SYSTEM REVOLUTION

SR SPINFALL

Automation-driven tape motion

USER MANUAL / RELEASE CANDIDATE 0.5.0 / 6 NOVEMBER 2026

Draw the slowdown in your DAW. Choose how time responds.



JUCE-rendered Linux editor

> Classic, Modern and Loop are included. This is a release candidate. Read the verification status on page 10 before distribution or installation testing.

Stereo effect | VST3 target: Windows/macOS | AU target: macOS | Standalone test application

Your first tape stop

Start with a stereo audio track and a finite section of music. Set a comfortable monitoring level. Insert SR Spinfall after the instrument or audio source.

01 Choose **Classic**. Set Pitch / Speed to **100%**, Mix to **100%** and Output to **0 dB**. Audio passes through the latency-aligned neutral path.

02 Expose **Pitch / Speed** in the DAW automation lane. Add a 100% point before the effect starts.

03 Draw a ramp down to 0%. A short ramp makes a quick stop; a long curve makes a gradual drag. The DAW automation defines the duration.

04 Add an explicit return to exactly **100%**. This restores live timing and re-arms Loop mode for its next capture.

An example envelope

Position	Speed	Result
Before the stop	100%	Normal, latency-aligned playback
Halfway down the curve	50%	Half playback rate in Classic/Loop
End of curve	0%	Wet audio fades to silence
Recovery point	100%	Smooth return to live audio

For a complete stop, use Mix 100%. With a lower Mix, the dry signal continues while the wet signal stops. Draw a return point after every stop rather than relying on the next clip or section to restore the control.

Choose the behaviour

Classic: pitch and time slow together. **Modern:** pitch falls while the event clock stays fixed. **Loop:** the preceding captured slice repeats and slows down.

> Automation is read at host-block boundaries and smoothed per sample. Modern updates its spectral ratio per hop. The plugin does not promise sample-offset-accurate host automation.

Controls and gestures

Control	Range / default	What it changes
Pitch / Speed	0-100% / 100%	Main automation control. Unity at 100%; wet silence at 0%.
Mode	Classic / Modern / Loop; Classic	Selects the timing behaviour. Mode changes crossfade over about 20 ms.
Mix	0-100% / 100%	Latency-aligned dry/wet blend.
Output	-24 to +12 dB / 0 dB	Output gain; no automatic limiter.
Tension	-1 to +1 / 0	Curves the Speed response. Positive values deepen the slowdown sooner.
Bypass	Off / On; Off	Smooth, latency-aligned internal bypass.
Loop Timing	Sync / Free; Sync	Selects beat divisions or milliseconds.
Loop Length	1/32 to 1/1 / 1/8	Synced length for the next capture.
Free Length	20-8,000 ms / 250 ms	Free length for the next capture.

Fine control

Double-click sliders to reset. The wheel uses fine normalized steps; Shift+wheel is ten times finer, subject to parameter quantization. Loop Timing and Division double-click reset to Sync and 1/8. Small value boxes support typed values. The large Speed dial supports drag, wheel and host automation.

Reading the history

Cyan is effective smoothed Speed after Tension; the dim trace is the raw knob target. Amber shows stereo output extrema after Mix, Output and Bypass. The waveform auto-scales for visibility. Red marks actual peaks beyond +/-1. This view is not a calibrated level or loudness meter.

About eight seconds are retained. Closing the editor disables collection. A transport or sample-rate reset, or a display-frame gap, starts a fresh trace. Paused hosts can leave the last trace frozen.

Classic and Modern

Classic - pitch and time move together

Classic reads recorded input at the automated rate. At 50%, pitch drops an octave and playback advances at half speed. The read head falls behind live audio, accumulating lag. At zero, a short gain envelope produces silence rather than a held DC sample.

Returning to 100% uses a roughly 20 ms crossfade to current audio. The accumulated backlog is discarded; it is not replayed at accelerated speed. History is finite: after about 30 seconds of exhausted history, a protected transition rebases playback to newer audio.

Modern - pitch movement on a fixed clock

Modern uses a stereo-linked, transient-aware phase vocoder. Analysis and synthesis use the same hop, so event spacing does not stretch. Pitch ratio is bounded at 1/16, four octaves down; the lowest Speed range fades to silence. Vocal formants are not preserved.

Short spectral windows reduce latency but limit bass resolution. Drums may soften or smear, and extreme shifts may sound phasey or coloured. These are creative processing trade-offs. A fixed event clock does not guarantee that every transient retains its exact original shape.

Shared nominal latency

Sample rate	Delay	Time
44.1 / 88.2 / 176.4 kHz	1,024 / 2,048 / 4,096 samples	About 23.22 ms
48 / 96 / 192 kHz	1,024 / 2,048 / 4,096 samples	About 21.33 ms

All modes and dry/bypass paths use the same delay. Other sample rates use the smallest power-of-two frame of at least 20 ms, so delay can approach 40 ms. The actual integer delay is reported to the host. Enable the DAW's plugin delay compensation.

Loop capture and re-arming

Loop captures the preceding slice when Speed leaves exactly 100%. The slice ends just before the plugin's latency-aligned live position. Capture is immediate, not a forward recording or grid-quantized launch. Playback repeats that slice while Speed changes its pitch and duration.

Division	Quarter-note beats	Length at 120 BPM
1/32	0.125	62.5 ms
1/16	0.25	125 ms
1/8	0.5	250 ms
1/4	1	500 ms
1/2	2	1,000 ms
1/1	4	2,000 ms

A 1/1 whole note always means four quarter-note beats, including in other time signatures. Sync uses the last valid host tempo, initially 120 BPM, bounded to 20-400 BPM. The longest capture is 12 seconds at 20 BPM. Free timing spans 20-8,000 ms.

While the loop is playing

Tempo and length changes apply to the next capture; the current snapshot stays fixed. Return Speed to exactly 100% to crossfade to live audio and re-arm. A new departure triggers another capture, even during recovery. Changing Mode alone does not capture a new slice.

Seam treatment softens up to 5 ms per side, capped for short loops, while preserving the requested sample period. Rapid replacement uses a short continuity correction. These transitions can soften attacks near the boundary.

> Start playback early enough to fill history. Capturing immediately after load, stop or seek zero-pads missing preceding audio. Captured audio is not stored in plugin state; parameter recall requires fresh history. A held loop can repeat under silent input, so use a finite export selection.

Automation: Ableton Live and FL Studio

Ableton Live

01 Load the stereo VST3 effect. On macOS you may instead use the AU build. Enable the relevant plug-in folders in Live's settings and rescan after installing.

02 Select the device. If Pitch / Speed is not shown, enter **Configure**, move the large dial, then leave Configure. Select that parameter in the automation chooser.

03 In Arrangement View, show automation and draw a 100% start, your slowdown curve, a zero hold if wanted, and a return to exactly 100%. If the computer MIDI keyboard intercepts A, turn it off before using the automation shortcut.

04 Play from before the first point. If manual knob movement overrides automation, use Live's Re-enable Automation control. For Loop mode, allow pre-roll to fill the preceding slice.

FL Studio

01 Insert the VST3 on a Mixer track. Move the plugin's Pitch / Speed dial once so FL Studio identifies it as the last tweaked parameter.

02 Use **Tools > Last tweaked > Create automation clip**. Alternatively, expose the parameter through the wrapper's parameter list and create its automation clip there.

03 Edit the clip in the Playlist. For Speed, normalized 1.0 is 100% and 0.0 is stopped. Include a unity point before and after the slowdown.

04 Check the project's initialized value and clip start value if playback starts at the wrong Speed. Use explicit points rather than leaving an unintended held value after the clip.

For Mode automation, normalized 0 / 0.5 / 1 select Classic / Modern / Loop. Keep Mix at 100% for complete wet silence at Speed 0%. DAW menu names can vary by version; references are listed on page 12.

Automation: Logic Pro and REAPER

Logic Pro - macOS AU

01 Install the AU component and let Logic validate it. Insert SR Spinfall as an Audio FX effect on a stereo channel.

02 Show track automation (A) and choose the plugin's **Pitch / Speed** parameter from the automation parameter menu. Draw the curve in the lane, including 100% before and after the effect.

03 To record knob moves, choose Touch or Latch and move Speed during playback. Return the track to **Read** when finished so the written envelope plays back.

04 Check the final value after a Latch pass. Restore 100% explicitly to recover live audio and re-arm Loop capture. Keep the bounce range finite for a held loop.

REAPER

01 Load the VST3 in the track FX chain. Touch Pitch / Speed, then use the FX **Param** menu for the last-touched parameter and choose **Show track envelope**.

02 Add or edit envelope points for the 100%-to-zero slowdown and unity recovery. Use the envelope's value entry when an exact endpoint is needed.

03 Use Touch or another suitable write mode to record movements, then switch to Read or the desired playback mode. Verify the envelope is enabled and visible.

04 For Loop mode, start from before the trigger and fill history. Seeks and transport changes flush captured audio, so an immediate mid-stop audition can differ from playback through the passage.

Across all four DAWs

Keep the plugin's Mix at 100% for a full tape stop, or lower it for a parallel effect. Internal bypass retains the plugin delay; a DAW's hard bypass can have different compensation behaviour. Verify the result when rendering, especially across scene changes, seeks or automation overrides.

Installation and standalone testing

Windows x64

A compiled installer, when built, installs the complete VST3 bundle into the common 64-bit VST3 directory and optionally installs the standalone test application. Close the DAW before installation. The source ZIP itself is not a VST3 or installer.

For manual installation, copy the complete **SR Spinfall.vst3** folder to **C:\Program Files\Common Files\VST3**. Do not pull out only the inner binary. Rescan the DAW and choose its VST3 entry.

macOS universal

Copy the AU component to **~/Library/Audio/Plug-Ins/Components** or the VST3 bundle to **~/Library/Audio/Plug-Ins/VST3**. The build script targets macOS 11+ with Intel and Apple Silicon slices. Signing/notarization and native validation remain release tasks.

Standalone application

Choose an audio device, input and output channels. The standalone processes live input; it is not a file player. Use an appropriate driver and buffer size. On Windows, use the device/driver options actually available in the build. DAW plug-in audio runs through the DAW's driver.

Start at Speed 100%, Mix 100%, Output 0 dB. Confirm live input reaches the effect, then lower Speed. Route the output so it cannot feed back into the same live input. The standalone has no DAW tempo; Sync defaults to 120 BPM, while Free uses milliseconds.

Uninstall

Use Windows Apps/Installed apps for an installer-managed copy. For a manual copy, remove only that plugin bundle from its VST3/AU folder. Preserve projects and your own audio. The installer has no broad wildcard uninstall cleanup.

Troubleshooting

Symptom	What to check
Plugin is missing	Compile the correct platform format, install the complete bundle, then rescan. A source archive cannot be scanned as a VST3.
No sound	Return Speed to 100%, disable bypass overrides, confirm input routing and Mix/Output. At Speed 0 and Mix 100%, wet silence is expected.
Dry music continues at zero	Mix is below 100%, or a parallel DAW route is still audible.
Loop starts silent	The capture had insufficient history after load/start/seek. Return to 100%, play with pre-roll, then trigger again.
Loop length will not change	Changes are latched for the next capture. Return to exactly 100% and leave unity again.
Timing falls behind	Classic intentionally accumulates lag. Modern keeps a fixed event clock. Check host delay compensation too.
Low notes smear or sound grainy	Use a less extreme Modern shift, try Classic, or render and compare. Formants and perfect transient shape are not preserved.
Audio crackles under load	Increase the audio buffer or use a lower project sample rate. High-rate Modern processing is expensive; profile in your DAW.
Automation stops responding	Check Read mode, lane/clip activation and manual-override status. Confirm the envelope controls this plugin instance.
Long export or repeat under silence	Held Loop can continue indefinitely. Return Speed to 100% and use a finite export time selection.
History freezes or clears	Host processing may be paused, the editor may have reopened, or display frames were dropped. This does not change the audio.
Size or scaling looks wrong	Reopen the editor; restored sizes are clamped to supported bounds. Native high-DPI/host checks are still required for this release candidate.

Verification and technical limits

Check	Status
Linux JUCE build	Passed: GCC 13, Release, VST3 and standalone
JUCE processor tests	Passed: six rates, null/latency, state migration, simulated transport/bypass
Editor software rendering	Passed: JUCE software renders, parameter bindings, conditional controls, resize recall
External VST3 validator	Passed: pluginval 1.0.4, strictness 5, including editor and editor automation
Windows native build / DAW	Passed: x64 build, install/uninstall, pluginval 5. DAW pending.
macOS AU/VST3 / DAW	Passed: universal build, pluginval 5 and auval (arm64). DAW pending.
Standalone DSP and queue tests	Passed across six standard sample rates; detailed logs included

DSP tests cover bitwise neutral playback, measured delay, rapid automation, pitch ratios, fixed-clock pulse spacing, stereo phase, loop snapshot integrity, tempo/length changes and buffer wrap. Visualizer tests cover saturation, gaps, 200,000 concurrent transfers and 627 resize layouts. Sanitizer results and exact verification boundaries are included in the source package.

Processing boundary

Stereo in/out, float processing, C++17 and JUCE 8. Processing uses preallocated buffers, parameter ramps and denormal protection. All supported ratios are at or below unity. Classic uses sinc interpolation; Loop uses 4-point Hermite; Modern translates spectral peak regions and rejects out-of-range destination bins.

At 192 kHz, DSP buffer storage is roughly 102 MB per instance. Modern processing is CPU-heavy at high rates. Container benchmarks are not a DAW CPU reading or a worst-case deadline guarantee. Neutral unity tests compare against input delayed by the reported plugin latency.

> This release candidate does not claim exact sonic identity with another product. Real material, native DAW automation, installation, signing and cross-platform compatibility require their own verification before a production release.

Build and release guide

Windows

Install Visual Studio 2022 with Desktop development with C++, CMake 3.22+, Git and Inno Setup 6.3+. From the source folder, run the checked PowerShell build script:

```
powershell -ExecutionPolicy Bypass -File scripts/build-windows.ps1 -Installer
```

The script fetches pinned JUCE 8.0.13 unless an SDK path is supplied, compiles Release targets, runs CTest, stages real binaries and invokes Inno Setup. It stops on missing products or failed tests. Output installers go in dist/. A pre-existing SDK checkout is not silently replaced.

macOS

Install Xcode command-line tools, CMake and Git, then run:

```
./scripts/build-macos.sh
```

The script builds universal AU/VST3/standalone targets, runs CTest and stages unsigned local test products. Developer ID signing and notarization need your certificates and Apple account. No credentials are embedded in this project.

Before distributing a production build

01 Run all CTest suites and the relevant format validators. Test neutral null, latency and state recall in each actual target DAW.

02 Test the installer on a clean Windows machine, and AU/VST3 loading on both supported Mac architectures. Verify high-DPI resizing and automation gestures.

03 Listen on real vocals, drums, synths and buses. Confirm acceptable Modern quality and callback CPU at the intended sample rates.

04 Choose and satisfy the applicable JUCE license, preserve dependency notices, then sign/package the tested binaries. The included CI workflow builds artifacts; it does not publish a release.

References and credits

Original code, interface vectors and branding: System Revolution / SR Spinfall. Bundled font: DejaVu Sans, with its complete notice in Assets/LICENSE_DEJAVU. Original source license: LICENSE.txt. JUCE and format SDK licensing remains separate; read THIRD_PARTY.md and the exact SDK notices.

Ableton Live automation

https://www.ableton.com/en/manual/automation/

Ableton plug-in parameters

https://www.ableton.com/en/live-manual/12/using-plug-ins/

FL Studio automation clips

https://www.image-line.com/fl-studio-learning/fl-studio-online-manual/html/playlist_automationclip.htm

Logic Pro automation overview

https://support.apple.com/guide/logicpro/automation-overview-lgcpb1a1ea03/mac

Logic Pro automation modes

https://support.apple.com/guide/logicpro/lgcpb1a6ab26/mac

REAPER user guide

https://www.reaper.fm/userguide.php

JUCE 8.0.13 source/license

https://github.com/juce-framework/JUCE/tree/8.0.13

Inno Setup architecture settings

https://jrsoftware.org/ishelp/topic_setup_architecturesinstallin64bitmode.htm

DAW workflow guidance was checked against the manufacturers' documentation on 5 November 2026. Menu names can differ between versions. This manual describes the implemented behaviour and records unverified platform checks explicitly.