A/DA Flanger Clone Notes - PCB Rev 01 & PCB Rev 02

To build the stock circuit with no modifications...

Install jumpers to bridge the breaks at Pads C and D (below and to the left of IC2).

See notes for Pads at E (below the Speed pot), below.

C29 appears twice in the layout (to the left of IC6 - 4047). Do not install the one that connects to Pad F.

Install a jumper to bridge the gap at Pads K (Rev 02 only, to the left of the Enhance pot).

Descriptions of additional pads on the PCB layout

Pad A
Output of first stage input buffer. Could be used to send input signal to second delay line for TZF mod, or to a second output jack (pseudo stereo), or other effect, mixer, recorder, etc...

Pad B
Output of second stage input buffer/regen mixer. Could be used to send signal (input + regen) to second delay line for TZF mod, or to another output jack, or to other effect, mixer, recorder, etc...

Pads at C & D
Input to the output buffer/mixer. The signal at Pad C is a mix of clean and regen signals. The signal at Pad D is the output of the delay line.

For the stock output, install a jumper between the two adjacent pads at Pad C, and another jumper between the two adjacent pads at Pad D.

For a vibrato switch (100% wet output), install a jumper between the two adjacent pads at Pad D, and use a SPDT toggle switch to make/break the connection between the two adjacent pads at Pad C. Note that when the toggle breaks the Pad C connection, some regen will also be cut out of the output.

Various options for blending of clean, wet and regen signals are possible by installing potentiometer(s) between Pads A, B, C, D, G, K. See the descriptions of these pads to determine possible senarios for experimentation.

One of the three pads on the node with IC2b Pin 6 might also be a good place for a return input from a second delay line (TZF mod) or other effect.

One possible wiring option for combining wet/dry blend and TZF mods... Tie the output of the second delay line to one throw of a DPDT toggle switch. Tie Pad C (dry output from R41) to the other throw of the toggle. Tie the pole of the toggle switch to one leg of a linear pot. Tie Pad D (wet output from R42) to the other leg of the pot. Tie the pot's wiper to one of the pads connected to IC2b Pin 6. Of course, that's just one possibility. You may have to experiment with other configurations to suit your needs.

Pads at E
Timing capacitor(s) for LFO.
For the ADA Rev3 configuration, install both C24 and C25 as shown and install a jumper at Pads E to tie the positive terminals of the two caps together.

For the ADA Rev4 configuration, install only C24 or C25 (not both) and install a jumper to tie the the cap appropriately between the Speed and Range pots. Experiment with the cap's value, orientation and/or using a non-polarized capacitor in this configuration.

For an LFO hi/lo speed range switch that toggles between the ADA Rev3 and Rev4 configurations, install both C24 and C25. Tie the positive terminal of C24 to the pole of a SPDT toggle switch. Tie one throw of the toggle switch to the positive terminal of C25. Tie the other throw of the switch to the junction of the Speed pot lugs 1 & 2. Experiment with the caps' values, orientations and/or using non-polarized capacitors to obtain a pleasing range of speeds.

Pad F
4047 clock timing capacitor.
There are two footprints for C29 (timing cap) with pads to allow one to be switched in/out of parallel with the other. If available, as an alternative to installing a second cap and a switch, a variable capacitor could also be tried.

Another possible alternative for enabling a variable clock rate might be to experiment with replacing R69 (2M2) with a variable resistor.

Pad G
Output of main delay line / Input to threshold & regen buffers.
This might also be a good place for the return input from a second delay line (TZF mod) or other effect.

Pad H & Pad J
Output of Range pot, from the LFO to the clock section.
This is where the bounce mod would be installed. Do not install R65. Pad H goes to the input of the bounce circuit. The output of the bounce circuit goes to Pad J.

Pads K (Rev 02 only)
These pads allow for additional external processing to be inserted into the feedback (regen) path of the circuit. The lower pad, coming from IC1 pins 13 & 14, is the send. The upper pad, coming from trim pot T2 is the return. To build the stock circuit, insert a jumper between the two pads.

Additional pads
Additional pads for V+, Vb, and GND have been added to allow the onboard power to be tapped for external circuits/mods. GND pads are above the open perfboard area in the lower left. V+ pads are adjaceent to the output ov the LM7815 voltage regulator. One additional pad for Vb is located just below pin 1 of the Threshold pot (upper left). Additional pads for Vb can be found at vias between the upper and lower layers of the PCB along the Vb trace.

Some suggestions for possible modifications

TZF mod
Use send & return so that any other circuit or pedal could be used for the second delay line. Looking at Jürgen Haible's Storm Tide flanger, he used buffers on both the send and the return. You may not need to worry about buffers if you use another pedal for the second delay line, but it maybe something to be aware of if you're going to try putting you own circuit together for the second delay line. So anyway, since I'm not 100% positive of the best places for the send and the return, I added extra pads at the outputs of IC1a and IC1b as potential send outputs, and extra pads at the inverting inputs of IC2c (shown as IC3c on Stephen's scheme) and IC2b as potential return inputs.

Stereo outputs mod
The idea for this mod is to feed a clean signal to a second output jack, and install a toggle switch to remove the clean signal that is mixed into the main output. The clean signal can be tapped directly from the input (direct thru), or from the output of the first input buffer stage (Pad A). The toggle switch should be installed to make/break a connection between the two pads at Pad C. Note that when the toggle breaks the Pad C connection, some regen will also be cut out of the output. Alternatively, a switching type jack could be used for the second output jack to break the connection between the two pads at Pad C when a plug is inserted.

Vibrato mod
For this mod, you just want to eliminate the clean signal from being blended in with the output. If you do the stereo mod (above), the main output will give you vibrato (100% wet output, no dry signal blended in). If you're not interested in the stereo mod and just want to be able to get vibrato from the main output, you can just add a toggle switch. Put a jumper at Pad D from R42 to IC2b (delayed signal) and a SPST toggle switch between R41 and IC2b (clean signal). Again, note that when the toggle breaks the Pad C connection, some regen will also be cut out of the output. To add a wet/dry blend pot, tie one pot leg to the pad at R41, the other pot leg to the pad at R42, and the wiper to one of the pads at the inverting input of IC2b.

LFO speed switch
The pads and traces around C24 and C25 are set up to allow for either the ADA Rev3 config (two electro caps w/ pos legs tied together), the ADA Rev4 config (one cap, probably a non-polarized electro), or the use of both caps with a hi/lo LFO range switch, switching one of the caps in/out. See notes for Pad E, above. Experiment to find the cap values that give you a range of speeds that you like.

4047 timing cap
This might be a good spot for a variable cap, if you can get one. As an alternative to the variable cap, between IC5 and IC6 there are two identical caps both marked C29. Same deal as with the LFO speed caps... there are pads to let you switch one in/out of parallel with the other. Another alternative would be to experiment with replacing R69 with a variable resistor.

Bounce
The bounce circuit (big thanks to Stephen Giles) basically replaces R65, between the range pot and the clock range trim. See notes for Pads H & J, below.

Some other resources...

ADAdepot.com
http://www.adadepot.com/

mode zero
http://www.modezero.com/ada-flanger.htm

Stephen Giles' build method and notes
http://www.diystompboxes.com/smfforum/index.php?topic=25681.msg170884#msg170884

The big TZF thread
http://www.diystompboxes.com/smfforum/index.php?topic=49929.0

moosapotamus
http://moosapotamus.net/IDEAS/ADAflanger/ADAflanger.html

~ Charlie Barth 25 June 2007