

TEN

EFFECTS

Bridge of Vibes

Firmware How-To Reference

A working set of feature guides for the Bridge of Vibes optical chorus/vibrato, covering the treadle, programming mode and every control in the current firmware.

This is a reference, not the final printed manual -- it will be folded into one once the feature set is locked down.

Quick Reference

Every gesture on one page. Detailed guides are numbered 01 to 15.

Normal playing

Do this	What happens	Guide
Tap RATE / INT / LEVEL switch	Assigns that control to the treadle (LED solid), or back to its knob	01
Hold RATE / INT / LEVEL switch 1.5 s	Locks the knob at its current position; hold again to unlock	02
Tap CHO	Switches between chorus (LED on) and vibrato (LED off)	-
Hold CHO 1.5 s	Toad mode on/off (recalls the recorded Toad preset)	04
Hold CHO + RATE together 1.5 s	RATE LED blink on/off (kills a rare tick some downstream pedals pick up)	03
Hold CHO + LEVEL together 1.5 s	RISE / EXTEND tune mode on/off	14
Hold PROG 1.5 s	Programming mode on/off (7 setup screens)	06
Hold PROG while powering on	Calibration mode	13

Programming screens (tap CHO to move between them)

#	Screen	Blinks on arrival	What the three knobs / switches do
1	Window shift	1	Slides stages 2-4 up or down in their sweep range
2	Rate offsets	2	Makes stages 2-4 run faster than stage 1
3	Phase offsets	3	Delays stages 2-4 in the cycle relative to stage 1
4	Treadle direction	4	Flips heel/toe direction per control
5	Treadle range	5	Sets the slow and fast limits for a treadle-driven RATE
6	Record Toad preset	6	Saves the current setup as the Toad preset
7	Factory reset	7	Puts settings back to factory defaults

LEDs

LED	Normal meaning
RATE	Blinks with the LFO (unless the blink is turned off, guide 03). Solid when RATE is assigned to the treadle
INT	Solid when INT is assigned to the treadle
LEVEL	Solid when LEVEL is assigned to the treadle
CHO	On = chorus, off = vibrato. Double-heartbeat blink while Toad mode is on
PROG	Off in normal playing. Blinks in programming mode and in tune mode

Where settings live

Locks, treadle assignments, offsets, shifts and the RATE LED blink setting are saved in memory and survive power-off. Calibration, the Toad preset and the RISE/EXTEND values each have their own memory area.

Assign a Control to the Treadle

RATE, INT and LEVEL can each follow the expression treadle instead of their knob.

What it does

Puts the treadle in charge of one control. You can assign any combination: just RATE, all three, and so on. The knob is ignored while a control is assigned.

How to do it

1. Be in normal playing mode (PROG LED off).
2. **Tap** (a short press) the switch under the control you want: RATE, INT or LEVEL.
3. The control's LED lights solid. That control now follows the treadle.
4. Tap the same switch again to hand it back to the knob.

What you will see

RATE, INT or LEVEL LED solid = treadle. Otherwise the RATE LED blinks with the LFO, and INT and LEVEL LEDs are off.

Good to know

- Saved immediately; the assignment survives power-off.
- While a control is assigned, holding its switch to lock does nothing. Unassign it first.
- If the treadle works backwards for a control, flip it in programming screen 4 (guide 10).
- To limit how fast a treadle-driven RATE can go, use programming screen 5 (guide 11).

Lock a Control

Freeze RATE, INT or LEVEL at the knob's current position.

What it does

A locked control ignores its knob and stays at the value it had when you locked it. Handy for setting a sound and then not worrying about bumping the knob.

Lock

1. Set the knob where you want it.
2. **Press and hold** that control's switch (RATE, INT or LEVEL) for 1.5 seconds.
3. The control's LED gives **5 fast flashes**. It is locked.

Unlock

1. Press and hold the same switch for 1.5 seconds.
2. The LED gives **3 slower flashes**. The knob is live again.

Good to know

- Saved; locks survive power-off.
- Locking only works when the control is **not** assigned to the treadle.
- The lock captures the knob's position at the moment you lock it.
- Locks are part of what the Toad preset records (guide 05).

RATE LED Blink Toggle

Turn the RATE LED's blinking off if it ever ticks through a downstream pedal.

What it does

The RATE LED normally blinks in time with the LFO. Each time it (or any LED) changes, the firmware sends a short burst on the wires that update all the LEDs together, and on rare setups a pedal placed after the Bridge of Vibes -- especially an overdrive or other gain pedal sharing a power supply with it -- can pick that burst up as a faint tick in the signal. A steadily blinking LED sends that burst on every blink; turning the blink off stops it. You can still hear and feel the rate in the sweep itself; only the visual blink is affected. Toad mode's heartbeat blink (guide 04) is silenced by this same setting, for the same reason.

Turn it on or off

1. Be in normal playing mode.
2. **Hold CHO and RATE together for 1.5 seconds.**
3. The RATE LED gives **3 quick blinks** to confirm. The blink is now off -- the RATE LED stays dark during normal play.
4. Hold CHO and RATE together for 1.5 seconds again to turn the blink back on.

Good to know

- Saved; the on/off state survives power-off.
- If RATE is assigned to the treadle (guide 01), its LED is already solid rather than blinking, so this setting has no visible effect until you unassign it -- but it is still saved for when you do.
- If a tick is present even with the blink off, try giving the downstream pedal its own isolated power supply, or placing it before the Bridge of Vibes in the chain instead of after.
- The Toad preset records whether the blink is on or off (guide 05).

Toad Mode

Recall the Toad preset with one hold of the CHO switch.

What it does

Toad mode loads a preset -- either the factory one your pedal shipped with, or one you recorded yourself (guide 05): chorus or vibrato, locks, treadle assignments and directions, treadle range, rate and phase offsets, window shifts and the RATE LED blink setting. Knobs that are not locked stay live.

Use it

1. **Hold CHO for 1.5 seconds.** Toad mode is on. The CHO LED does a double-heartbeat blink about every 1.2 seconds (unless the RATE LED blink is turned off, guide 03 -- then it holds steady instead).
2. Hold CHO for 1.5 seconds again to leave. Everything goes back to how it was before you entered.

Good to know

- Your pedal ships with a factory Toad preset already recorded, so there is something to recall the first time you try this.
- Recording your own preset (guide 05) replaces the factory one permanently -- there is no way back to the factory preset once you have recorded over it, so if you like it, consider it a starting point rather than a safety net.
- Changes you make while Toad mode is on are not saved.
- Tapping CHO still switches chorus/vibrato while in Toad mode.
- The RISE/EXTEND values (guide 14) are not part of the Toad preset.
- Toad mode itself never survives a power cycle -- powering off always returns you to normal playing. The recorded preset survives; only the act of being in Toad mode does not.

Record the Toad Preset

Save the way the pedal is set up right now as the Toad preset.

What it does

Stores a snapshot of the current setup so you can recall it with Toad mode (guide 04).

Record

1. Set the pedal up the way you want the preset: chorus or vibrato, locks, treadle assignments, the RATE LED blink setting, and any programming-screen settings.
2. **Hold PROG for 1.5 seconds** to enter programming mode.
3. Tap CHO until you reach screen 6: all LEDs blink 6 times when you arrive, and the RATE, INT and LEVEL LEDs chase each other.
4. **Hold CHO for 1.5 seconds**. The CHO, RATE, INT and LEVEL LEDs go solid.
5. **Release CHO**. All LEDs flash 5 times, the preset is recorded, and the pedal leaves programming mode.

Good to know

- Recording replaces whatever preset was there before, including the factory one your pedal shipped with -- this cannot be undone.
- The preset survives power-off and is not erased by a factory reset.
- It records what is set at the moment you record. Set things up first, then enter programming mode.

Programming Mode

Seven setup screens reached with the PROG switch.

What it does

Programming mode reuses the knobs and switches for setup tasks. While in it, the LFO speed and depth freeze at what they were when you entered, so the sound stays steady while you adjust.

Enter, move around, exit

1. **Hold PROG for 1.5 seconds** to enter. The PROG LED blinks. You start on screen 1.
2. **Tap CHO** to go to the next screen. The LEDs blink all together once for screen 1, twice for screen 2, and so on up to 7. After 7 it wraps to 1.
3. **Hold PROG for 1.5 seconds** to exit.

The screens

#	Screen	Blinks on arrival	What the three knobs / switches do
1	Window shift	1	Slides stages 2-4 up or down in their sweep range
2	Rate offsets	2	Makes stages 2-4 run faster than stage 1
3	Phase offsets	3	Delays stages 2-4 in the cycle relative to stage 1
4	Treadle direction	4	Flips heel/toe direction per control
5	Treadle range	5	Sets the slow and fast limits for a treadle-driven RATE
6	Record Toad preset	6	Saves the current setup as the Toad preset
7	Factory reset	7	Puts settings back to factory defaults

Good to know

- Each screen has its own way of saving, described in its own guide (07 to 12). Exiting does not save anything extra.
- Screens 1-3 use a small "pickup" so nothing jumps: a knob does nothing until you move it a little (about 1.5% of its travel) from where it sat when you arrived on the screen.
- Programming mode is not available while calibrating or tuning RISE/EXTEND.

Window Shift (screen 1)

Slide each stage's sweep window up or down.

What it does

Each phase stage sweeps between a calibrated minimum and maximum. Window shift slides that window for stages 2, 3 and 4 without changing the calibration, so you can line the stages up by ear. Stage 1 is the reference and never shifts.

Knob to stage

Knob	Adjusts
RATE	Stage 2
INT	Stage 3
LEVEL	Stage 4

How to do it

1. Enter programming mode (guide 06). You are on screen 1. The RATE, INT and LEVEL LEDs blink at each stage's own LFO speed.
2. Turn a knob to move that stage's window. It works relative to where the knob was when you started moving it: full travel from there is 50% of the stage's range each way. The total shift is limited to minus 50% to plus 50%.
3. Listen while the sweep runs and adjust until the stages sound right together.
4. **To save a stage:** hold that stage's switch (RATE, INT or LEVEL) for 1.5 seconds. Its LED goes solid. Release. That is saved.
5. Hold PROG for 1.5 seconds to leave.

Good to know

- Screens 1-3 use a small "pickup" so nothing jumps: a knob does nothing until you move it a little (about 1.5% of its travel) from where it sat when you arrived on the screen.
- Knob direction on screens 1-3: these screens read the INT and LEVEL knobs without the direction flip used in normal playing, so those two knobs may feel backwards here. Just turn and listen.
- A shift that pushes a window past the ends of the digipot range squeezes it rather than wrapping.

Rate Offsets (screen 2)

Make stages 2 to 4 run faster than stage 1.

What it does

Normally all four stages share one LFO. A rate offset makes a stage's LFO run faster than stage 1's by 0% to 100%, which spreads the four sweeps and makes the effect less regular.

Knob to stage

Knob	Adjusts
RATE	Stage 2
INT	Stage 3
LEVEL	Stage 4

How to do it

1. Enter programming mode and tap CHO once to reach screen 2 (2 blinks).
2. Turn a knob. The knob's position sets that stage's offset from 0% to 100%. Each stage's LED blinks at that stage's actual LFO speed so you can see the difference.
3. **To save a stage:** hold its switch (RATE, INT or LEVEL) for 1.5 seconds so the LED goes solid, then release.
4. Hold PROG for 1.5 seconds to leave.

Good to know

- At 0% (and zero phase offset) a stage simply follows the main LFO.
- Screens 1-3 use a small "pickup" so nothing jumps: a knob does nothing until you move it a little (about 1.5% of its travel) from where it sat when you arrived on the screen.
- Knob direction on screens 1-3: these screens read the INT and LEVEL knobs without the direction flip used in normal playing, so those two knobs may feel backwards here. Just turn and listen.

Phase Offsets (screen 3)

Delay stages 2 to 4 within the cycle relative to stage 1.

What it does

A phase offset shifts where a stage is in its sweep cycle compared with stage 1, anywhere across one full cycle. Stages then peak at different moments instead of all together.

Knob to stage

Knob	Adjusts
RATE	Stage 2
INT	Stage 3
LEVEL	Stage 4

How to do it

1. Enter programming mode and tap CHO twice to reach screen 3 (3 blinks). The CHO LED stays solid on this screen.
2. Turn a knob. Its position sets that stage's offset across the full cycle. Each stage LED blinks with its own shifted LFO, so you can see the offsets moving.
3. **To save a stage:** hold its switch (RATE, INT or LEVEL) for 1.5 seconds so the LED goes solid, then release.
4. Hold PROG for 1.5 seconds to leave.

Good to know

- Screens 1-3 use a small "pickup" so nothing jumps: a knob does nothing until you move it a little (about 1.5% of its travel) from where it sat when you arrived on the screen.
- Knob direction on screens 1-3: these screens read the INT and LEVEL knobs without the direction flip used in normal playing, so those two knobs may feel backwards here. Just turn and listen.
- Phase offsets are relative to stage 1, which is never shifted.

Treadle Direction (screen 4)

Flip heel-down and toe-down for each treadle-driven control.

What it does

If a control moves the wrong way when you rock the treadle, this reverses it. RATE, INT and LEVEL are set independently.

How to do it

1. Enter programming mode and tap CHO three times to reach screen 4 (4 blinks).
2. The CHO LED blinks once per second. Each control's LED blinks **in step** with the CHO LED when the direction is normal, or **opposite** to it when reversed.
3. To flip a control, hold its switch (RATE, INT or LEVEL) for 1.5 seconds. Its LED goes solid while you hold. Release to save.
4. Hold PROG for 1.5 seconds to leave.

Good to know

- Only matters for controls assigned to the treadle (guide 01).
- Reversal is part of the Toad preset (guide 05).

Treadle Range (screen 5)

Set the slowest and fastest RATE the treadle can reach.

What it does

When RATE is assigned to the treadle, this sets the two ends of its range: heel-down gives the slow limit and toe-down the fast limit (or the reverse if you flipped the direction). Between them the treadle sweeps the speed smoothly.

How to do it

1. Enter programming mode and tap CHO four times to reach screen 5 (5 blinks). RATE, INT and LEVEL LEDs do a double blink about once a second.
2. On this screen the RATE **knob** sets the LFO speed live so you can hear the limit.
3. **Fast limit:** turn the RATE knob to the fastest speed you want. Hold the **RATE switch** for 1.5 seconds (LED solid), then release.
4. **Slow limit:** turn the RATE knob to the slowest speed you want. Hold the **INT switch** for 1.5 seconds (LED solid), then release.
5. Hold PROG for 1.5 seconds to leave.

Good to know

- The two limits are kept at least 128 counts apart (about an eighth of the knob's travel); if you set them closer, the second is pushed away.
- Only affects RATE. INT and LEVEL follow the full treadle range.
- The limits are part of the Toad preset (guide 05).

Factory Reset (screen 7)

Put settings back to how the pedal left the factory.

What it does

Clears your setup back to defaults. It also puts the RISE/EXTEND values back to their factory numbers.

How to do it

- 1. Enter programming mode (hold PROG 1.5 s).
- 2. Tap CHO **six times** to reach screen 7 (7 blinks). The PROG and CHO LEDs blink together.
- 3. **Hold CHO for 1.5 seconds**. The PROG and CHO LEDs go solid.
- 4. **Release CHO**. All LEDs flash 10 times. The reset is done and the pedal leaves programming mode.

What is reset

Reset to default	Left alone
Treadle assignments off, directions normal, treadle range full. Locks off. RATE LED blink on. Chorus mode. Rate offsets, phase offsets and window shifts all 0. RISE/EXTEND back to factory: chorus 27 / 10, vibrato 50 / 40.	Calibration (min and max codes for the four stages). The recorded Toad preset.

Tap CHO carefully: pressing it one time too many wraps past screen 7 back to screen 1. If the LEDs do not blink 7 times, you are not on the reset screen.

Calibration Mode

Teach each stage where its 0 degree and 180 degree ends are.

What it does

Calibration records a minimum and a maximum digipot code for each of the four vactrol stages. The pedal sweeps between them in normal playing. Redo it after any change that affects the LED drive or the phase stages (LED resistors, R61, R13, R85, a replaced vactrol).

Enter

1. Hold **PROG** while powering the pedal on.
2. All LEDs flash 3 times. You are in calibration. The stage being calibrated has its LED blinking.

Which switch and LED belongs to which stage

Stage	LED that blinks	Its own switch	Test tone
1	RATE	RATE	1000 Hz
2	INT	INT	150 Hz
3	LEVEL	LEVEL	1400 Hz
4	CHO	CHO	1800 Hz

Calibrate each stage

1. Turn the **RATE knob**. It sets the vactrol drive (code 0 to 255) for the stage being calibrated.
2. Find the **minimum** end (the 0 degree end). Press that stage's own switch once. Its LED goes solid with the PROG LED.
3. Turn the RATE knob to the **maximum** end (the 180 degree end). Press the same switch again. The values are saved, and the LEDs flash 3 times.
4. Tap **PROG** to move to the next stage (it wraps to stage 1 after stage 4). Repeat.
5. When all four are done, **hold CHO for 2 seconds**. The LEDs flash 5 times and the pedal boots normally.

Good to know

- The other three stages are parked while one is being calibrated.
- The CHO switch has two jobs here: a quick tap is stage 4's switch, and holding it for 2 seconds exits.
- RISE/EXTEND (guide 14) pushes the bright end past the calibrated maximum, so you never need to calibrate past the stage's true limit.
- This guide covers the buttons and knob only. How to judge the 0 and 180 degree ends at each test tone comes from your own Univibe_Cal_Procedure notes.

RISE / EXTEND Tune Mode

Dial in the lopsided lamp sweep live, separately for chorus and vibrato.

What the two settings do

Setting	What it changes	Range	Factory chorus	Factory vibrato
RISE (%)	How much of each LFO cycle the lamp spends getting brighter. 50 = even. Below 50 = fast attack, slow release (a bulb heating fast, cooling slow). Above 50 = the reverse.	10 to 80	27	50
EXTEND (%)	How far the bright end of the sweep is pushed past the calibrated maximum, as a percent of the calibrated span. 0 = off. Bigger = brighter, sparklier top end.	0 to 100	10	40

Tune

1. Be in normal playing mode. **Hold CHO and LEVEL together for 1.5 seconds.**
2. The PROG LED blinks and the INT and LEVEL LEDs stay solid. You are tuning the mode shown by the CHO LED (on = chorus, off = vibrato).
3. Turn the **INT knob** to change RISE and the **LEVEL knob** to change EXTEND. You hear the change instantly.
4. Tap **CHO** to switch between chorus and vibrato and tune the other one. The pedal also switches sound to that mode.
5. When you are happy, **hold CHO and LEVEL together for 1.5 seconds** again. The PROG LED stops blinking. The values are saved.

How the knobs behave

- Nothing changes when you enter. The knobs work relative to where they sit when you enter, or when you tap CHO.
- Each step of the setting takes about 1.5% of knob travel. A tiny bump does nothing.
- To reach further than one sweep of the knob allows, tap CHO twice. That re-takes the starting position.
- The RATE knob still sets LFO speed, so you can test slow and fast rates while tuning.
- While tuning, the LFO depth is held at full and LEVEL is frozen. The INT and LEVEL switches do nothing.

Saving and resetting

- Values are saved **when you exit tune mode**. If you power off while the PROG LED is still blinking, the changes are lost.
- A factory reset (guide 12) puts both modes back to the factory numbers above.
- They are not part of the Toad preset.