



2z flanger

analog (To Zero) stereo flanger

features & specs

- The 2z flanger is a 100% analog flanger designed to optimize the performance of an NOS (new old stock) Panasonic MN3010 BBD chip. In my comparison testing, the MN3010 BBD has no equal for flanging, and this includes the very good, but noisy and fragile Reticon SAD1024A .
- The 2z flanger (as an effect), explores the relationship between the dry signal, a delayed signal which has the delay time **automatically** varied (or swept) from >30ms to <1ms , and a delayed signal which is **manually** adjusted (or set) between >30ms to <1ms. When mixed together these 3 signals produce the characteristic highly-resonant, harmonically-related, flanging sound that sweeps down in pitch (long delay time >30ms) and then up in pitch (short delay time <1ms) and then back down in pitch, and so on.
- The 2z flanger is an 18v design - the recommended power supply for the US and World market is the Cioks DC-7. Do not attempt to use a 9v power supply. The power jack is the standard 5.5 x 2.1mm, center tip - negative.
- Direct Out and Effect Out jacks - the 2z flanger is primarily a Mono-In / Mono-Out design. Stereo-Out operation is possible by using the Direct Out jack to one amp, and the Effect Out jack to a second amp. Turn the Mix knob full clockwise (100% effect). The result is an old-school, two-amp, wet / dry rig that sounds (and records) very nice.
- The controls are as follows:
 - Sweep Range - this knob controls the range of delay time that is **automatically** varied (or swept) by the 2z flanger's LFO (low frequency oscillator). Clockwise settings will sweep through a **wider range** of delay time, resulting in **more** low to high pitch variation during the sweep. Counter-clockwise settings will sweep a **narrow range** of delay time, resulting in **less** pitch variation.
 - Sweep Range Modes - two separate modes are also accessed via the Sweep Range knob. (no toggle switches). Full clockwise turns the **Manual Delay Time** knob **off**. This allows the 2z flanger's LFO to sweep the entire range of delay time, resulting in flanging with extreme pitch variation and swept de-tuning. Full counter-clockwise turns the **Sweep Range** knob **off** entering the Manual Delay **Only** mode, which allows for the creation of filter-matrix sounds by turning the Manual Delay Time knob. You can also use the toneczar expression pedal to manually control the 2z flanger's delay time.
 - Manual Delay Time - this knob allows the delay time to be **manually** set. Full clockwise is less than 1ms. Full counter-clockwise is greater than 30ms. The Manual Delay Time knob works together with the Sweep Range knob to allow the 2z flanger's **actual** delay time and the **range** of delay time to be adjusted, which will create the desired flanging sound.
For example: if the Manual Delay Time and the Sweep Range knobs are both set at 12:00, this results in delay time that will automatically sweep between 15ms and 10ms. Say you turn the **Manual Delay Time** knob to 9:00, this will make the swept delay time **longer**, resulting in delay time that is automatically sweeping between 20ms and 15ms, thus moving the flanging sound **down** in overall pitch. Now, if you turn the **Manual Delay Time** knob to 3:00, this will make the swept delay time **shorter**, resulting in delay time that is automatically sweeping between 10ms and 5ms, thus moving the flanging sound **up** in overall pitch.
- **To sum up** - Use the **Manual Delay Time** knob to place the audible **center** of the flange sweep where desired. Use the **Sweep Range knob** to simultaneously adjust the audible **low** and **high** points of the flange sweep.



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- **Rate** - this knob allows for adjusting how fast (or slow) the soft-start, silent-run LFO (low frequency oscillator) operates. Full fast (clockwise) is 10 cycles per second. Full slow (counter-clockwise) takes 20 seconds to complete one cycle. The rate indicator (Red LED) flashes in time even with the 2z flanger in bypass. Note: it is a good idea when powering up the 2z flanger to place the Rate knob at 12:00 (or higher) to allow the LFO to start quickly. If the 2z flanger is powered up with the Rate knob at full-slow, it will take the LFO over 5 minutes to start.
- **Feedback** - this knob allows for either positive or negative feedback to be introduced, which greatly enhances the flanging characteristics. The Feedback knob features a center-off detent at 12:00. There is **no** feedback with the Feedback knob in the center detent. Note: placing the Feedback knob at either max positive or max negative will result in loud self-oscillation - this is by design.
- **Mix** - this knob allows for active mixing of the dry and delayed signals. The standard setting is 12:00 for an equal mix of dry and delayed signals. Full clockwise is 100% delayed signal. Full counter-clockwise is 100% dry signal.
- **Volume** - this knob allows for the overall volume to be adjusted to the desired level regardless of the Mix and Feedback knob settings. The standard setting for unity gain will be approximately 12:00.
- **Expression pedal jack** - please use only the toneczar expression pedal. Other expression pedals will not work. The expression pedal function of the 2z flanger allows foot-control of the Manual Delay Time setting, this bypasses the Manual Delay Time knob completely, but still works with the Sweep Range knob. If you place the Sweep Range knob full counter-clockwise in the **Manual Delay Only** mode, you can have expression pedal control of the entire range of delay time. (>30ms to <1ms).
- **Hardwired, True-Bypass switching with ON indicator (Red LED).**
- **Built for life construction** featuring full-size thru-hole components and a thru-plated FR4 epoxy-glass printed circuit board that is hand soldered, hand wired, scope-tested and tuned. There are no miniature surface-mount components. No pcb mounted pots, jacks or switches. No aluminum electrolytic caps in the signal path. No internal trim pots, DIP switches, socketed parts, ribbon wire or push-on connectors. (nothing to work loose and fall apart).
- The 2z flanger is offered in two finishes, powder-coat matte black or the optional polished aluminum. Note: this is not a show finish. It will be full of character, matching the rest of the toneczar product line. These products are designed to be installed on a pedal board and stepped on, not polished with a soft cloth and admired.

SPECIFICATIONS

Input Impedance: > 500K ohms

Output Impedance: < 50K ohms

Current Consumption: 100ma. @ 18v dc.

Signal to noise: 90 db dry only

60-70 db wet only (depends on settings)

Dimensions: 7 1/2" W x 4 1/4" D x 2 1/4" H

(knobs add 1" to height)

Weight: approximately 2 lbs.