   _control_         Enabled

//Map   _control_         Dry Wet Amount
//Map   _control_         Rotary Level

//Map   _control_         Rotary Run
//Map   _control_         Rotary Speed
//Map   _control_         Mod Wheel Speed Override
//Map   _control_         Pulley Select
//Map   _control_         Rotor Belt
//Map   _control_         Horn Belt
//Map   _control_         Crossover
//Map   _control_         Rotor Acceleration
//Map   _control_         Horn Acceleration

//Map   _control_         Amp Drive Amount
//Map   _control_         Amp Mode
//Map   _control_         Amp Tone Amount
//Map   _control_         Amp Presence Amount

//Map   _control_         Mic Angle
//Map   _control_         Mic Height
//Map   _control_         Mic Distance

//Map   _control_         Advanced Cabinet
//Map   _control_         Cabinet Size
//Map   _control_         Reflection
//Map   _control_         Damping
//Map   _control_         Scoop Size
//Map   _control_         Reverb
```

Version history

1.0.1

- **Initial release**

Special thanks to the Psyclone *testing crew.*

Psyclone Dual Rotary Speaker was designed, coded and assembled by Jiggery-Pokery Sound, of London, England.
Design incorporates assets by Sarah Mancuso.

Jiggery-Pokery Sound

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From the maker of ...

Rack Extensions

- **Ammo 100LA Modulation Oscillator** - Portable single-channel oscillator for audio and CV rate synthesis and LFOs, featuring 128 waveforms
- **Ammo 400R Modulation Oscillators** - 4-channel LFO generator with audio output, featuring 136 waveforms and advanced modulation mixing
- **Ammo 1200BR Modulation Synthesizer** - Advanced 4-channel LFO generator and audio synthesizer adds S&H, Comparator and Electro-Switch
- **Anansi Mid/Side Mastering Router** - Mid/side audio router with mono compatibility check, 3-in merger and 3-out splitter
- **Arjuna Dualling Flanger** - Dual stereo flanger with parallel or serial operation, and negative or positive feedback
- **Champagne SuperNova Vintage Synthesizer** - A loving and virtual recreation of the original polyphonic synth: the 1939 beast, the Novachord!
- **Charlotte Envelope Generator** - 9-stage EG with time, level, curve and velocity control per stage, and a priority-selectable MIDI-to-cv-pitch splitter
- **Chenille BBD Chorus Ensemble** - Realistic BBD chorus device, based on the 70s string synth ensembles and the classic Roland Dimension D rack unit
- **Combo 310 Unique Organ** - The legendary Dutch electronic home/church organ, best known as the "Jarre" organ of Oxygene and Equinoxe.
- **Combo B3T Organ** - The famous American tonewheel organ and Leslie combo in highly tweak-able and addictive Rack Extension format
- **Combo Compact Organ** - The classic Italian transistor organ now in a brilliant, easy to use and equally compact Rack Extension format. Bags o' fun!
- **Combo Continental Organ** - The classic British transistor organ in a fantastic Rack Extension for that instant 60s feel!
- **Combo Electric Harpsichord** - A rare example of a lovely 60s curio, the Baldwin Solid Body, aka Electric, Harpsichord!
- **Combo X~705 Space Organ** - An inspirational Frankensynth monster: an all-in-one Hammond clone, synthesizer and Rhapsody 610 string ensemble!
- **Itsy Stereo/Phase Inverter** - L/R channel flip, cv-controllable 180˚ stereo inverting width adjust, stereo phase inverters and phase correlation metering
- **JPS Harmonic Synthesizer** - Vintage additive synthesizer emulation, based on the ultra-rare RMI keyboard
- **Lolth CV Delay Splitter** - 4x4 channel cv splitter with independently adjustable gain and inversion controls, channel delay, and mirroring
- **Melodic Electric Glockenspiel** - The fabulous Czech keyboard, the deliriously delicious deep clang of the delightfully delovely Delicia Melodic
- **Miranda CV Delay Merger** - 4x4 channel cv merger with independently adjustable gain and inversion controls, channel delay, and mirroring
- **Mordred Audio Bypass Merger** - 4 x 5 channel stereo audio merger with independently switch-able outputs and auto-fade control
- **Psyclone Dual Rotary Speaker** - An advanced and dedicated rotary speaker plugin, based on the Combo B3T rotary effect
- **Shelob Audio Bypass Splitter** - 4 x 5 channel stereo audio splitter with independently switch-able outputs, mirroring, and auto-fade control
- **Steerpike BBD Delay Ensemble** - Vintage style 6-tap BBD device, with multiple delay modes including parallel, serial, and reverse
- **The Animus Shimmerverb Ensemble** - 6-channel shimmerverb, with algorithmic and convolution-based reverb into granular pitch-shifter
- **Titus BBD Delay Line** - A lightweight 1U delay device featuring a single Steerpike delay line, with reverse
- **Villanelle Killer Wah** - A convenient wah-wah device featuring multiple wah ranges, including several based on classic guitar pedals

ReFills

- **Guitars vol.1+2: Stratocaster & Telecaster** - Multi-sampled guitars with slides, mutes, signature L6 effects and keyswitching
- **Elements^2: Vector Synthesis Workstation** - Massive patch collection featuring Korg Wavestation/MS2000, Waldorf Blofeld and Roland SC-8850
- **Additions: Vintage Additive Synthesizers** - DK Synergy + Kawai K5m + Thor FM.
- **Blue Meanie: Virtually an ARP2600** - Thor and Kong-based analogue synth machine
- **Kings of Kong Classic Drum Machines*** - the premier ReFill for Reason 5+, with over 50 classic beatboxes for Kong Drum Designer
- **Retro Organs v2**- Hammond B3 + Farfisa Combo Compact + Vox Continental in one brilliant ReFill. Also available for Reason Essentials
- **B3 Tonewheels v1.5** - the original 24-bit non-Leslie samples ReFill with advanced rotary speaker emulation
- **Farfisa Combo Compact Deluxe v1.5** - the complete set of original 24-bit Farfisa samples covering, both standard and Deluxe models
- **Vox Continental v1.5** - a complete set of original samples from the classic C300 organ, featuring original and extended Continental footages
- **Hammond Novachord** - the near-antique pre-WW2 monster polyphonic valve synthesizer, in association with Hollow Sun
- **Retrospective: 40 years of Synthesizer History** - Over 1Gb of vintage samples from synths and electronic keyboards licensed from Hollow Sun

For more information on these products and for direct downloads of the latest versions, plus a wide range of great Combinator skins, please visit **www.jiggery-pokery.com**