

El Rico Loco's Leslie

Real Leslie Box

English user manual
Rotary speaker VST3 effect for
Bitwig Studio

VST3 audio effect
Windows 64-bit
RicoLoco Audio



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Quick start

This plug-in is an audio effect. Place it after an organ, synthesizer, electric piano or another instrument. It does not generate sound and does not need a standalone mode.

Insert in Bitwig

- Open an Instrument Track containing an instrument that already produces sound.
- Add RealLeslie after it in the same device chain.
- Set track monitoring as you normally use it.
- Run the plug-in in stereo for the full spatial effect.

First setting

- Set Rotor Speed to Slow.
- Leave Mix at 100% initially.
- Use Crossover near 800 Hz.
- Start with Doppler 75%, Cabinet 35%, Room 7% and Stereo 65%.
- Switch to Fast while playing and listen to the separate horn and drum acceleration.

Current project VST3 folder: C:\Users\el_ri\Documents\JUCEprojects\VST3. Add this folder to Bitwig's plug-in locations if it is not scanned yet.

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Cabinet and sliding control panel

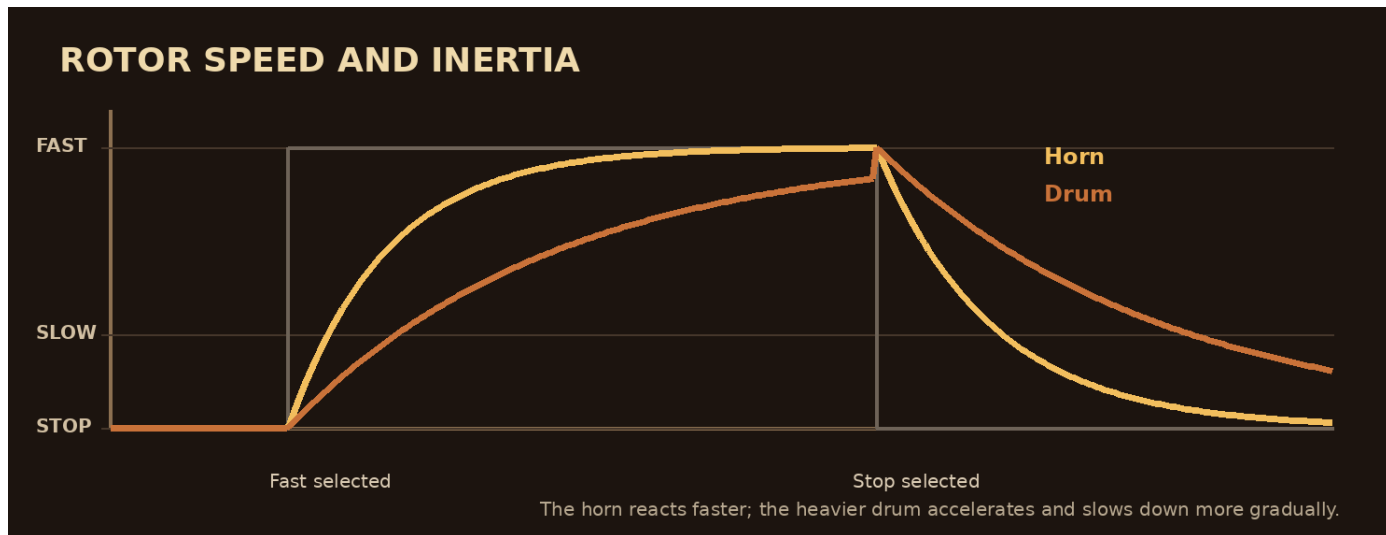


Left: compact cabinet view. Right: click SETTINGS to slide the control panel open; click CLOSE to return.

1 Settings	2 Hoorn / Horn	3 Drum	4 Rotor Speed	5 Mix
6 Doppler	7 Stereo Width	8 Room	9 Crossover	10 Horn Level
11 Drum Level	12 Cabinet	13 Fast Speed	14 Horn Reverse	15 L/R Offset

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Stop, Slow and Fast



Speeds

- Slow: horn 0.80 Hz and drum 0.65 Hz.
- Fast at 100%: horn 6.70 Hz and drum 5.80 Hz.
- Fast Speed scales both Fast rates from 50% to 150%.
- Stop sets the target speed to zero; both rotors coast down naturally.

Mechanical inertia

- The lighter horn accelerates in about 0.75 s and decelerates in about 1.40 s.
- The heavier drum accelerates in about 2.40 s and decelerates in about 4.00 s.
- The sound therefore keeps moving during transitions instead of changing speed instantly.
- The animation follows the same rotor phases used by the audio engine.

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Horn, drum and crossover



Crossover

- Splits the input signal between 400 and 1600 Hz.
- Frequencies above crossover feed the horn; lower frequencies feed the drum.
- 800 Hz is the default and a good starting point.
- A lower value sends more signal to the horn; a higher value sends more midrange to the drum.

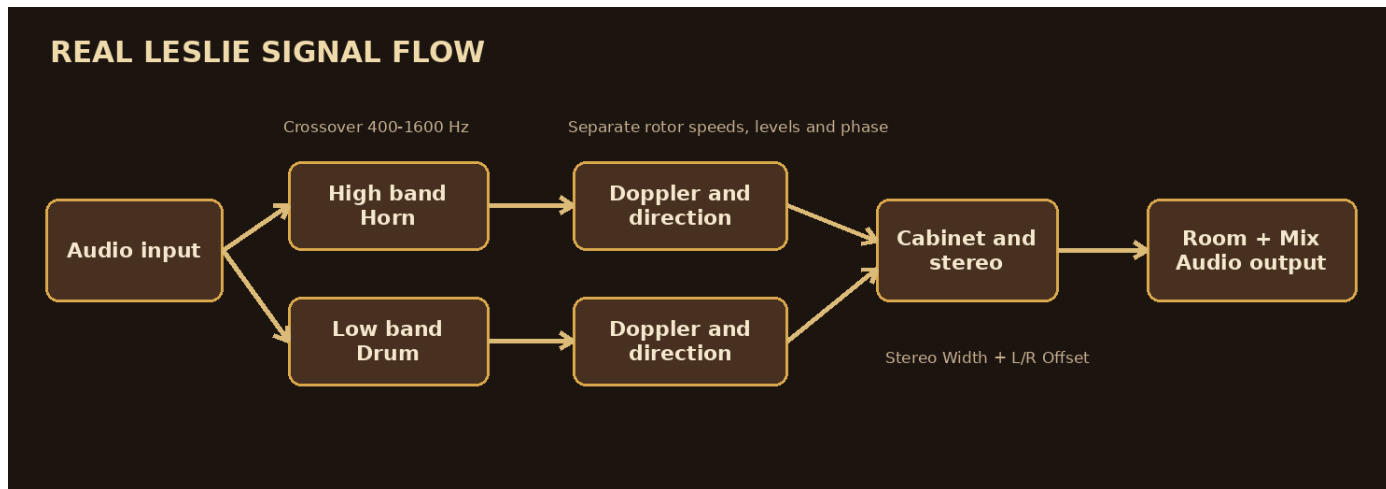
Balance and direction

- Horn Level and Drum Level range from -18 to +6 dB.
- Use the levels to balance brightness and low-frequency weight independently.
- Horn Reverse changes the horn's direction only.
- The drum keeps its normal direction, changing the interaction between the rotors.

Horn Reverse is most obvious in stereo and during Slow/Fast transitions.

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Doppler and stereo motion



Doppler

Sets the depth of the periodic delay and therefore the audible pitch movement. The horn has more Doppler depth than the drum.

L/R Offset

Introduces an extremely small speed difference between left and right. At 100%, the total difference is about 0.6%.

Stereo Width

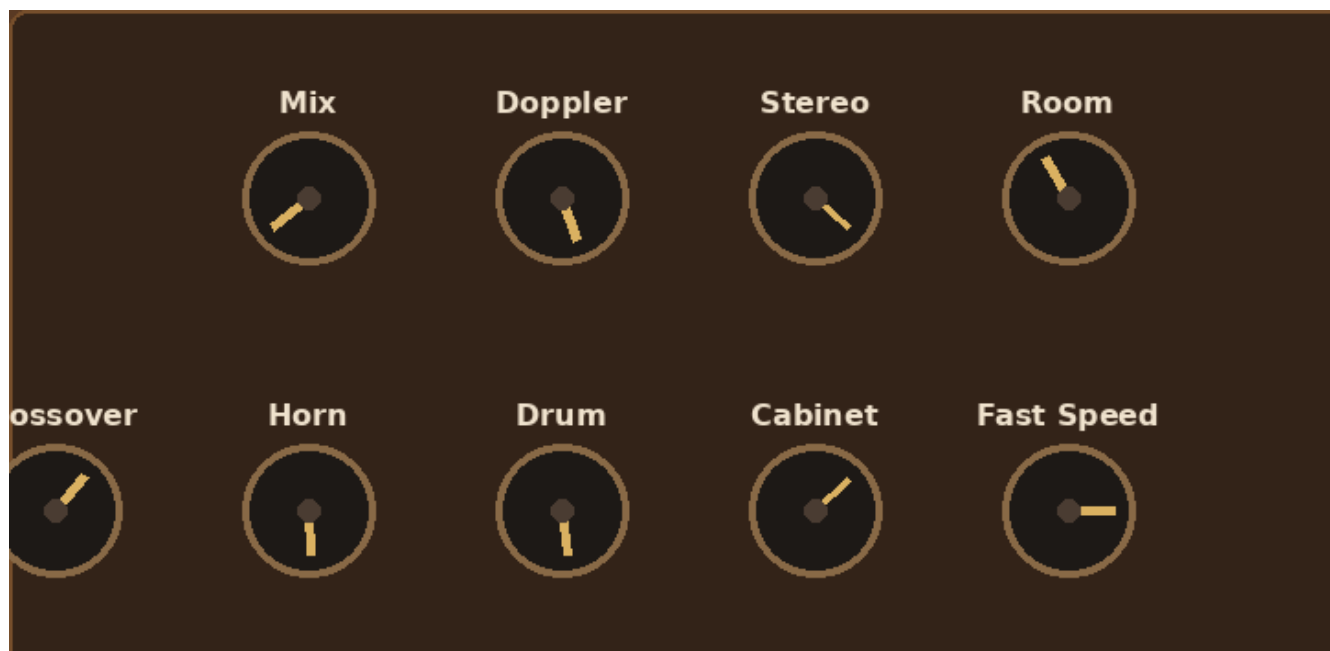
Increases the phase offset between the virtual left and right microphones and adds a small amount of crossfeed.

In practice

Use 50-75% Doppler for natural rotation. High Stereo Width and L/R Offset create a wider, livelier image but can sound pronounced on headphones.

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Mix, Cabinet and Room



Mix

- 0% is fully dry; 100% is the complete Leslie effect.
- An equal-power dry/wet curve prevents an unnecessary level dip around the middle.
- 100% is usually appropriate for organ; 35-70% can suit subtler use.

Cabinet

- Adds the tone of the wooden cabinet through several filters.
- Lower values remain more open; higher values add stronger cabinet character.
- Start near 35% and increase only after crossover and levels are balanced.

Room

- Adds a short, damped room reflection after rotation and cabinet processing.
- The 7% default keeps the sound alive without pushing it far away.
- Use more Room for solo organ and less when the DAW already supplies reverb.

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Parameter reference

Parameter	Range / choice	Default	Purpose
Rotor Speed	Stop / Slow / Fast	Slow	Three-position rotor mode
Horn Reverse	Off / On	Off	Reverses horn only
Mix	0-100%	100%	Dry/wet balance
Doppler	0-100%	75%	Pitch and delay movement
Crossover	400-1600 Hz	800 Hz	Split between drum and horn
Horn Level	-18 to +6 dB	+1.5 dB	High rotor level
Drum Level	-18 to +6 dB	+1.0 dB	Low rotor level
Cabinet	0-100%	35%	Wooden cabinet colour
Room	0-100%	7%	Short room ambience
Stereo Width	0-100%	65%	Microphone phase and width
Fast Speed	50-150%	100%	Fast rotor speed scale
L/R Offset	0-100%	20%	Small left/right speed difference

All parameters are stored by Bitwig in the project and can be automated.

Practical settings

Classic organ Slow Slow Mix 100 Doppler 70 X-over 800 Hz Horn +1 dB Drum +1 dB Cabinet 40 Room 8 Stereo 60	Classic organ Fast Fast Fast Speed 100 Doppler 80 Cabinet 35 Room 6 Stereo 70 L/R Offset 20
Wide modern rotation Fast Fast Speed 115 Doppler 65 Stereo 90 L/R Offset 55 Room 10	Dark vintage cabinet Slow X-over 1000 Hz Horn -2 dB Drum +2 dB Cabinet 70 Room 5 Stereo 45
Subtle electric piano Slow Mix 45 Doppler 35 X-over 650 Hz Cabinet 25 Room 4 Stereo 50	Dramatic transition Start in Slow and automate to Fast; Fast Speed 125 Doppler 85 Stereo 80 Horn Reverse on

Set Crossover and Horn/Drum Level first, then adjust Doppler, Cabinet and Stereo. This keeps each change easy to identify.

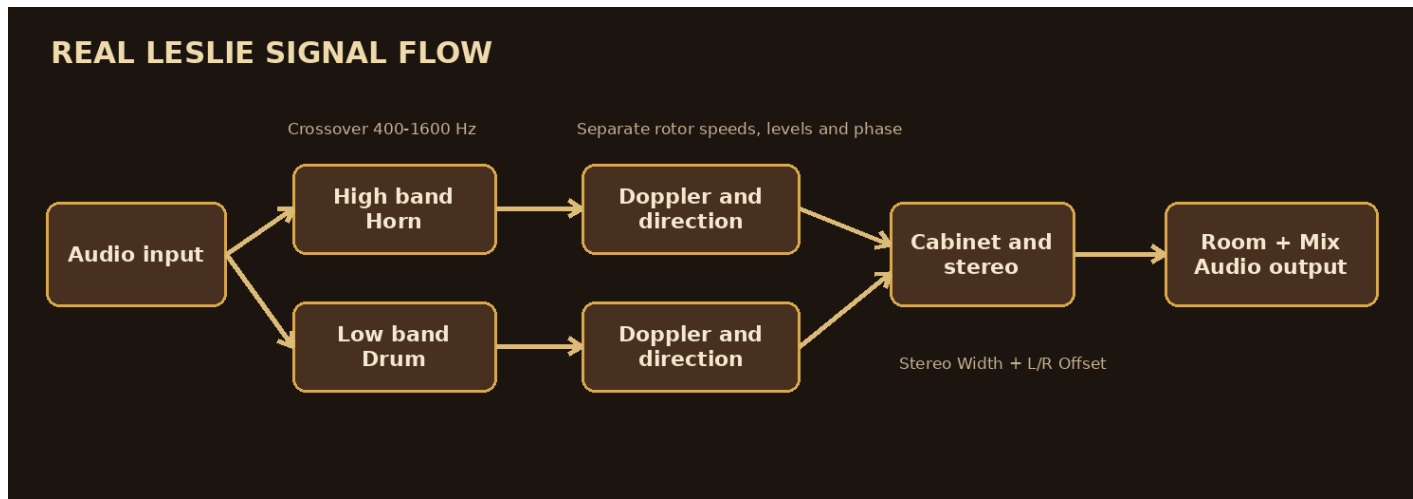
Automation and control in Bitwig

1	Select the RealLeslie device in the device chain.
2	Open the automation chooser and find the Rotor Speed parameter.
3	Draw Stop, Slow and Fast as three discrete positions. The plug-in supplies the acceleration and deceleration itself.
4	Automate Fast Speed only when the maximum Fast rate should change during the song.
5	For a MIDI controller, map a Bitwig Remote Control or MIDI control to Rotor Speed; the effect itself does not need direct MIDI input.
6	Optionally automate Horn Reverse, Mix, Doppler or Stereo Width for effect transitions.

For realistic performance, Rotor Speed is the main live control: play mainly in Slow, switch to Fast for accents, then return to Slow or Stop.

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How the simulation works



Audio model

- Linkwitz-Riley crossover for a smooth split.
- Separate delay lines for horn and drum, left and right.
- Variable delay creates the Doppler effect.
- Directional level and tone changes simulate rotation past microphones.

Space and motion

- Cabinet filters colour the combined rotor signal.
- Stereo Width simulates different listening angles.
- L/R Offset prevents a completely static left/right relationship.
- A short room reverb follows the rotation; the reported effect tail is 1.5 seconds.

Troubleshooting

No sound	Check that RealLeslie follows an instrument, track monitoring is enabled and Mix/levels are not set incorrectly.
Plug-in is missing	Check the VST3 folder and rescan plug-ins in Bitwig.
Window only shows the cabinet	This is the compact view. Click SETTINGS to slide out the control panel.
Fast sounds too extreme	Reduce Fast Speed, Doppler, Stereo Width or L/R Offset.
Too much low end	Reduce Drum Level or lower Crossover so more midrange reaches the horn.
Sound is too bright	Reduce Horn Level, raise Crossover or increase Cabinet carefully.
Clipping or distortion	Reduce Horn/Drum Level and check the instrument level before the plug-in.
Automation jumps oddly	Use three clear discrete Rotor Speed positions: Stop, Slow and Fast.

RealLeslie is intended as a VST3 audio effect in the Bitwig device chain. It is not a standalone instrument and produces no sound without an input signal.

Edition: v6 interface with gold logo and speaker grilles | Platform: Windows 64-bit | Host: Bitwig Studio