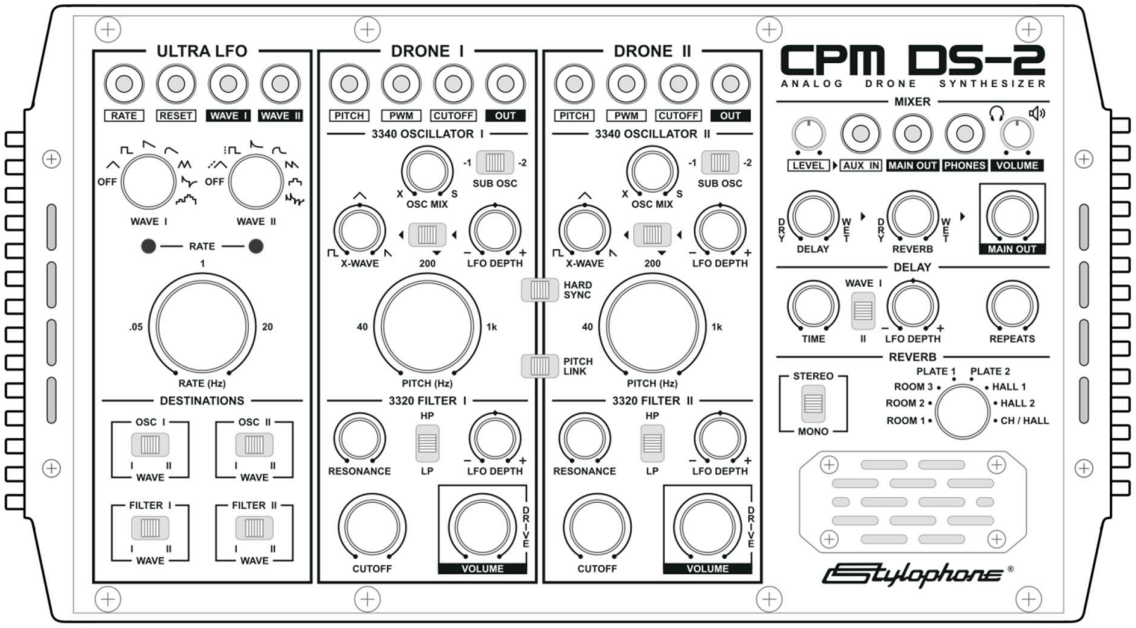
Stylophone®

PATCHBOOK

COMPACT PORTABLE MODULAR SERIES



Version 2.0

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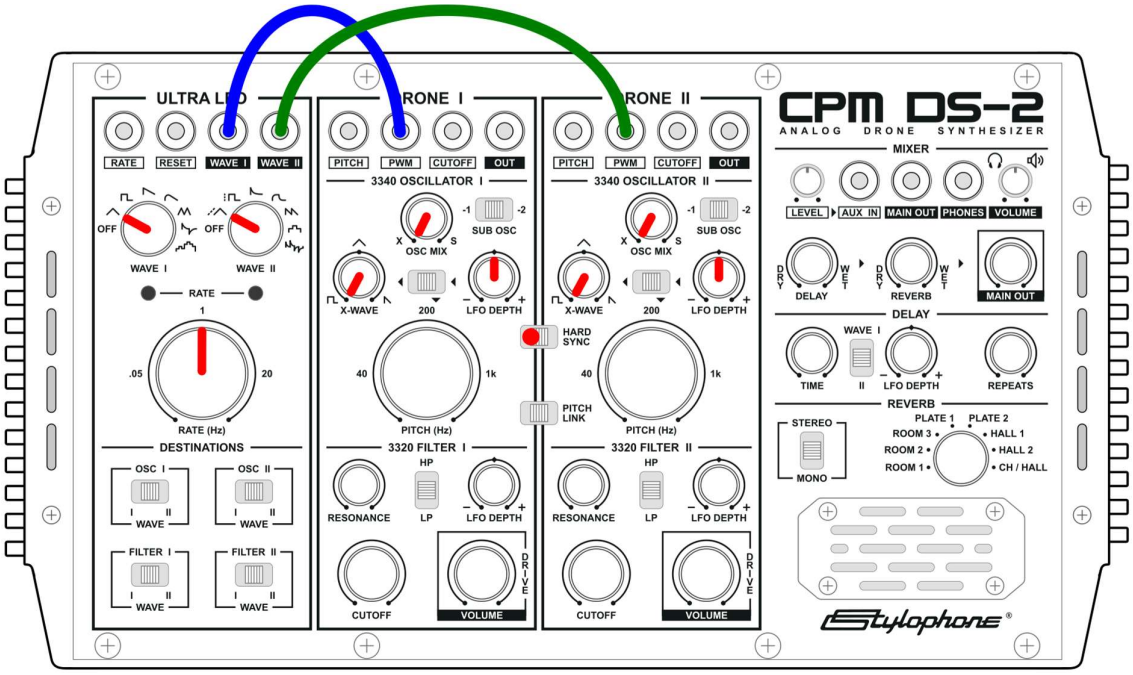
(This is an evolving document and more chapters with more patches will be added in future versions.)

CHAPTER 1

Single DS-2 patches

PULSE WIDTH MODULATION

Get a Chorus type effect by modulating the width of Square (Pulse) wave oscillators.



Patch LFO **WAVE I** to DRONE I **PWM** and LFO **WAVE II** to DRONE II **PWM**.

Set LFO WAVE I knob to Triangle and set LFO WAVE II to Triangle (90° phase shifted).

Set LFO RATE knob to 12 o'clock.

Set X-WAVE knobs of both drones to the Square (Pulse) waveform.

Set OSC MIX knobs on both drones to X.

Set OSC LFO DEPTH knob on both drones to 12 o'clock.

Switch HARD SYNC off if you want to hear both oscillators.

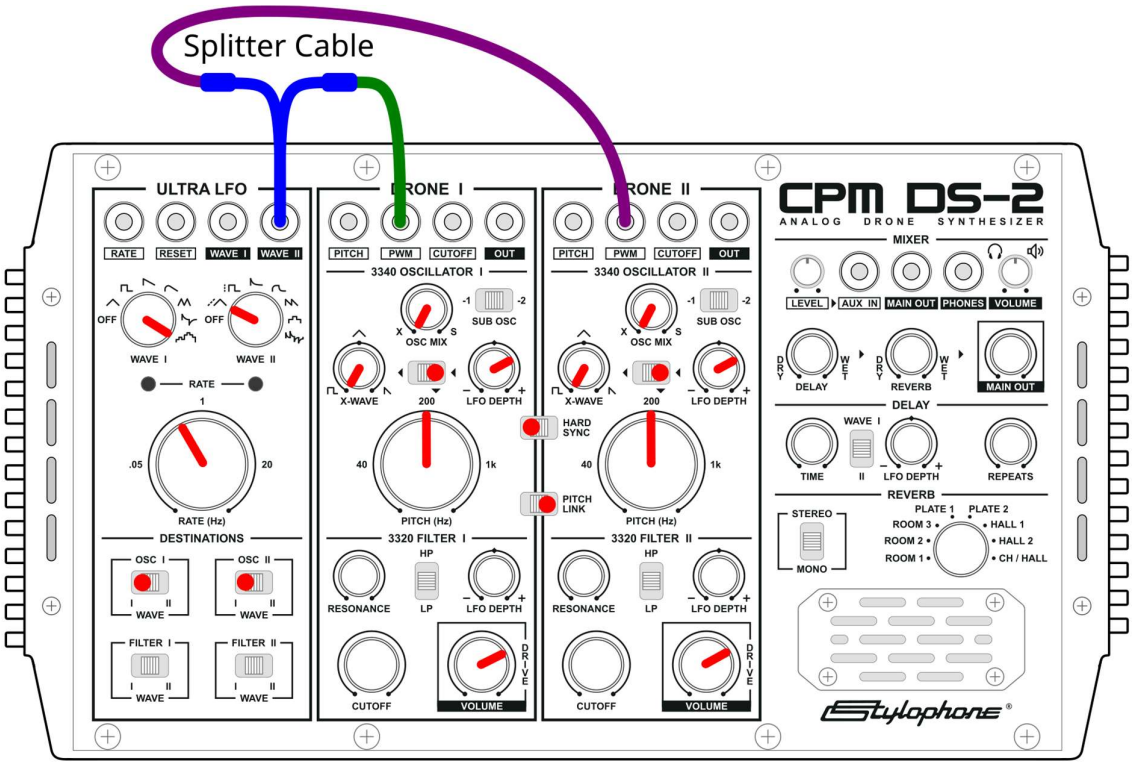
You should now have a rich chorus like oscillator sound on both drone voices. This is due to how the **PWM** input alters the symmetry of the DRONE sections Square waves without altering their pitches.

Experiment with different LFO waveforms to get a variety of chorus type effects. You can also experiment with the LFO RATE for faster or slower modulation speeds.

Try the stepped LFO waveforms to alter the Pulse Width and timbre of the oscillators in a stepped way instead of the chorus effect produced by the other waveforms with slopes.

PWM AND PITCHED SEQUENCE

Sequence the PITCH of the DRONE oscillators together with PWM.



Connect the splitter cable to LFO **WAVE II**, patch its sockets to **PWM** on DRONE I and II.

Set LFO WAVE I to the Quad Speed Square Wave pattern, LFO WAVE II to Triangle (90° phase shifted), RATE to 11 o'clock, OSC I DESTINATION switch to WAVE I and OSC II DESTINATION switch to WAVE I.

Both DRONE sections are set up the same. Set the OSC MIX knob to X (x-wave), set the X-WAVE knob to Square, the OSC LFO DEPTH routing switch to the right (pitch), the OSC LFO DEPTH knob to 2 o'clock, PITCH to 12 o'clock and the VOLUME to 2 o'clock.

Set HARD SYNC to the left (off) and PITCH LINK to the right (on).

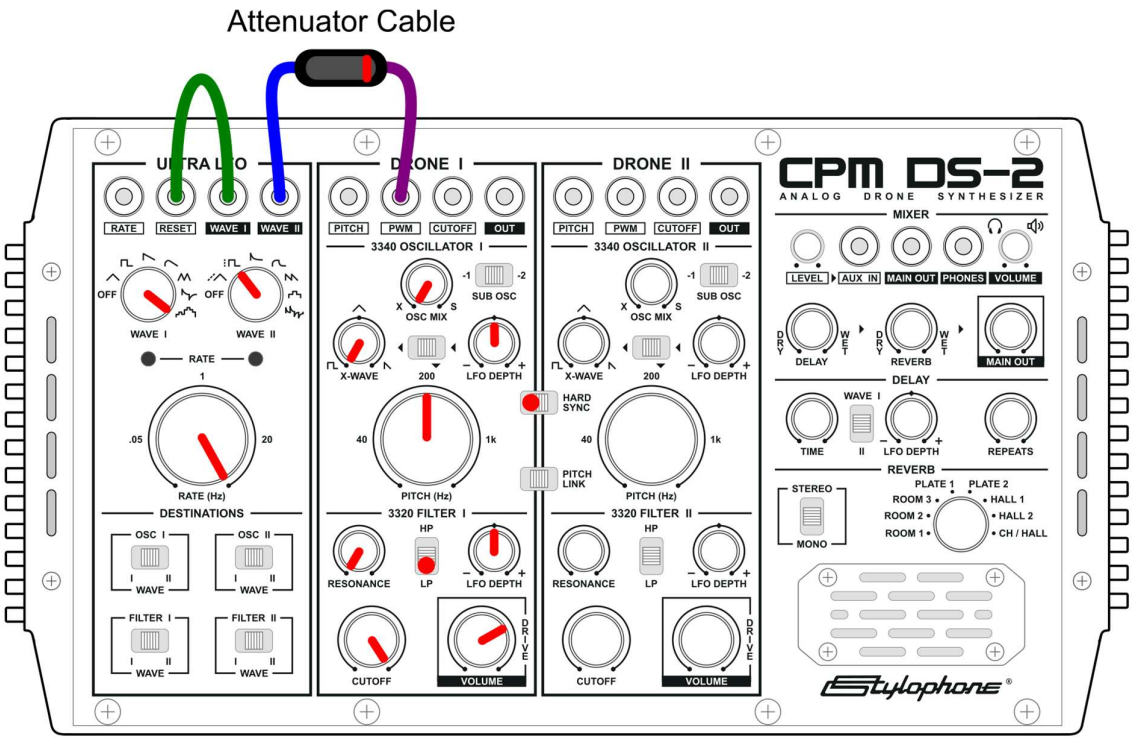
Try to set the PITCH and OSC LFO DEPTH knob settings as close as you can to each other. To make it easier to match the PITCH knobs you can turn LFO WAVE I to OFF while you adjust them.

By creating a copy of the LFO **WAVE II** output and connecting that to the **PWM** socket on both DRONE sections we're able to create the same PWM effect as the 'Pulse Width Modulation' example. But here we're using a single LFO output so the change in symmetry will be in the same direction on both oscillators.

LFO WAVE I is routed to both DRONE pitches using the front panel controls so try adjusting the LFO WAVE I knob to see how this changes the pitch over time.

STATIC PULSE WIDTH OSCILLATOR

Set static Pulse Width of an oscillator with the attenuator cable to make new timbres.



Patch LFO **WAVE I** to LFO **RESET**, patch LFO **WAVE II** to the attenuator cable, then patch its output to DRONE I **PWM**. Set the slider on the attenuator cable to maximum.

Set WAVE I to Quad Speed Square Wave pattern, WAVE II to Square (90° phase shifted) and RATE to maximum.

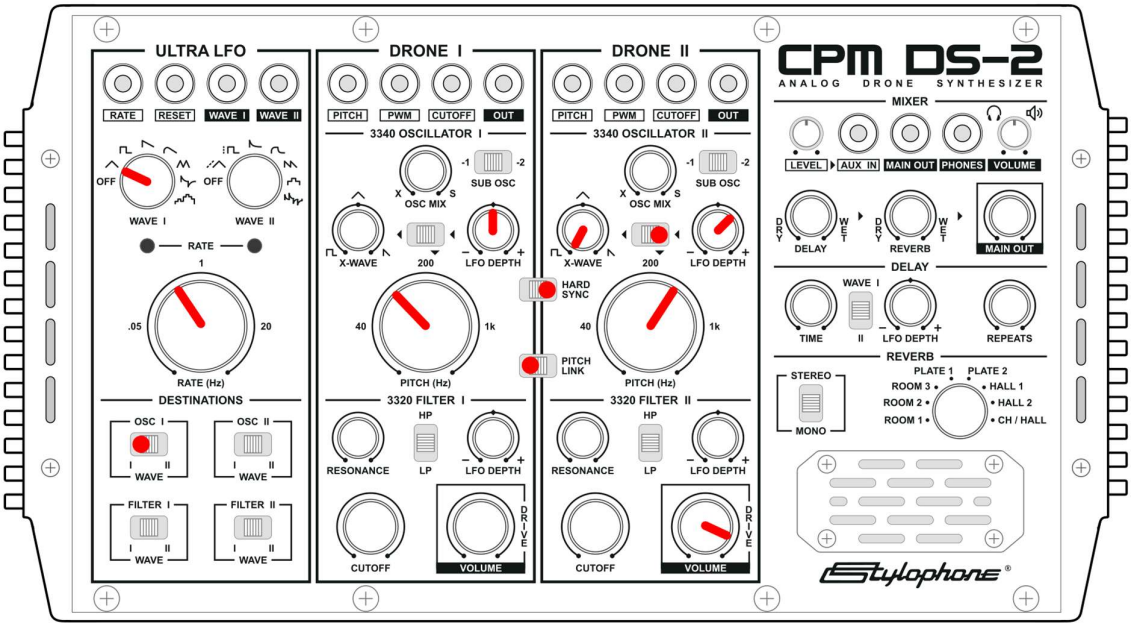
In DRONE I set OSC MIX to X (x-wave), X-WAVE to Square, OSC LFO DEPTH to 12 o'clock (off) and PITCH to 12 o'clock. Set HARD SYNC to the left (off). Set RESONANCE to minimum, CUTOFF to maximum, filter type to LP, FILTER LFO DEPTH to 12 o'clock and VOLUME to 2 o'clock.

The LFO **RESET** socket is used to restart the LFO, but in this case the LFO settings and patch cable to **RESET** mean it's constantly resetting itself without moving. Note how the LFO WAVE II LED is constantly lit. There are still a few ripples in its output so the RATE is maxed out so these can't be heard. This produces a constant high voltage at **WAVE II** which when connected to the **PWM** socket will move the DRONE I Square wave oscillator symmetry to a different fixed position creating a static Pulse wave with a different timbre.

The attenuator cable slider controls depth so try adjusting that to hear the different timbres. Try moving the **PWM** patch to **PITCH**. It's possible to make the DRONE PITCH much higher using this method, right up to the limit of the human hearing range! Also, by changing the LFO WAVE II knob to Logarithmic Triangle we can create a fixed negative voltage from the **WAVE II** output which can be used for negative modulation.

CLASSIC HARD SYNC

Create a shifting HARD SYNC tone from DRONE II



Set LFO WAVE I to the Triangle, set the RATE knob to 11 o'clock and set the OSC I DESTINATION switch to WAVE I.

In the DRONE I section set the OSC LFO DEPTH to 12 o'clock (off) and set the PITCH knob to 11 o'clock.

Set the HARD SYNC switch to the right (on) and the PITCH LINK switch to the left (off).

In the DRONE II section set the X-WAVE knob to Square, set the OSC LFO DEPTH routing switch to the right (pitch) and the OSC LFO DEPTH knob to 2 o'clock. Set the PITCH knob to 1 o'clock.

Set the DRONE II VOLUME as needed, note the oscillator audio from the DRONE I section is muted in the MIXER section when HARD SYNC is switched on, so it doesn't muddy the hard sync sound, (though a self resonant filter would be heard, see 'Filters as Tone Generators' example).

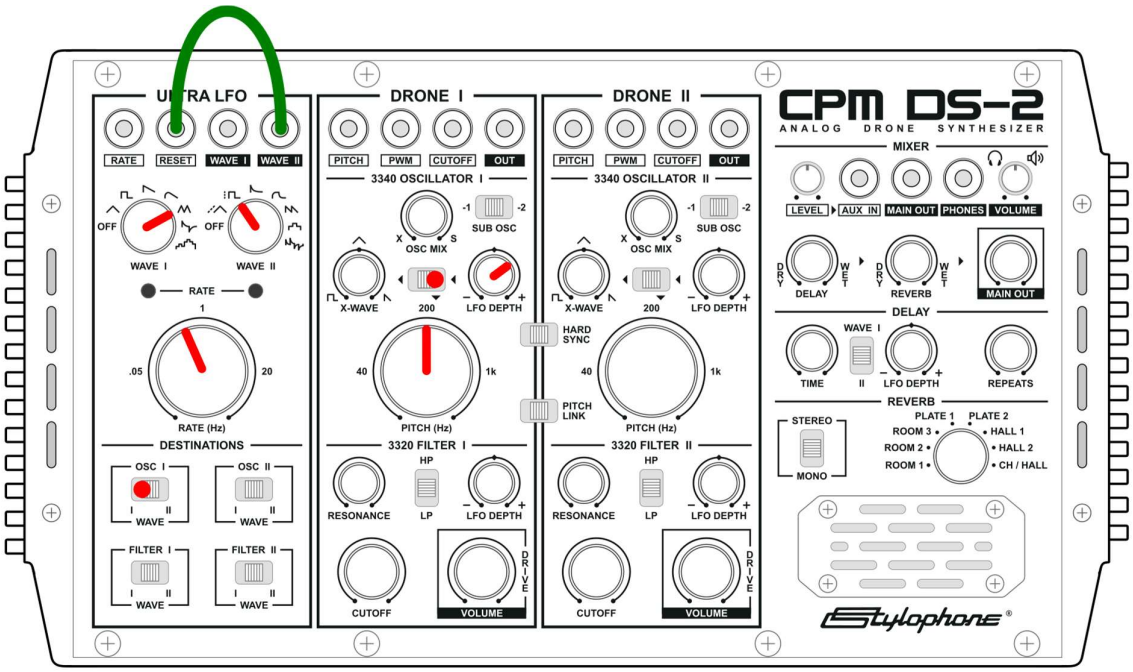
When the HARD SYNC switch is on it forces the waveform heard from DRONE II to restart its cycle in sync with the output of DRONE I. The effect works best when the PITCH of DRONE II is higher than that of DRONE I.

Try experimenting with the DRONE I and II PITCH knobs and the DRONE II OSC LFO DEPTH knob to get a different range of effects. Also try changing the LFO WAVE I shape to control how the sync sound changes over time and the DRONE II X-WAVE shape for different timbres.

Add some DELAY for a big spacey sci-fi sound!

MORE LFO WAVEFORMS

Create more LFO waveforms with the LFO RESET socket.



Patch LFO **WAVE II** to LFO **RESET**.

Set LFO WAVE I knob to the Double Speed Triangle wave and set LFO WAVE II to the Square (90° phase shifted) wave.

Set the OSC I LFO DESTINATION switch to WAVE I

Set LFO RATE knob to 11 o'clock.

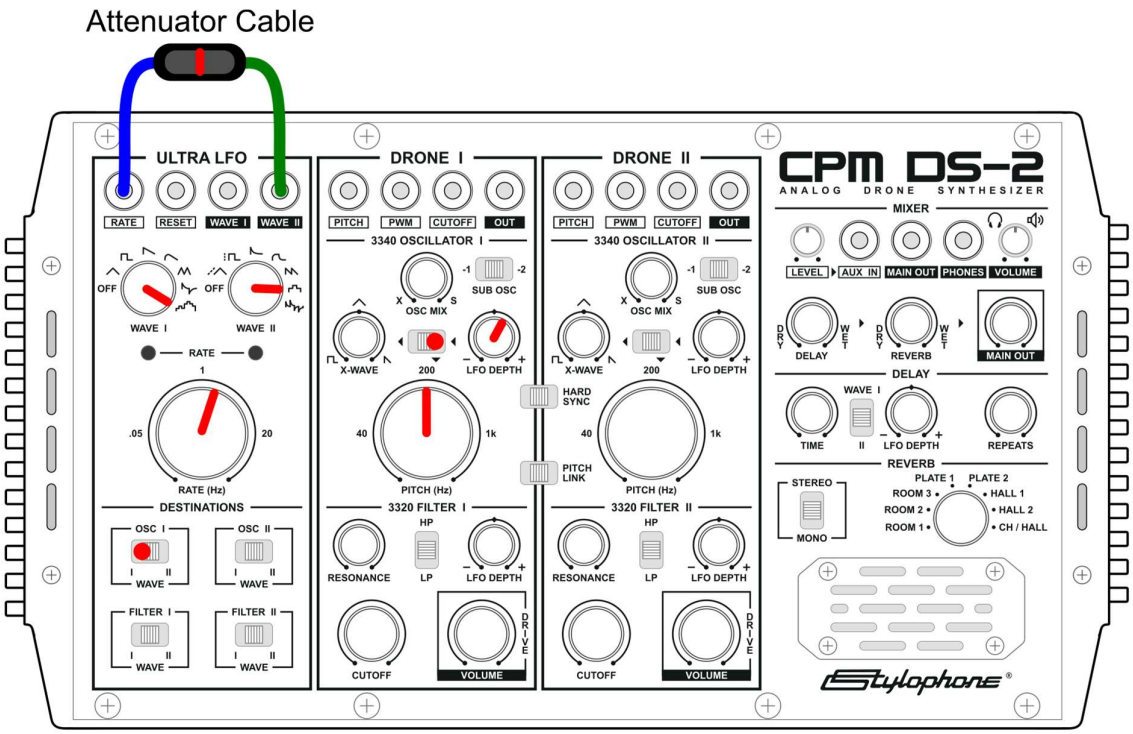
In the DRONE I section set the PITCH knob to 12 o'clock, the OSC LFO DEPTH routing switch to the right (pitch) and the OSC LFO DEPTH knob to 2 o'clock.

In this example because the **WAVE II** output is connected to **RESET**, the LFO wave will restart when the output at the **WAVE II** connection is high enough (when the LFO WAVE II LED is bright enough). This creates a unique LFO waveform with a smooth up and down motion and an abrupt change when the **WAVE II** output resets the LFO. You should be able to hear this in the pitch of DRONE I as the LFO cycles.

Experiment with different LFO WAVE I and WAVE II knob positions and destinations such as filter CUTOFF. Also try moving the patch cable from the **WAVE II** socket to **WAVE I** for even more options.

EVEN MORE LFO WAVEFORMS

Create more LFO waveforms with the LFO RATE socket.



Patch LFO **WAVE II** to the attenuator cable, then patch its output to LFO **RATE**.

Set the slider on the attenuator cable to approximately 50%.

Set LFO WAVE I knob to the Quad Speed Square Pattern wave and set LFO WAVE II to the Double Speed Square Pattern wave.

Set the OSC I LFO DESTINATION switch to WAVE I

Set LFO RATE knob to 1 o’clock.

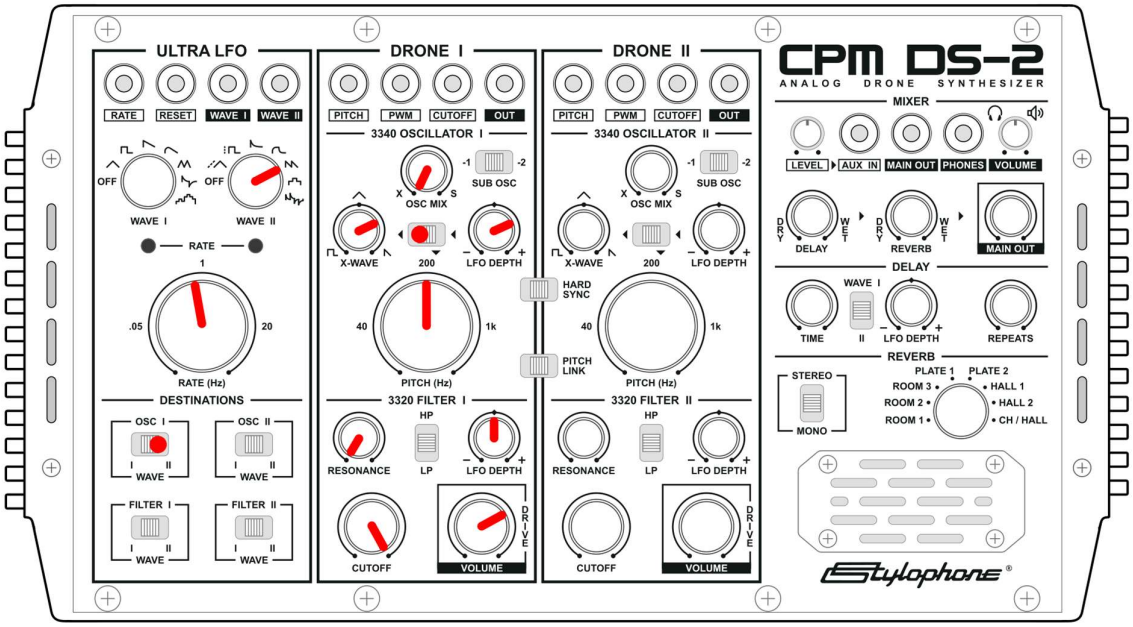
In the DRONE I section set the PITCH knob to 12 o’clock, the OSC LFO DEPTH routing switch to the right (pitch) and the OSC LFO DEPTH knob to 1 o’clock.

In this example the **WAVE II** output of the LFO is controlling the LFO rate which can achieve some interesting effects. The LFO WAVE I output can be heard affecting the pitch of DRONE I. The slider on the attenuator cable works like a depth knob by setting the amount that the LFO affects its own speed. You should be able to hear steps of different length as the LFO cycles.

Experiment with different LFO WAVE I and WAVE II knob positions and destinations such as filter CUTOFF. Also try moving the patch cable from the **WAVE II** socket to **WAVE I** for even more options.

TIMBRE CONTROL WITH X-WAVE

Timbre control without using the FILTER.



Set LFO WAVE II to the Double Speed Sawtooth wave, Set the RATE to 11 o'clock and the OSC I DESTINATION switch to WAVE II.

In the DRONE I section set the OSC MIX to X (x-wave), the X-WAVE knob to 2 o'clock, the OSC LFO DEPTH routing switch to the left (x-wave), the OSC LFO DEPTH knob to 2 o'clock and the PITCH to 12 o'clock. Set the RESONANCE to minimum, the CUTOFF to maximum, the FILTER LFO DEPTH to 12 o'clock (off) and VOLUME to 2 o'clock.

The OSC I DESTINATION switch and OSC LFO DEPTH switch settings route the LFO to control the X-WAVE knob. This moves it using the Double Speed Sawtooth wave so the oscillator starts as a Saw wave and gradually moves to a Triangle wave changing its timbre (also known as tone). Note how this is achieved without the use of the filter which is completely open and unmodulated.

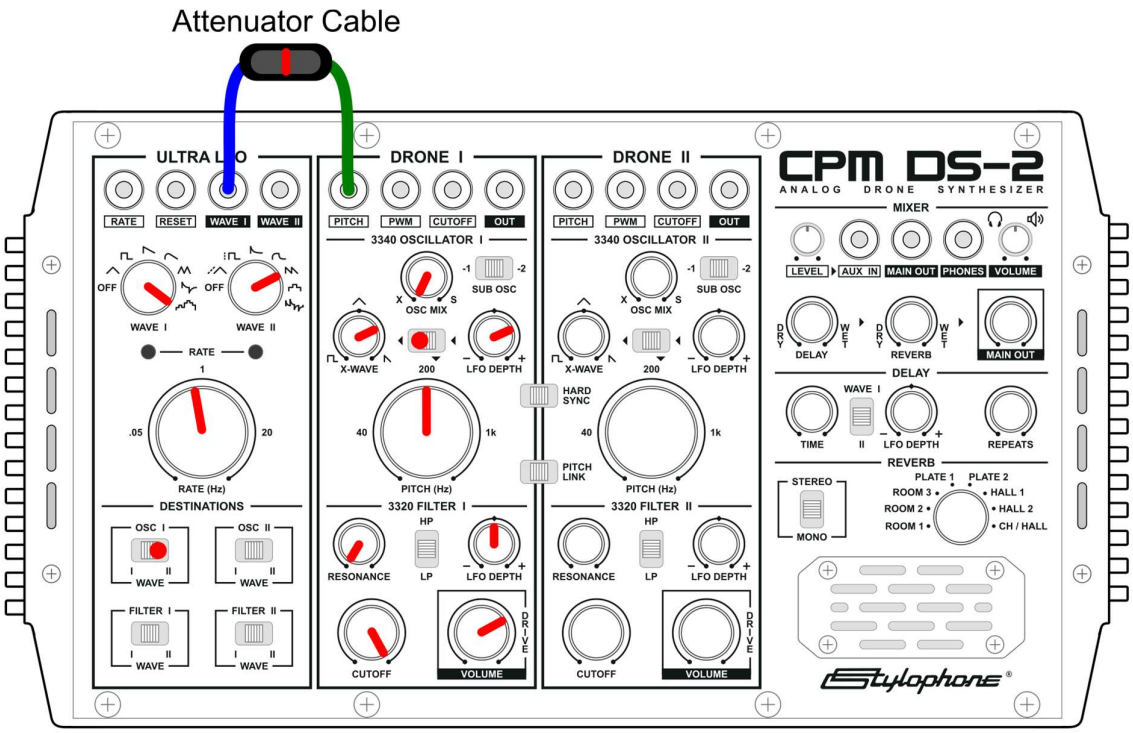
Moving the OSC LFO DEPTH routing switch to the left also stops the LFO from being sent to PITCH so there won't be any change to the tuning of the oscillator in this example.

Try moving the X-WAVE and OSC LFO DEPTH knob to different positions to find different changes in timbre.

Also try different LFO WAVE II knob positions to see how this affects to timbres change over time.

PITCH AND X-WAVE TIMBRE MODULATION

Simultaneous PITCH and X-WAVE timbre control using patch sockets.



Patch **WAVE I** to the attenuator cable, set its slider to 50% then patch its output to DRONE I **PITCH.**

Set LFO WAVE I to Quad Speed Square Pattern wave, LFO WAVE II to Double Speed Sawtooth wave, Set RATE to 11 o'clock and the OSC I DESTINATION switch to WAVE II

In the DRONE I section set the OSC MIX to X (x-wave), the X-WAVE knob to 2 o'clock, the OSC LFO DEPTH routing switch to the left (x-wave), the OSC LFO DEPTH knob to 2 o'clock and the PITCH to 12 o'clock. Set the RESONANCE to minimum, the CUTOFF to maximum, the FILTER LFO DEPTH to 12 o'clock (off) and VOLUME to 2 o'clock.

This is an extension of the 'Timbre Control with X-WAVE' examples.

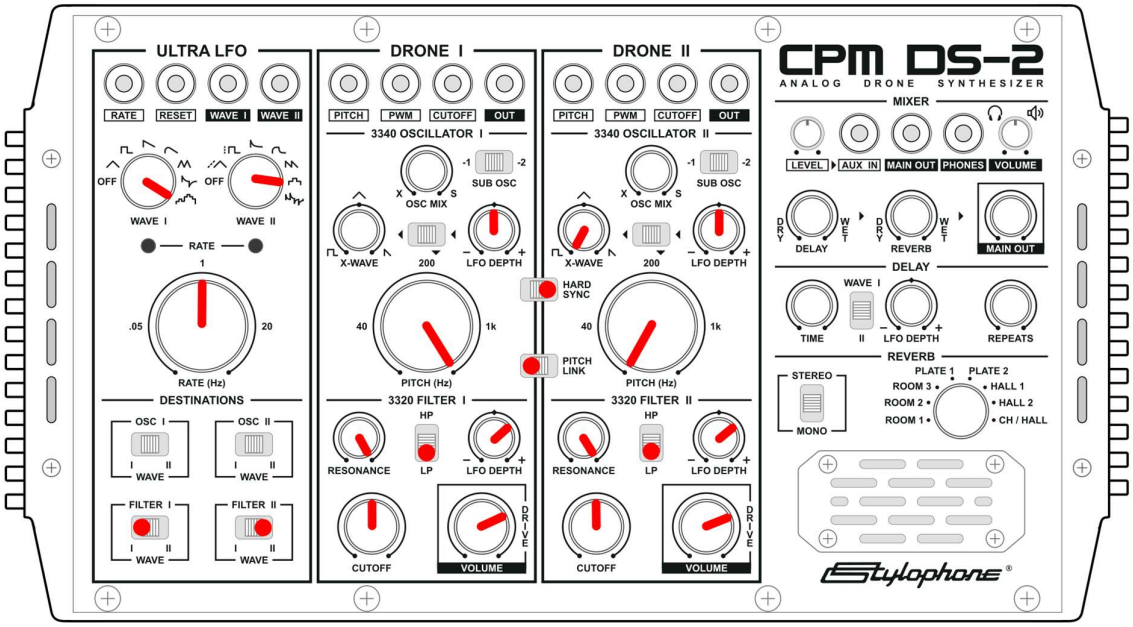
In both examples we're using the OSC LFO DEPTH routing switch to route the LFO to the X-WAVE knob, but we can still route the LFO to control its PITCH by using the **PITCH** patch sockets.

By connecting **WAVE I** to **PITCH** through the attenuator cable we create an extra connection to control PITCH, the amount of which is controllable with the slider on the attenuator cable.

Note though that this allows only positive modulation to be applied (0-100%) whereas the LFO DEPTH knobs on the front panel are 'attenuverters'. These allow attenuation and inversion to be applied (-100% to 0 to 100%).

FILTERS AS TONE GENERATORS

Create a sequence with self oscillating filters.



Set LFO WAVE I to the Quad Speed Square Pattern wave and LFO WAVE II to the Double Speed Square Pattern wave. Set the RATE to 12 o'clock, the FILTER I DESTINATION switch to WAVE I and the FILTER II DESTINATION switch to WAVE II.

In DRONE I section set the OSC LFO DEPTH to 12 o'clock (off) and PITCH to maximum. Set the RESONANCE to maximum, the CUTOFF to 12 o'clock, filter type to LP, FILTER LFO DEPTH knob to 1 o'clock and VOLUME to 2 o'clock.

Move the HARD SYNC switch to the right (on) and PITCH LINK to the left (off).

In the DRONE II section set the X-WAVE knob to square, the OSC LFO knob to 12 o'clock (off) and the PITCH to minimum. Match the filter settings in DRONE II to DRONE I.

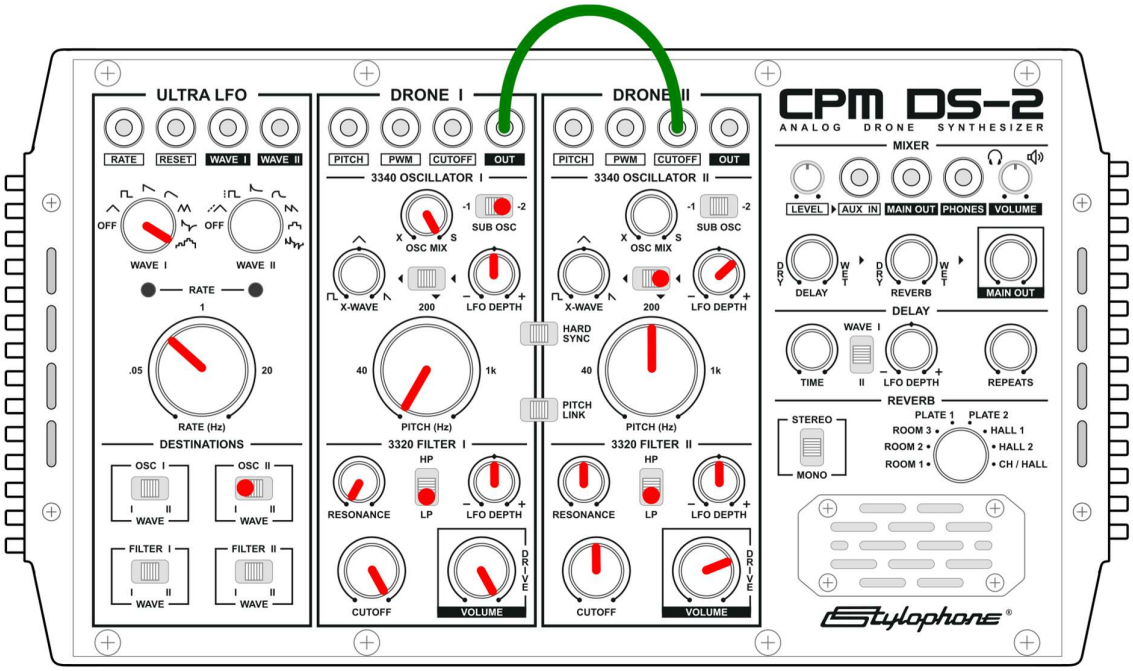
In this example the HARD SYNC switch mutes the audio of oscillator in DRONE I, the X-WAVE and PITCH settings in DRONE II mean that its oscillator is reset so often that it also doesn't produce any sound.

These settings don't mute the DRONE sections completely though, by turning up the RESONANCE knobs on both filters they will be self oscillating meaning they produce audio on their own. Because we've routed two different LFO waveforms to the filter CUTOFFs you'll hear a sequence played by the output of the filters, a chirpy sequence of sine waves.

Experiment with the VOLUME knobs, turning them up will distort the sine wave output from the filters making them brighter and more aggressive. Try different LFO settings, CUTOFF and FILTER LFO DEPTH settings for different sequences. Also try reintroducing the DRONE oscillators to see how that effects the sound.

SUB OSC AS AN LFO

Use the SUB OSC output as an LFO.



Patch DRONE I **OUT** to DRONE II **CUTOFF**, this mutes the audio of OSC I in the MIXER section which is useful since we're using OSC I as a modulation source. Set LFO WAVE I knob to the Quad Speed Square Pattern, set the RATE to 11 o'clock and the OSC II LFO DESTINATION to WAVE I.

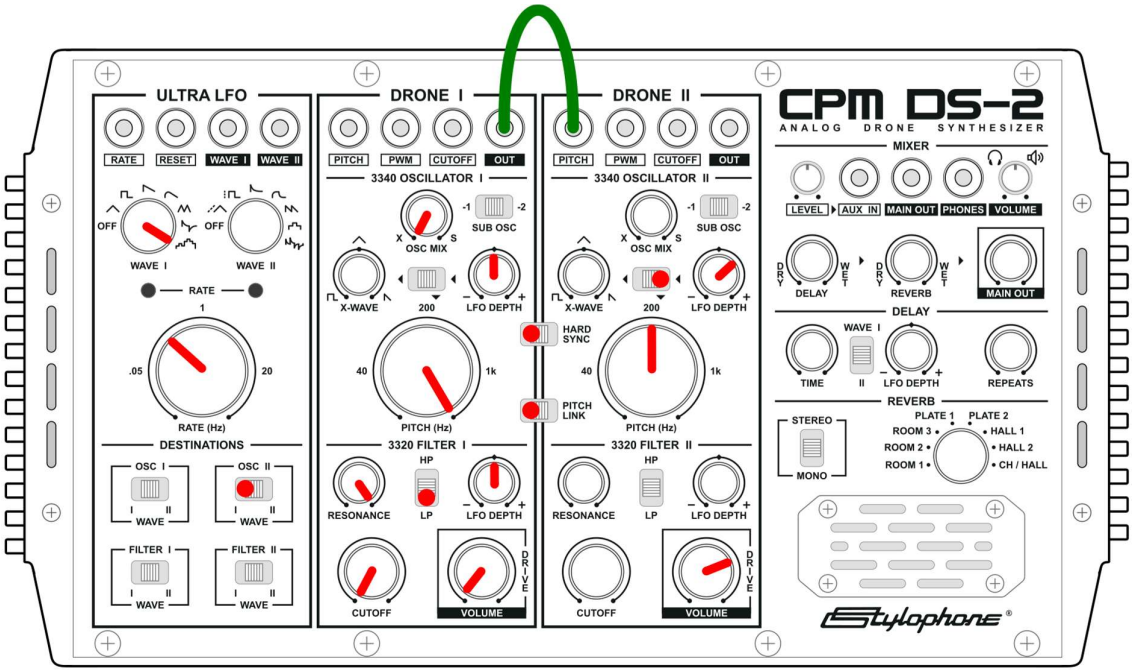
In the DRONE I section set the SUB OSC switch to -2, the OSC MIX to S (sub), the OSC LFO DEPTH knob to 12 o'clock (off) and the PITCH to minimum. Set the RESONANCE to minimum, CUTOFF to maximum, type to LP, FILTER LFO DEPTH to 12 o'clock (off) and VOLUME to maximum.

In the DRONE II section set the OSC LFO DEPTH routing switch to the right (pitch), the OSC LFO DEPTH knob to 2 o'clock and the PITCH to 12 o'clock. Set the RESONANCE and CUTOFF to 12 o'clock, type to LP, FILTER LFO DEPTH to 12 o'clock (off) and VOLUME to 2 o'clock.

In this example because DRONE I **OUT** is connected to DRONE II **CUTOFF**, the output of DRONE I will move the filter CUTOFF in DRONE II around. Because we've set the DRONE I to SUB OSC -2 it will be fairly slow at around 6 times a second. You'll be able to hear this is running at a different speed to the ULTRA LFO which is routed to the DRONE II PITCH. You'll also notice that the DRONE II FILTER LFO DEPTH is off, the **CUTOFF** socket is not attenuated so is available for additional modulation. The DRONE I VOLUME control is used as an attenuator here because we're using an audio source as control voltage. Experiment with the DRONE II CUTOFF and RESONANCE as you'll hear the effect sounds like the Double Speed Exponential Sawtooth on the LFO due to the way audio signals have their DC offset removed (voltages won't hold and will always slope back to the centre).

FILTER AS A VIBRATO LFO

Use the filter to create a rapid vibrato LFO.



Patch DRONE I **OUT** to DRONE II **PITCH**, note that this mutes the audio of OSC I in the MIXER section which is useful since we're using OSC I as a modulation source.

Set LFO WAVE I knob to the Quad Speed Square Pattern, set the RATE to 11 o'clock and the OSC II LFO DESTINATION to WAVE I.

In the DRONE I section set OSC MIX to X (x-wave), OSC LFO DEPTH to 12 o'clock (off) and the PITCH to maximum. Set the RESONANCE to maximum, CUTOFF to minimum, type to LP, FILTER LFO DEPTH to 12 o'clock (off) and VOLUME to slightly more than minimum.

Makes sure HARD SYNC and PITCH LINK are set to the left (off).

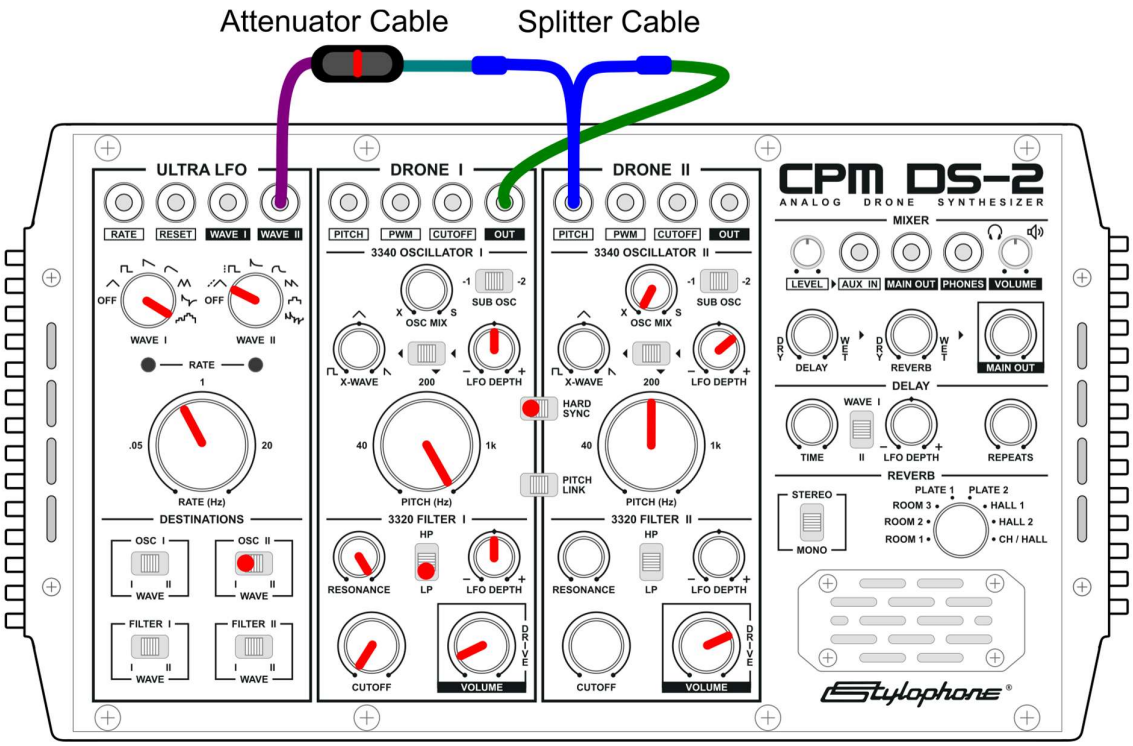
In the DRONE II section set the OSC LFO DEPTH routing switch to the right (pitch), the OSC LFO DEPTH to 2 o'clock and the PITCH to 12 o'clock. Set the VOLUME to 2 o'clock and the filter settings to your own taste.

In this example because DRONE I **OUT** is connect to DRONE II **PITCH**, the output of DRONE I will move the PITCH in DRONE II around creating vibrato that is separate from the ULTRA LFO RATE. As we saw in the 'Filters as Tone Generators' example turning the FILTER RESONANCE to maximum makes the filter self resonate producing a sine wave. The difference here is that the CUTOFF in DRONE I is set to minimum so the sine wave that is produced is cycling at about 12 times a second which is slow enough for vibrato.

The DRONE I oscillator is still producing a tone but it's PITCH is set to maximum so it's audio is 'out of the way' because the low pass (LP) settings of the filter in DRONE I also remove the high frequency it produces.

TRIPLE MODULATION

Connect three modulation sources to a DRONE oscillator.



Patch **WAVE II** to the attenuator cable, then patch its output to one of the sockets on the splitter cable. Patch DRONE I **OUT** to the other socket on the splitter cable then patch that to DRONE II **PITCH**. Set the attenuator cable slider to 50%.

Set LFO WAVE I to the Quad Speed Square Pattern wave, LFO WAVE II to Triangle (90° phase shifted), RATE to 11 o'clock and OSC II DESTINATION to WAVE I

In DRONE I set the OSC LFO DEPTH knob to 12 o'clock (off) and PITCH to maximum. Set RESONANCE to maximum, CUTOFF to minimum, type to LP, FILTER LFO DEPTH to 12 o'clock (off) and VOLUME to 8 o'clock.

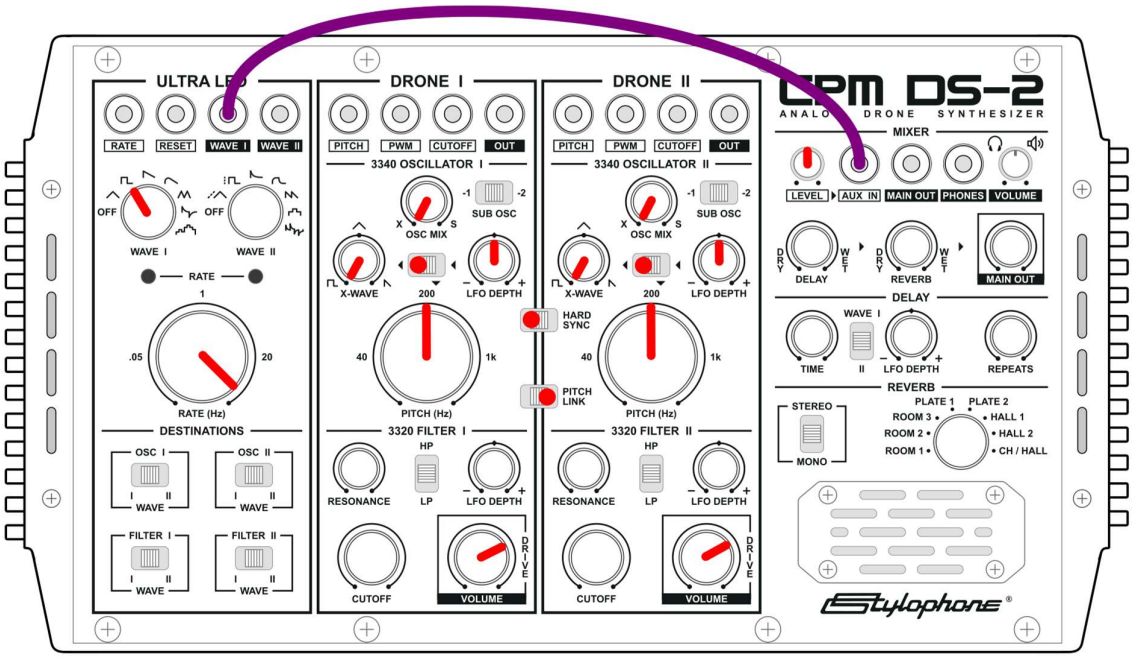
Set HARD SYNC to the left (off).

In DRONE II set the OSC MIX knob to X (x-wave), the OSC LFO DEPTH knob to 2 o'clock, PITCH to 12 o'clock and VOLUME to 2 o'clock.

The resonance from the DRONE I filter is once again used as a vibrato LFO, this is mixed with WAVE II by using the splitter and attenuator cables as a mixer. The DRONE II OSC LFO DEPTH is also receiving WAVE I from the LFO so that's a total of three modulation sources. Try changing the attenuator cable slider, DRONE I VOLUME and DRONE I OSC LFO DEPTH knob to mix their modulation intensities. Also try moving the patch from **PITCH** to **CUTOFF** and see what can be done with FILTER modulation.

3 OSCILLATOR DRONE

Use the LFO as an audio oscillator.



Patch the **WAVE I** socket to **AUX IN**. In the MIXER set AUX IN LEVEL to 12 o'clock.

Set LFO WAVE I to the Square wave and the RATE to 4 o'clock.

The settings for both DRONE sections are the same. Set OSC MIX to X (x-wave), X-WAVE to Square, the OSC LFO DEPTH routing switch to the left (x-wave), the OSC LFO DEPTH knob to 12 o'clock (off) and the PITCH to 12 o'clock.

Set HARD SYNC to the left (off) and PITCH LINK to the right (on).

Try to match the PITCH knobs as best as you can. If you need to hear them without the audio from the LFO, turn down the AUX IN LEVEL.

In this example the LFO is running very fast so the waveform it creates is within audio rate, so when that's connected to the AUX IN socket we can hear it. You'll be able to tune the output of the LFO using the RATE knob within about the top 10% of its range.

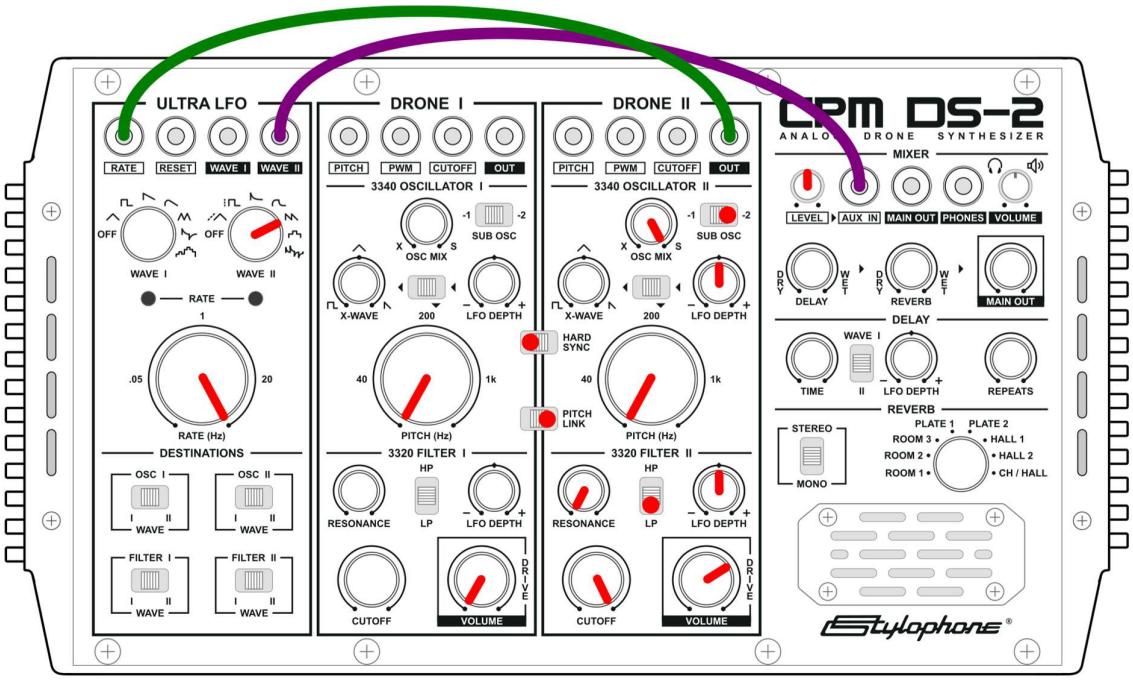
Because it's running at audio rates its effect on the OSC LFO DEPTH to PITCH is more noticeable, so here it's being routed to X-WAVE so that won't be heard. This is a useful way to disconnect the LFO from pitch, changes in timbre aren't as noticeable to our ears.

Try different LFO WAVE I knob positions. They will all have different timbres just like the DRONE oscillators. Also try moving the **WAVE I** connection to **WAVE II** and move the LFO WAVE II knob for more options.

Try adjusting the OSC MIX knobs to bring in the sound of the DRONE sub oscillators too.

ROLE REVERSAL

Use the LFO as an audio oscillator and the audio oscillator as an LFO!



Patch the **WAVE II** socket to **AUX IN** and DRONE II **OUT** to **RATE**. In the MIXER set AUX IN LEVEL to 12 o'clock. (Note! Patching into the DRONE **OUT** sockets mutes the OSC in the mixer section which is to facilitate their use as modulation sources only.)

Set LFO WAVE II to the Double Speed Sawtooth wave and the RATE to maximum.

In DRONE I set the PITCH to minimum and the VOLUME to minimum.

Set HARD SYNC to the left (off) and PITCH LINK to the right (on).

In DRONE II set the OSC MIX to S (sub), the SUB OSC switch to -2, the OSC LFO DEPTH knob to 12 o'clock (off) and PITCH to minimum. Set RESONANCE to minimum, CUTOFF to maximum, type to LP, FILTER LFO DEPTH to 12 o'clock (off) and VOLUME to 2 o'clock.

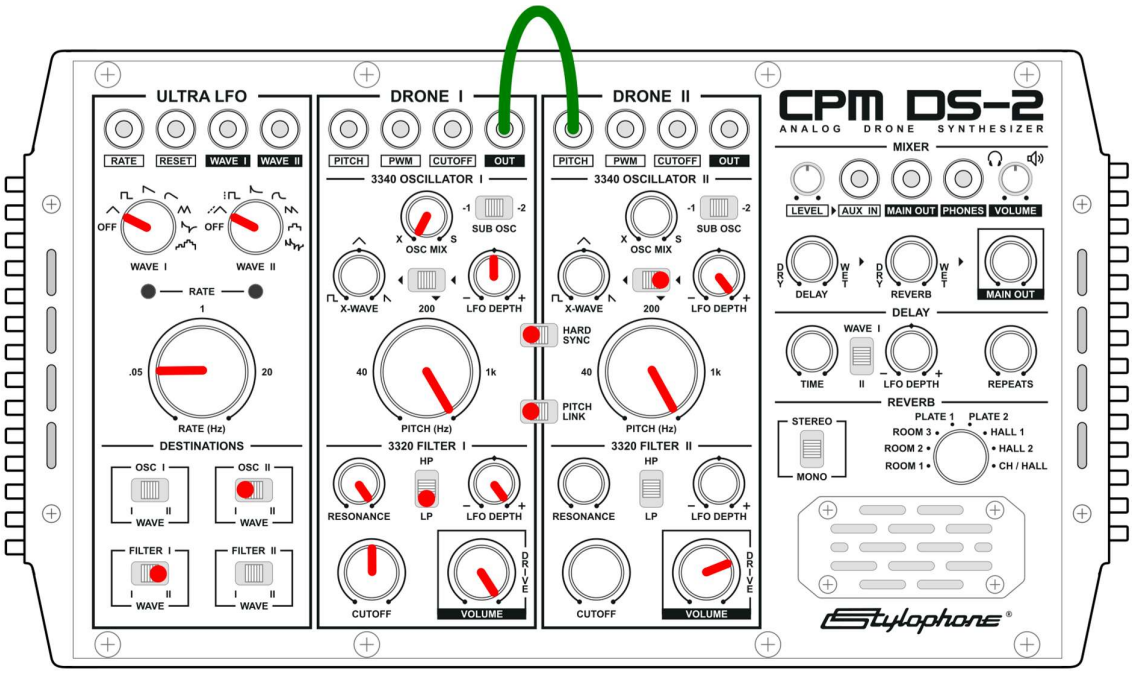
In this example we're making the LFO audible just as we did in the '3 Oscillator Drone' example, except this time we're using the Double Speed Sawtooth wave meaning its pitch will be higher.

We're using a DRONE **OUT** as an LFO source just as we did in the 'Sub Osc as LFO' but the difference here is in the PITCH LINK settings. With PITCH LINK on the DRONE II PITCH knob will be relative to the DRONE I PITCH knob so with both PITCH knobs turned down to minimum the DRONE II output will be even slower than in the 'Sub Osc as LFO' example. Try turning PITCH LINK off to hear the difference.

Also try experimenting with different LFO WAVE II knob settings for different timbres and the DRONE II PITCH and VOLUME knobs for different modulation speeds and depths.

EXTREME PITCH FM

Create a chaotic soundscape by allowing DRONE I to control DRONE II.



Patch DRONE I **OUT** to DRONE II **PITCH**. (Note! Patching into the DRONE **OUT** sockets mutes the OSC audio in the mixer section to facilitate their use as modulation sources only.)

Set LFO WAVE I knob to the Triangle, set the LFO WAVE II knob to Triangle (90° phase shifted), set the RATE to 9 o'clock, set the OSC II DESTINATION switch to WAVE I and FILTER II DESTINATION switch to WAVE II.

In the DRONE I section set the OSC MIX to X (x-wave), the OSC LFO DEPTH to 12 o'clock (off) and the PITCH to maximum. Set the RESONANCE to maximum, CUTOFF to 12 o'clock, type to LP, FILTER LFO DEPTH to maximum and VOLUME to maximum.

Makes sure HARD SYNC and PITCH LINK are set to the left (off).

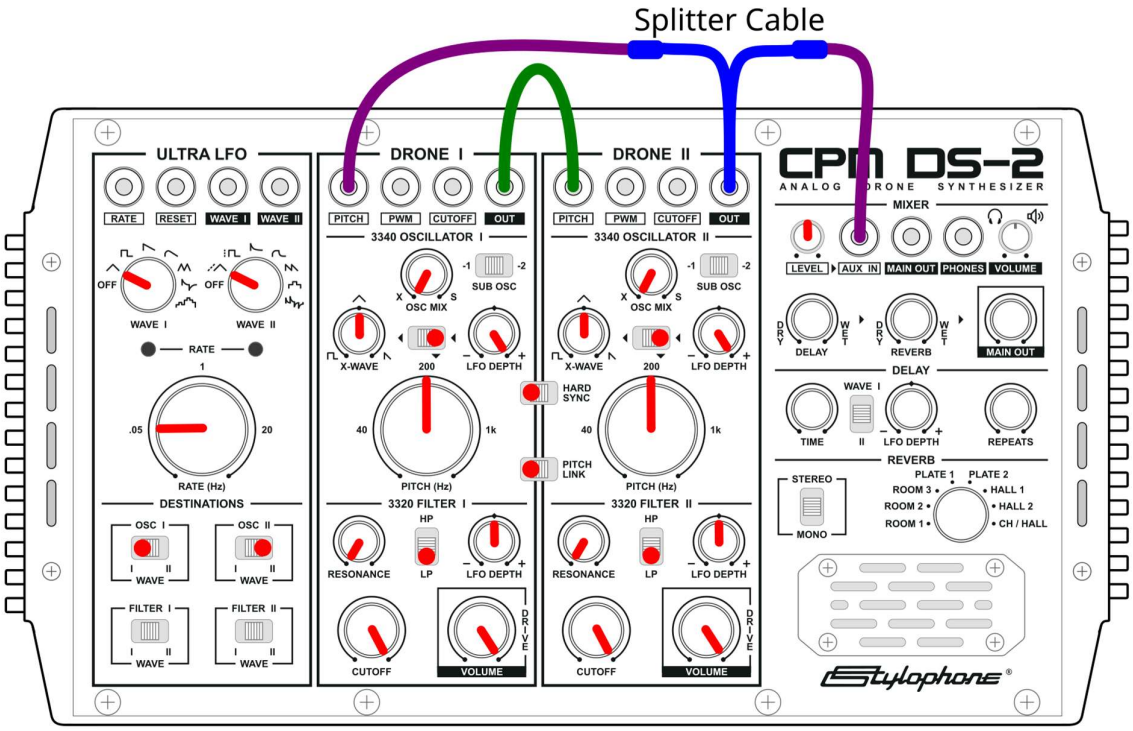
In the DRONE II section set the OSC LFO DEPTH routing switch to the right (pitch), the OSC LFO DEPTH knob to maximum and the PITCH to the maximum. Set the VOLUME to 2 o'clock and the filter settings to your own taste.

Note how this is only a few tweaks away from the 'Filter as a Vibrato LFO' but the results are more extreme! The DRONE I CUTOFF has been raised to audio range meaning it modulates DRONE II faster, plus this allows the DRONE I oscillator to mix with the resonant sine wave so the modulation fed into the **PITCH** of DRONE II is very chaotic. Also, the LFO waves are moving in opposite directions, so the PITCH of DRONE II rises as the modulation coming from DRONE II falls.

Try moving the LFO DEPTH knobs towards the middle for a more subtle effect or turn up the REVERB knob for added nightmare fuel!

EXTREME PITCH FEEDBACK

Another method of producing a chaotic soundscape.



Patch DRONE I **OUT** to DRONE II **PITCH**. Connect the splitter cable to DRONE II OUT then patch its outputs to DRONE I **PITCH** and **AUX IN**. Set the AUX IN LEVEL to 12 o'clock (the volume can be much louder if this turned up).

Set LFO WAVE I knob to the Triangle, set the WAVE II knob to Triangle (90° phase shifted), set the RATE to 9 o'clock, set the OSC I DESTINATION to WAVE I and OSC II DESTINATION to WAVE II.

Makes sure HARD SYNC and PITCH LINK are set to the left (off).

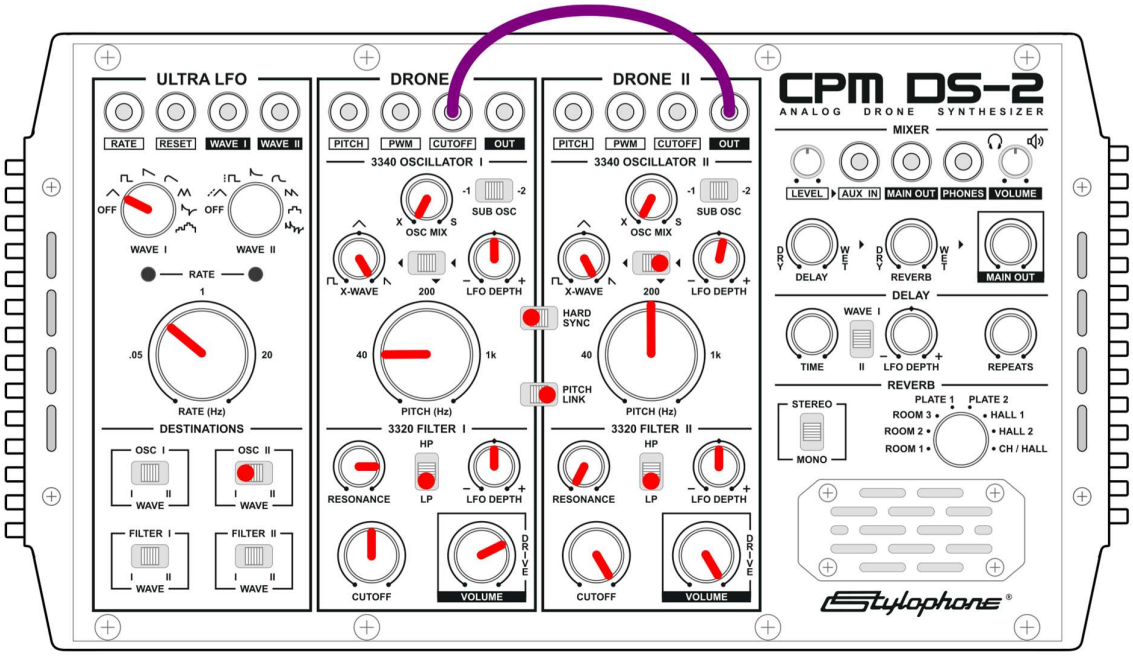
Both DRONE sections are the same. Set OSC MIX to X (x-wave), set X-WAVE to Triangle, set the OSC LFO DEPTH routing switch to the right (pitch), set the OSC LFO DEPTH knob to maximum and the PITCH to 12 o'clock. Set the RESONANCE to minimum, CUTOFF to maximum, type to LP, FILTER LFO DEPTH to 12 o'clock (off) and VOLUME to maximum.

Unlike the 'Extreme Pitch FM' example the filters are not used for modulation so their settings are as open as possible. We've made connections to both **OUT** sockets in this example so the splitter cable is used to duplicate the **OUT** of DRONE II into the **AUX IN**, otherwise it would not be heard.

The **OUT** of each DRONE is being fed into the other's **PITCH** meaning we've created a modulation feedback path turning our normally pleasant Triangle wave into a noisy cacophony! Try turning down DRONE I VOLUME to hear how DRONE II sounds when it's unaffected by feedback. Also try different X-WAVE knob positions for different timbres.

FILTER FM

Create amazing textures by modulating the filter at audio rate.



Patch DRONE II **OUT** to DRONE I **CUTOFF**. (Note! Patching into DRONE **OUT** sockets mutes the OSC audio in the mixer section to facilitate their use as modulation sources only.)

Set LFO WAVE I to Triangle, RATE to 10 o'clock and OSC II DESTINATION to WAVE I.

In DRONE I set OSC MIX to X (x-wave), X-WAVE to Saw, OSC LFO DEPTH knob to 12 o'clock (off) and PITCH to 9 o'clock. Set RESONANCE to 3 o'clock, CUTOFF to 12 o'clock, type to LP, FILTER LFO DEPTH to 12 o'clock (off) and VOLUME to 2 o'clock.

Set HARD SYNC to the left (off) and PITCH LINK to the right (on).

In DRONE II set OSC MIX to X (x-wave), X-WAVE to Saw, OSC LFO DEPTH routing switch to the right (pitch), OSC LFO DEPTH knob to slightly more than 12 o'clock and PITCH to 12 o'clock. Set RESONANCE to minimum, CUTOFF to maximum, type to LP, FILTER LFO DEPTH to 12 o'clock (off) and VOLUME to maximum.

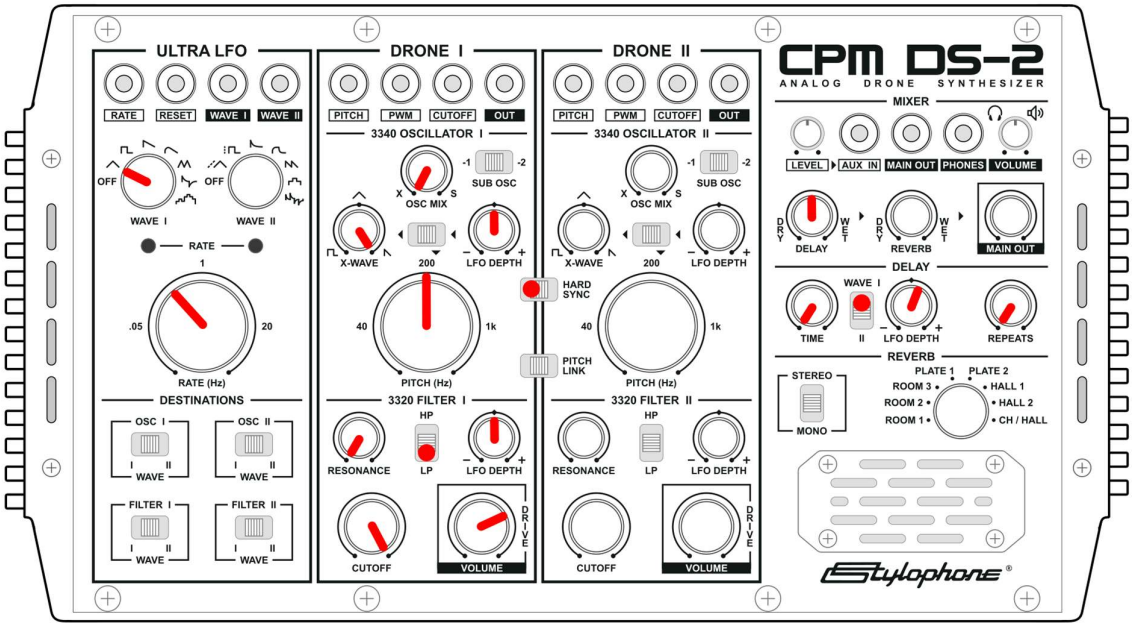
In this example both oscillators are producing a low bass tone, but rather than DRONE II being heard its output is fed into the **CUTOFF** socket one DRONE I. Because of this it's moving the CUTOFF around at audio rates, this is usually referred to as Filter FM.

The PITCH of DRONE II is being slowly moved back and forth by the LFO which gives the Filter FM effect a shifting tone. Note how the OSC LFO DEPTH knob is only turned up very slightly and the results are still very vivid. Try adjusting this to see what happens.

Also try changing the DRONE II X- WAVE, PITCH, filter CUTOFF, RESONANCE and filter type to see how that affects the sound.

DELAY AS A CHORUS

Create a subtle chorus effect using the delay.



Set the LFO WAVE I knob to Triangle and the RATE to 11 o'clock.

In the DRONE I section set the X-WAVE knob to Saw, the OSC MIX to X (x-wave), the OSC LFO DEPTH knob to 12 o'clock (off) and the PITCH to 12 o'clock. Set the RESONANCE to minimum, CUTOFF to maximum, type to LP, FILTER LFO DEPTH to 12 o'clock (off) and Volume to 2 o'clock.

In the MIXER and DELAY section set the DELAY MIX knob to 12 o'clock, set the TIME to minimum, DELAY LFO SOURCE switch to WAVE I, the DELAY LFO DEPTH knob to just above 12 o'clock and REPEATS to minimum.

The oscillator in DRONE I should be producing a bright sound with little or no movement but by mixing this with the output of the DELAY, the timing of which is being subtly modulated due to the DELAY LFO DEPTH settings, a chorus is produced. This will sound like two oscillators tuned slightly apart even though we're only using one oscillator. To hear DRONE I or the DELAY separately, adjust the DELAY MIX knob to either extreme.

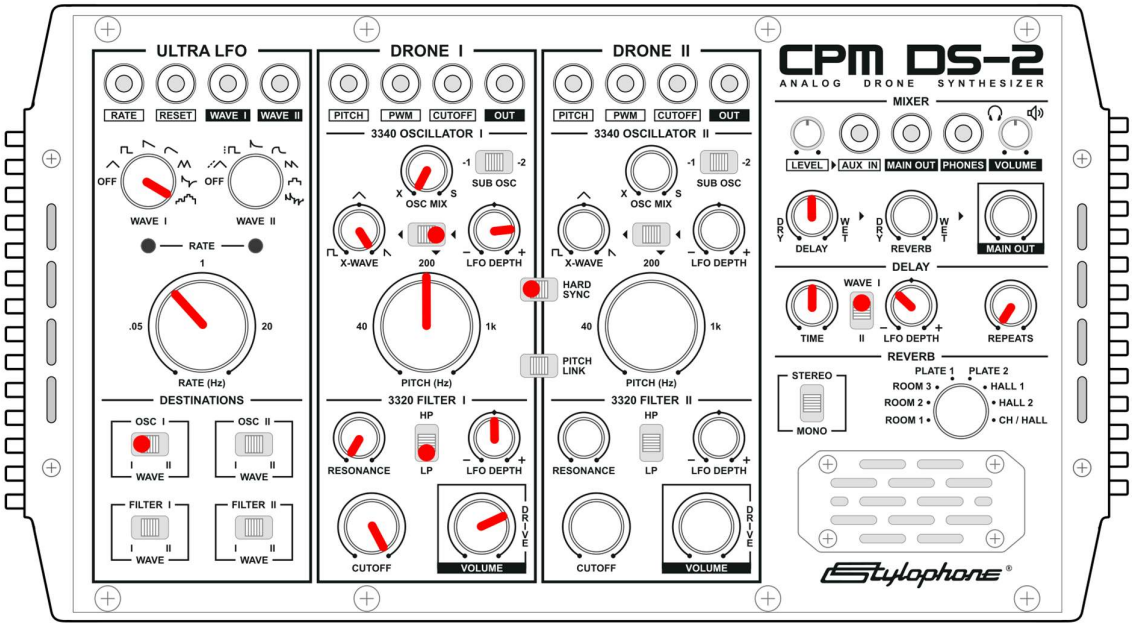
Try adding in DRONE II with similar tuning settings to DRONE I, this will thicken the sound up more. If you turn on PITCH LINK then DRONE II will follow any changes to the PITCH knob in DRONE I making adjustments easier.

Try also adding the CH/HALL REVERB ('CH' is also a chorus) which will thicken the sound up even more, great for drones!

Experiment with the DELAY LFO DEPTH settings for some wonkier sounds.

SEQUENCED DELAYS

Create another sequence layer by modulating the DELAY.



Set the LFO WAVE I knob to Quad Speed Square Pattern wave, the RATE to 11 o'clock and the OSC I DESTINATION switch to WAVE I.

In the DRONE I section set the X-WAVE knob to Saw, the OSC MIX to X (x-wave), the OSC LFO DEPTH routing switch to the right (pitch), the OSC LFO DEPTH knob to 3 o'clock and the PITCH to 12 o'clock. Set the RESONANCE to minimum, CUTOFF to maximum, type to LP, FILTER LFO DEPTH to 12 o'clock (off) and VOLUME to 2 o'clock.

In the MIXER and DELAY section set the DELAY MIX knob to 12 o'clock, set the TIME to 12 o'clock, DELAY LFO SOURCE switch to WAVE I, the DELAY LFO DEPTH knob to 10 o'clock and REPEATS to minimum.

Similar to the 'Delay as a Chorus' example this uses the DELAY to add to the sound coming from DRONE I, but this time it's creating a pitched sequence due to the position of the WAVE I knob in the ULTRA LFO section.

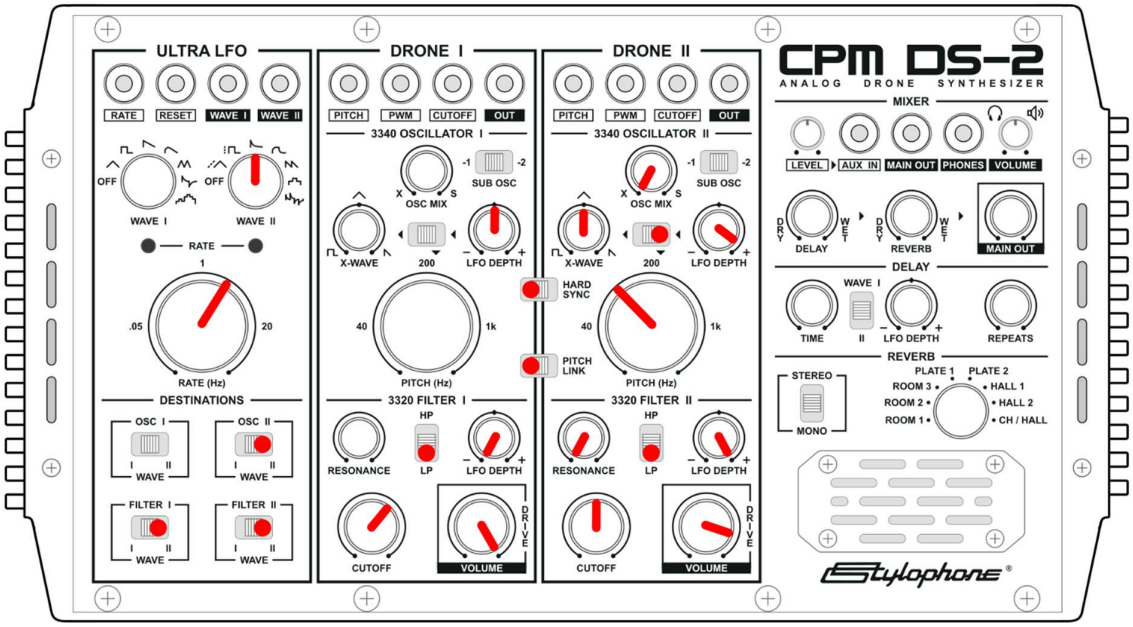
The tuning of the DELAY part of the sequence can be adjusted using the TIME and DELAY LFO DEPTH knob.

Try turning the OSC LFO DEPTH knob to the middle, the DELAY MIX knob up and the LFO RATE down. Note how there are a kind of 'gap' in the DELAY part of the sequence. The pitch of the delay is only altered when it receives a change from the LFO but will then settle back to the pitch received from the DRONE section. This can be used to create extra complexity in a sequence.

Once again try introducing DRONE II with different sequence settings for even more complexity.

KICK DRUM & ‘SIDECHAINED’ BASS

A techno like kick drum on DRONE II with a sidechain like bass sound on DRONE I



Set the LFO WAVE II knob to Exponential Sawtooth and set the RATE knob to set the tempo for the kick drum. Set DESTINATION switches OSC II to WAVE II, FILTER I to WAVE II and FILTER II to WAVE II.

In DRONE I set OSC LFO DEPTH knob to 12 o’clock (off), filter type to LP, CUTOFF to 1 o’clock, FILTER LFO DEPTH to minimum and VOLUME to maximum.

Set HARD SYNC and PITCH LINK to the left (off).

In DRONE II set OSC MIX to X (x-wave), X-WAVE to Triangle, OSC LFO DEPTH routing switch to the right (pitch), OSC LFO DEPTH knob to 4 o’clock and PITCH to 11 o’clock. Set RESONANCE to minimum, CUTOFF to 12 o’clock, type to LP, FILTER LFO DEPTH to maximum and VOLUME to 4 o’clock.

Set the DRONE I PITCH, RESONANCE etc to your own taste to make a bass or lead sound.

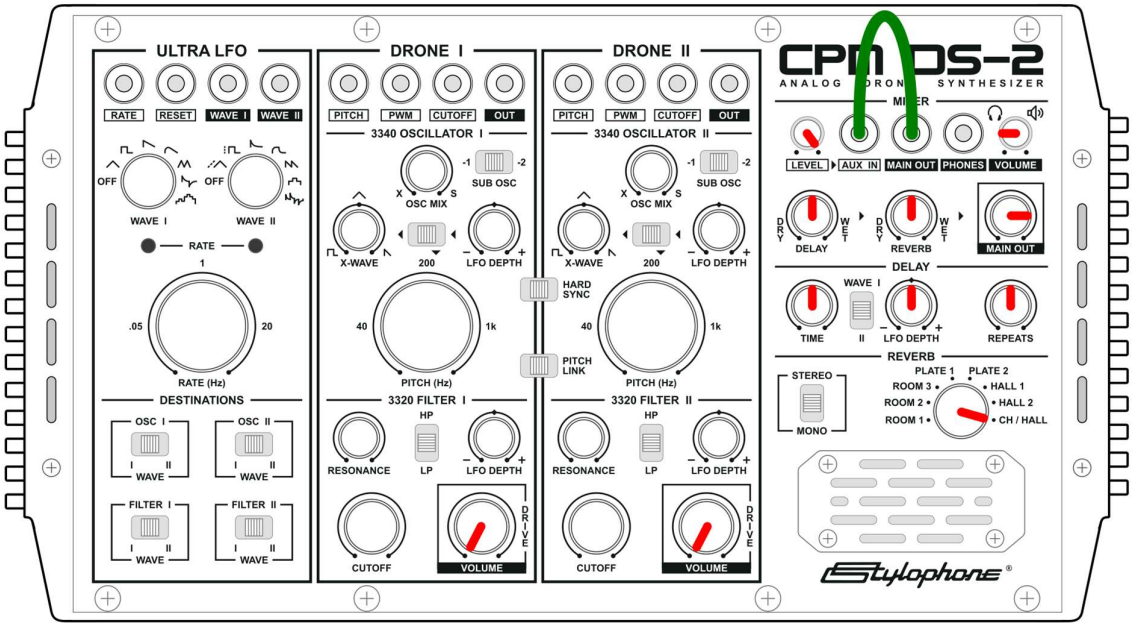
The Exponential Sawtooth LFO shape moves the PITCH and filter CUTOFF of DRONE II upwards, which then decays quickly making a kick drum sound. At the same time the filter CUTOFF of DRONE I will be moved downwards creating a ‘pumping’ sidechain compression like bass sound as it’s perceived level changes. To hear each of these separately, turn down each VOLUME knob.

Try making small changes to the LFO DEPTH knobs in the DRONE II section. Also experiment with its X-WAVE knob, Saw and Square will produce more aggressive kick drum sounds than Triangle. Also try adding some delay for rhythmic variation and reverb for a big dark nightclub sound!

NO INPUT MIXER TECHNIQUE

A classic technique to make some wild sounds!

WARNING: This patch can get VERY loud. So be careful to keep the VOLUME control low, especially if you're using headphones.



Turn the VOLUME knobs of both DRONE I and I to minimum.

In the Mixer section turn the AUX IN LEVEL to maximum and the SPEAKER/HEADPHONE VOLUME level to 9 o'clock

Set the MAIN OUT to 3 o'clock.

Set the DELAY MIX, REVERB MIX, DELAY TIME, DELAY LFO DEPTH and DELAY REPEATS to 12 o'clock.

Set the REVERB TYPE to CH/HALL. Lastly patch **MAIN OUT** to **AUX IN**.

This patch creates an audio feedback path between the MAIN OUT and AUX IN. Depending on the exact position of each knob a sound may start immediately or it might creep in slowly, either way a dissonant sound will be produced. Use the SPEAKER/HEADPHONE VOLUME knob to control the output level.

Notice how the DRONE sections aren't used, all the audio is generated in the MIXER.

The AUX IN LEVEL and MAIN OUT control the volume of audio fed back into the loop, try turning up MAIN OUT for more distortion. All other mixer controls will control the tone of the feedback loop, a huge variety of dissonant sounds can be obtained by tweaking them.

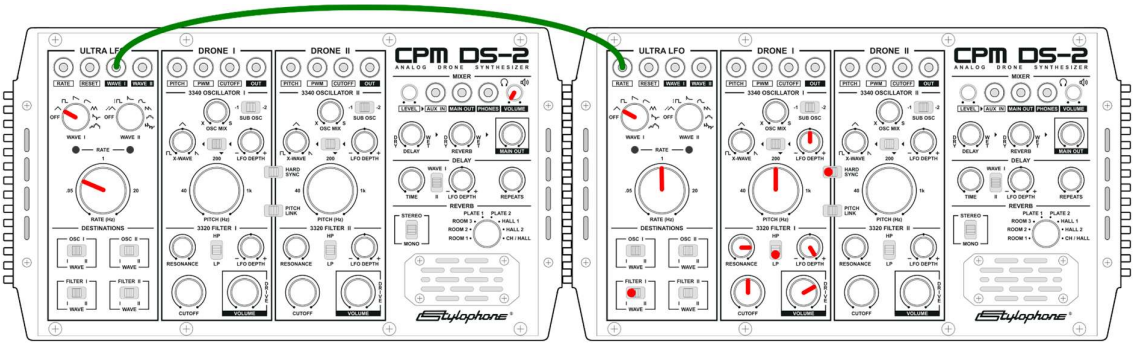
WARNING: This patch can get VERY loud. So be careful to keep the VOLUME control low, especially if you're using headphones.

CHAPTER 2

Double DS-2 patches

LFO TO LFO RATE

Control an LFO with a second LFO.



Audio is heard from the DS-2 on the right in this example.

Patch **WAVE I** (left) into **RATE** (right).

Left DS-2:

Set the LFO WAVE I knob to Triangle and the Rate to 10 o'clock.

In the MIXER turn the SPEAKER/HEADPHONES LEVEL to minimum

Right DS-2:

Set the LFO WAVE I knob to Triangle, RATE to 12 o'clock and FILTER I DESTINATION switch to WAVE I.

In the DRONE I section set the OSC LFO DEPTH knob to the 12 o'clock (off) and the PITCH to 12 o'clock. Set RESONANCE to 3 o'clock, CUTOFF to 12 o'clock, filter type to LP, FILTER LFO DEPTH knob to maximum and VOLUME to 1 o'clock.

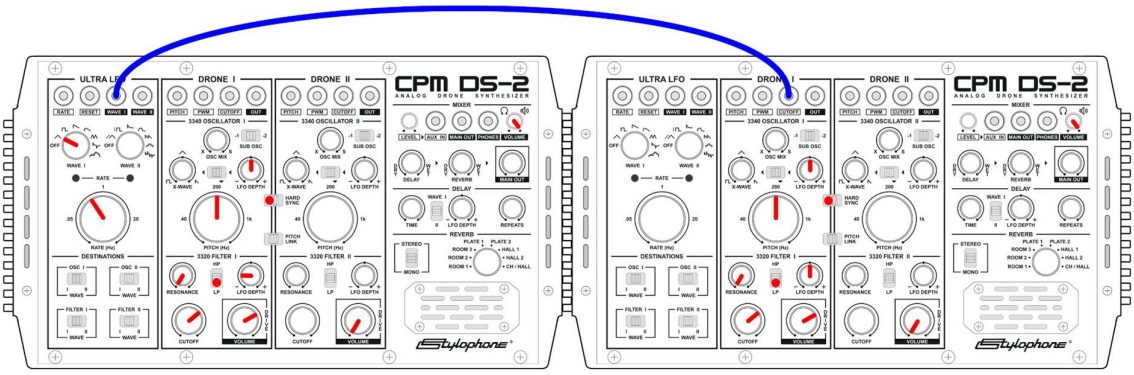
You should hear the LFO from the left DS-2 controlling the LFO speed of the right DS-2. The left LFO is slower, so the right LFO with gradually gain speed then slow down again as the left LFO cycles. The LFO is routed to the DRONE I FILTER so you will hear this as a kind of 'wub-wub' sound as the filter opens and closes.

Experiment with the RATE and LFO WAVE I controls on both machines, a large variety of effects can be achieved even with this simple setup.

Try also routing the LFO to pitch for a different effect.

AUTO PANNING

Create a sound that seems to pan across both units.



Audio is heard from the internal speakers on both DS-2s in this example.

Patch **WAVE I** (left) into DRONE I **CUTOFF** (right).

Left DS-2:

Set the LFO WAVE I knob to Triangle and the Rate to 11 o'clock.

In the DRONE I section set the OSC LFO DEPTH knob to 12 o'clock (off) and the PITCH to 12 o'clock. Set the RESONANCE to minimum, CUTOFF to 1 o'clock, type to LP, FILTER LFO DEPTH knob to 9 o'clock and VOLUME to 2 o'clock.

In the DRONE II section set the VOLUME to minimum.

In the MIXER set the HEADPHONE/SPEAKER VOLUME to maximum.

Right DS-2:

Match the DRONE and MIXER settings from the Left DS-2 apart from the DRONE I FILTER LFO DEPTH knob should be set to 12 o'clock.

You should hear a sound that pans back and forth between the two DS-2s. If you have managed to match the PITCH knobs closely on both units then this should sound smooth like the same sound moving back and forth.

This is achieved by controlling the filter on both units with the LFO on the Left DS-2, with modulation in different directions. On the Left DS-2 the FILTER LFO DEPTH is set on the minus side which produces negative modulation, while to the modulation that's taking place on the Right DS-2 with the patch cable which will be positive.

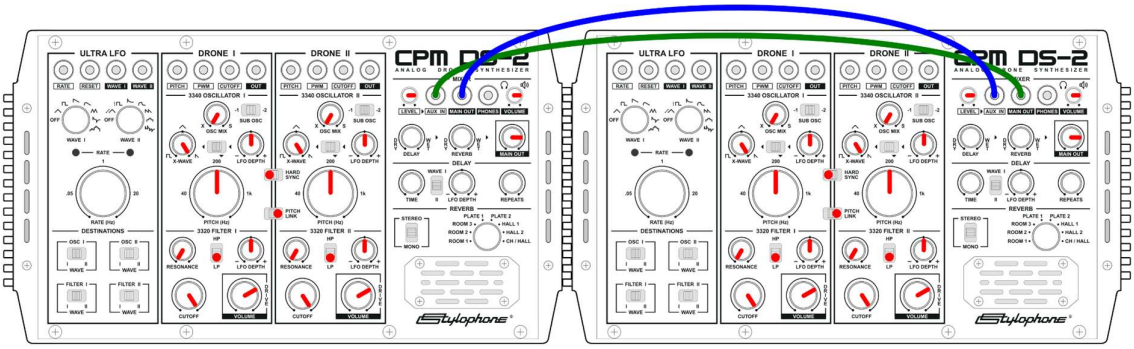
Try adding an attenuator cable in-line with the patch cable shown, this will enable us to change the depth of filter modulation on the Right DS-2.

Also try changing the filter type in both DRONE I sections to HP and see how this effects the sound.

SUPER WIDE DRONE

Create a super wide drone sound by using all DRONE sections and both speakers.

WARNING: This patch is designed to listened to through the internal speakers but can get VERY loud. So be careful to keep the VOLUME control low, especially if you're using headphones.



Audio is heard from both the DS-2 internal speakers in this example.

All DRONE sections settings are identical plus are copied onto both machines, try to match them as best as you can. The PITCH LINK switch should help DRONE I and II follow each other in pitch on each DS-2.

Set the OSC MIX knob to X (x-wave), the X-WAVE knob to Saw, the OSC LFO DEPTH knob to 12 o'clock (off) and PITCH to 12 o'clock. Set FILTER RESONANCE to minimum, CUTOFF to maximum, type to LP, FILTER LFO DEPTH to 12 o'clock (off) and VOLUME to 1 o'clock.

Set HARD SYNC to the left (off) and PITCH LINK to the right (on).

In the MIXER set AUX IN LEVEL, SPEAKER/HEADPHONE VOLUME and MAIN OUT to 3 o'clock.

Lastly patch **MAIN OUT** (left) to **AUX IN** (right) and **MAIN OUT** (right) to **AUX IN** (left).

These patch socket connections can create a feedback loop as in the 'No Input Mixer Technique' example but that's not the intention here, we're just trying to add the left DS-2 to the speaker on the right unit and vice versa though a little distortion is to be expected.

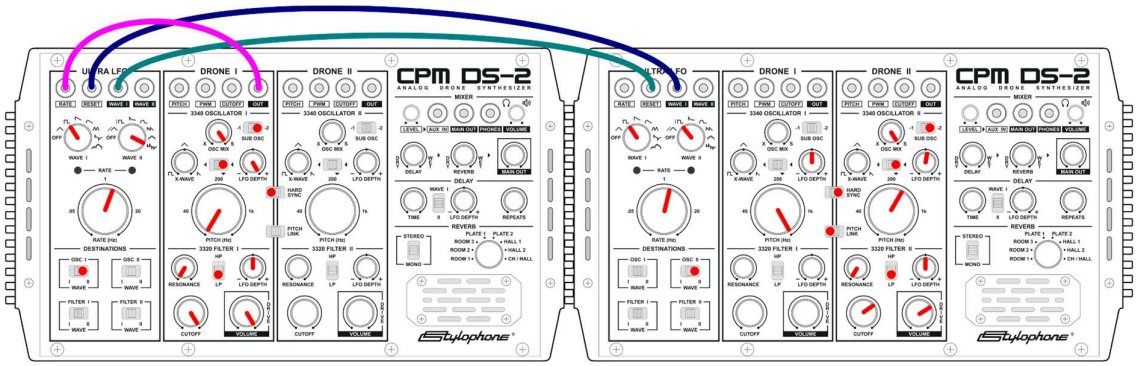
You should notice an increase in volume and a richer sound as the cables are added. The effect should be wide sounding due to small differences in the tuning and levels of the devices.

Experiment with different X-WAVE, OSC MIX and SUB OSC positions for some timbral changes and very deep drones.

WARNING: This patch is designed to listened to through the internal speakers but can get VERY loud. So be careful to keep the VOLUME control low, especially if you're using headphones.

AUTO MORSE CODE

Create an automatic Morse Code like sound.



Audio is heard from the Right DS-2 in this example.

Patch **WAVE I** (left) to **RESET** (right), **WAVE I** (right) to **RESET** (left) and DRONE I **OUT** (left) to **RATE** (left).

Left DS-2:

Set LFO WAVE I to Square, LFO WAVE II to Quad Speed Exponential Up/Down Sawtooth, RATE to 1 o'clock and OSC I DESTINATION switch to WAVE II. In DRONE I set OSC MIX to S, SUB OSC to -2, OSC LFO DEPTH routing switch to right, OSC LFO DEPTH knob to maximum and PITCH to minimum. Set HARD SYNC left. Set RESONANCE to minimum, CUTOFF to maximum, type to LP, FILTER LFO DEPTH to 12 o'clock and VOLUME to maximum.

Right DS-2:

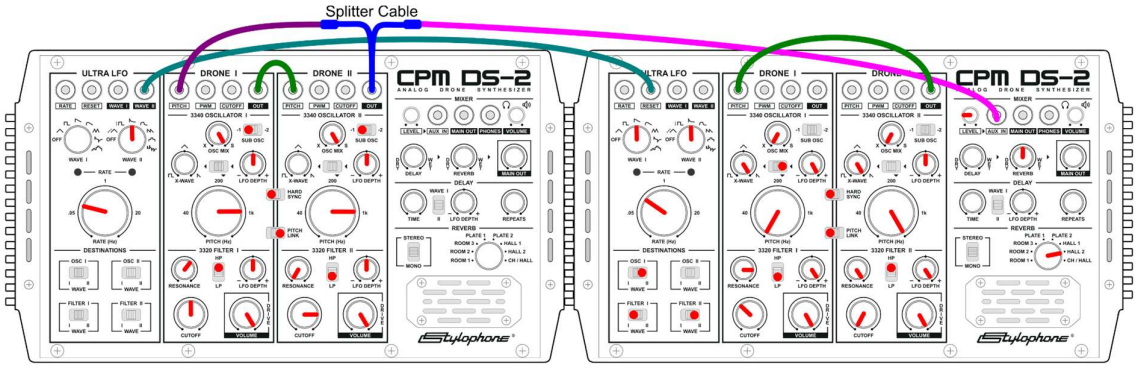
Set LFO WAVE I to Square, LFO WAVE II to Square (90° phase shifted), RATE to 1 o'clock and OSC II DESINATION to WAVE II. In DRONE I set OSC LFO DEPTH knob to 12 o'clock and PITCH to maximum. Set HARD SYNC right and PITCH LINK left. In DRONE II set OSC MIX to maximum, OSC LFO DEPTH routing switch right, OSC LFO DEPTH knob a little more than 12 o'clock and PITCH to 1 o'clock. Set the RESONANCE to minimum, CUTOFF to 2 o'clock, type to LP, FILTER LFO DEPTH to 12 o'clock and VOLUME to 2 o'clock.

Careful setting of DRONE II (right) PITCH and OSC LFO DEPTH are needed on this patch.

The patch connections between the two LFOs mean they keep trying to reset each other. This would fall into a short pattern but DRONE I (left) is also being used as an LFO controlling the left DS-2's **RATE**, with DRONE I (left) PITCH (think RATE in this case) modulated by WAVE II. This creates some randomness but still with a Square LFO output on the right DS-2. The HARD SYNC and PITCH settings (right) means that a tone is only heard when DRONE II PITCH is high enough. This is modulated with the LFO DEPTH knob from WAVE II so with these in just the right places the pitch will gate randomly creating a Morse Code like sound. Try removing the DRONE I **OUT** (left) patch cable to stop the randomness. Also try experimenting with the DRONE II (right) controls for different effects.

THUNDERSTORM

One DS-2 creates rain, the other DS-2 creates thunder.



Audio is heard from the Right DS-2 in this example.

Patch **WAVE II** (left) to **RESET** (right), DRONE I **OUT** (left) to DRONE II **PITCH** (left), splitter to DRONE II **OUT** (right) then it's sockets to DRONE I **PITCH** (left) and **AUX IN** (right)

Left DS-2:

Set LFO WAVE II to Exponential Sawtooth and RATE to 10 o'clock. In DRONE I set OSC MIX to S, SUB OSC to -1, OSC LFO DEPTH to 12 o'clock and PITCH to 3 o'clock. Set RESONANCE to 1 o'clock, CUTOFF to 12 o'clock, type to HP, FILTER LFO DEPTH to 12 o'clock and VOLUME to maximum. Set HARD SYNC left and PITCH LINK right. In DRONE II set OSC MIX to S, SUB OSC to -1, OSC LFO DEPTH to 12 o'clock and PITCH to 3 o'clock. Set RESONANCE to minimum, CUTOFF to 3 o'clock, type to LP, FILTER LFO DEPTH to 12 o'clock and VOLUME to maximum.

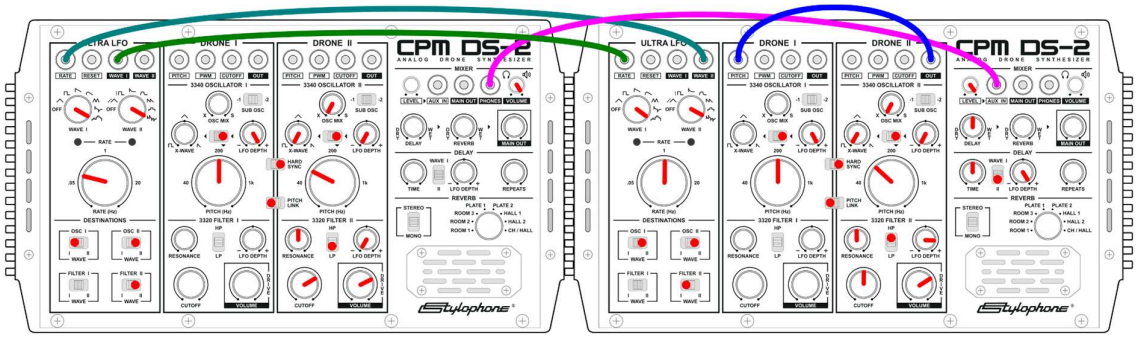
Right DS-2:

Set LFO WAVE I to Sawtooth, WAVE II to Exponential Sawtooth, RATE to 10 o'clock, and DESTINATION switches OSC I to WAVE II, FILTER I to WAVE I and FILTER II to WAVE II. In DRONE I set OSC MIX to X, X-WAVE to Saw, OSC LFO DEPTH routing switch to the right, OSC LFO DEPTH knob to maximum and PITCH to minimum. Set RESONANCE to 3 o'clock, CUTOFF to 10 o'clock, type to LP, FILTER LFO DEPTH to maximum and VOLUME to maximum. Set HARD SYNC and PITCH LINK to the left. In DRONE II set OSC MIX to X, X-WAVE to Saw, OSC LFO DEPTH to 12 o'clock and PITCH to maximum. Set RESONANCE to maximum, CUTOFF to minimum, type to HP, FILTER LFO DEPTH to maximum and VOLUME to maximum. In the MIXER set AUX IN LEVEL to 9 o'clock, REVERB MIX to 12 o'clock and REVERB TYPE to HALL 2

The left DS-2 produces white noise using a similar patch to 'Extreme Pitch Feedback'. This is mixed into the right DS-2 via **AUX IN**. The right DS-2 is producing a noisy boom sound that decays as the DRONE I CUTOFF closes when the LFO modulates it. The Left DS-2 **WAVE II** connection to **RESET** makes the thunderclaps vary a little due to their rates being similar but not the same. Try adjusting the Left DS-2 for a wide variety of white noise effects. Try turning up the Right DS-2 REVERB MIX to 'close the window' on the storm.

PSEUDORANDOM MACHINE

A chaotic generative patch.



Audio is heard from the Right DS-2 in this example.

Patch **WAVE I** (left) to **RATE** (right), **WAVE II** (right) to **RATE** (left), **PHONES** (left) to **AUX IN** (right), DRONE II **OUT** (right) to DRONE I **PITCH** (right)

Left DS-2:

Set LFO WAVE I to Quad Speed Square Pattern, LFO WAVE II to Quad Speed Exponential Up/Down Sawtooth, RATE to 10 o'clock and DESTINATION switches OSC I to WAVE I, OSC II to WAVE II and FILTER II to WAVE II. In DRONE I set the OSC LFO DEPTH routing switch to the right, OSC LFO DEPTH knob to maximum and PITCH to 12 o'clock. Set HARD SYNC to right and PITCH LINK to the left. In DRONE II set OSC MIX to X, X-WAVE to Square, OSC LFO DEPTH routing switch to the right, OSC LFO DEPTH knob to minimum and PITCH to 10 o'clock. Set RESONANCE to 12 o'clock, CUTOFF to 2 o'clock, type to LP, FILTER LFO DEPTH to minimum and VOLUME to 2 o'clock. In the MIXER set HEADPHONE/SPEAKER VOLUME to maximum.

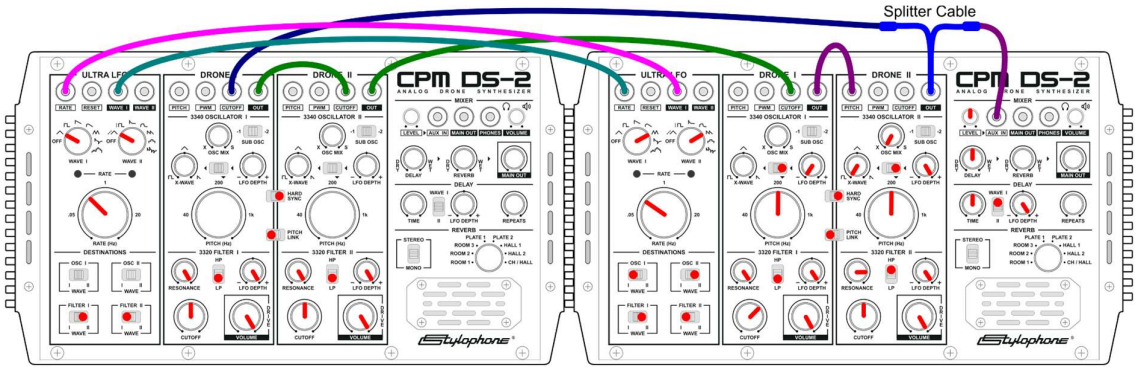
Right DS-2:

Set LFO WAVE I to Quad Speed Square Pattern, LFO WAVE II to Quad Speed Exponential Up/Down Sawtooth, RATE to 12 o'clock and DESTINATION switches OSC I to WAVE II, OSC II to WAVE II and FILTER II to WAVE I. In DRONE I set the OSC LFO DEPTH routing switch to the right, OSC LFO DEPTH knob to maximum and PITCH to 12 o'clock. Set HARD SYNC to right and PITCH LINK to the left. In DRONE II set OSC MIX to X, X-WAVE to Square, OSC LFO DEPTH routing switch to the right, OSC LFO DEPTH knob to minimum and PITCH to 10 o'clock. Set RESONANCE to 12 o'clock, CUTOFF to 12 o'clock, type to HP, FILTER LFO DEPTH to 3 o'clock and VOLUME to 2 o'clock. In the MIXER set AUX IN LEVEL to maximum, DELAY MIX to 12 o'clock, DELAY TIME to 12 o'clock, DELAY LFO SOURCE switch to WAVE II and DELAY LFO DEPTH knob to maximum.

The patch connections between the two Ultra LFO create a pseudorandom LFO shape depending on the RATE knob positions. This is routed to PITCH and FILTER on the different DRONE sections. The DELAY on the Right DS-2 also adds complexity. HARD SYNC is on on both machines so this can cause the oscillators to gate completely. Try turning up both DRONE I PITCH knobs to make the DRONE II outputs audible less often.

CHAOS GENERATOR

Another chaotic generative patch.



Audio is heard from the Right DS-2 in this example.

Patch **WAVE I** (left) to **RATE** (right), **WAVE I** (right) to **RATE** (left), DRONE I **OUT** (left) to DRONE II **CUTOFF** (left), DRONE II **OUT** (left) to DRONE I **CUTOFF** (right), DRONE I **OUT** (right) to DRONE II **PITCH** (right), DRONE II **OUT** (right) a splitter cable then it's sockets to **AUX IN** (right) and DRONE I **CUTOFF** (left).

Left DS-2:

Set LFO WAVE I to Triangle, LFO WAVE II to Triangle (90° phase shifted), RATE to 10 o'clock and DESTINATION switches FILTER I to WAVE II and FILTER II to WAVE I. Set HARD SYNC right and PITCH LINK left. DRONE I and II FILTER settings are the same. Set RESONANCE to maximum, CUTOFF to 12 o'clock, type to LP, FILTER LFO DEPTH to maximum and VOLUME to maximum.

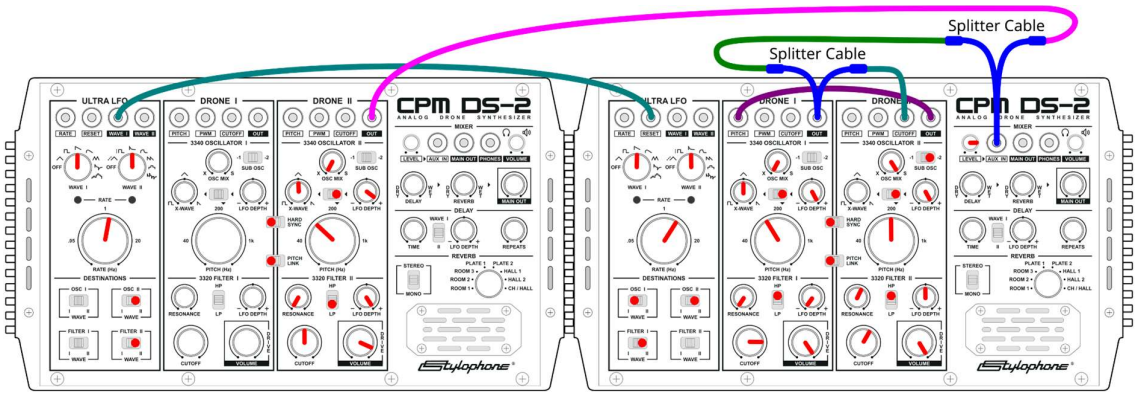
Right DS-2:

Set LFO WAVE I to Double Speed Triangle, LFO WAVE II to Double Speed Sawtooth, RATE to 10 o'clock and DESTINATION switches OSC I to WAVE I, OSC II to WAVE II, FILTER I to WAVE II and FILTER II to WAVE I. In DRONE I set the OSC LFO DEPTH routing switch right, OSC LFO DEPTH knob to minimum and PITCH to 12 o'clock. Set RESONANCE to maximum, CUTOFF to 2 o'clock, type to LP, FILTER LFO DEPTH to maximum and VOLUME to maximum. Set HARD SYNC right and PITCH LINK left. In DRONE II set OSC MIX to X, X-WAVE to Square, OSC LFO DEPTH routing switch right, OSC LFO DEPTH knob to maximum and PITCH to 12 o'clock. Set RESONANCE to 3 o'clock, CUTOFF to 12 o'clock, type to HP, FILTER LFO DEPTH to maximum and VOLUME to maximum. In the MIXER set AUX IN LEVEL to 12 o'clock, DELAY MIX to 12 o'clock, TIME to 12 o'clock, DELAY LFO SOURCE to WAVE I and DELAY LFO DEPTH to max.

A complex audio rate feedback loop is created between all drone outputs affecting the filters in three of the drones and pitch in the last, but only DRONE II (right) is heard. The two LFOs are affecting each other's RATE creating randomness. HARD SYNC is on (right) so try adjusting both PITCH knobs for some crunchiness as DRONE II is heard less often. Try turning down DRONE II (left) to hear the difference without its influence.

DRUM MACHINE

Create a kick drum and a snare with synced rhythms.



Audio is heard from the Right DS-2 in this example.

Patch **WAVE I** (left) to **RESET** (right), DRONE II **OUT** (right) to DRONE I **PITCH** (right), connect a splitter to DRONE I **OUT** (right), connect one of its sockets to DRONE II **CUTOFF** (right), connect a second splitter to **AUX IN** (right), connect it's sockets to DRONE II **OUT** (left) and the remaining splitter socket connected to DRONE I **OUT** (right)

Left DS-2:

Set LFO WAVE I to Sawtooth, LFO WAVE II to Exponential Sawtooth, RATE to set kick drum tempo and DESTINATION switches OSC II to WAVE II and FILTER II to WAVE II. Set HARD SYNC and PITCH LINK to the left. In DRONE II set OSC MIX to X, X-WAVE to Triangle, OSC LFO DEPTH routing switch to the right, OSC LFO DEPTH knob to 4 o'clock and PITCH to 10 o'clock. Set RESONANCE to minimum, CUTOFF to 12 o'clock, type to LP, FILTER LFO DEPTH to maximum and VOLUME to 4 o'clock.

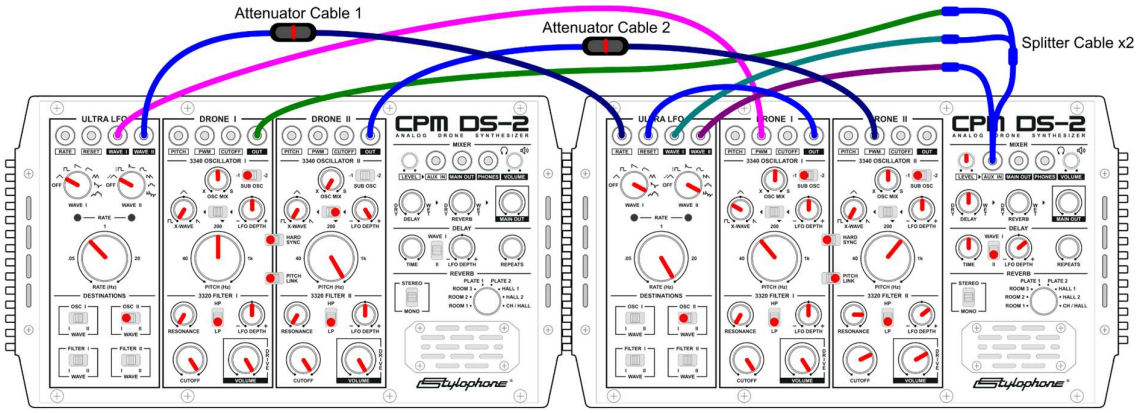
Right DS-2:

Set LFO WAVE I to Sawtooth, LFO WAVE II to Exponential Sawtooth, RATE to set snare tempo (try making this faster than the kick) and DESTINATION switches OSC I to WAVE I, OSC II to WAVE II and FILTER I to WAVE II. In DRONE I set the OSC MIX to X, X-WAVE to Triangle, OSC LFO DEPTH routing switch to the right, OSC LFO DEPTH knob to maximum and PITCH to 11 o'clock. Set RESONANCE to minimum, CUTOFF to 3 o'clock, type to HP, FILTER LFO DEPTH to minimum and VOLUME to maximum. Set HARD SYNC and PITCH LINK to the left. In DRONE II set OSC MIX to S, SUB OSC to -2, OSC LFO DEPTH routing switch to the right, OSC LFO DEPTH knob to maximum and PITCH to 12 o'clock. Set RESONANCE to 1 o'clock, CUTOFF to 1 o'clock, type to HP, FILTER LFO DEPTH to 12 o'clock and VOLUME to maximum. In the MIXER set AUX IN LEVEL to 3 o'clock.

The Left DS-2 uses the kick drum sound from 'Kick Drum and Sidechained Bass' on DRONE II. This is mixed with the right DS-2 using a splitter. The right DS-2 produces a snare or clap like crack sound using feedback. Its rate can be set relative to the kick using the RATE knob on the right DS-2, try adjusting this so the snare is faster than the kick. Also try some different WAVE I settings on the left DS-2 to get the snare to fall into different rhythms.

SUPER MEGA DRONE

A massive drone patch for massive drones!



Audio is heard from the Right DS-2 in this example. Patch a splitter cable to another splitter cable then patch this to **AUX IN** (right), plug their sockets to DRONE I **OUT** (left), **WAVE I** (right) and **WAVE II** (right). Patch attenuator cables from **WAVE II** (left) to **RATE** (right) and DRONE II **OUT** (left) to DRONE II **PWM** (right). Patch **WAVE I** (left) to DRONE I **PWM** (right) and DRONE I **OUT** (right) to **RESET** (right). Set the attenuator sliders to 50%.

Left DS-2:

Set LFO WAVE I to Triangle, LFO WAVE II to Triangle (90° phase shifted), RATE to 11 o'clock and OSC II DESTINATION to WAVE I. Set HARD SYNC and PITCH LINK to the left. Both FILTER sections are the same. Set RESONANCE to min, CUTOFF to max, type to LP, LFO DEPTH to 12 o'clock and VOLUME to max. In DRONE I set OSC MIX to 12 o'clock, SUB OSC to -1, X-WAVE to Square, OSC LFO DEPTH knob to 12 o'clock and PITCH to 12 o'clock. In DRONE II set OSC MIC to X, X-WAVE to Square, OSC LFO DEPTH routing switch right, OSC LFO DEPTH knob to max and PITCH to max.

Right DS-2:

Set LFO WAVE I to Quad Speed Square Pattern, LFO WAVE II to Quad Speed Exponential Up/Down Sawtooth, RATE to max and OSC II DESTINATION to WAVE I. In DRONE I set the OSC MIX to 12 o'clock, SUB OSC to -1, X-WAVE to 10 o'clock, OSC LFO DEPTH knob to 12 o'clock and PITCH to 11 o'clock. Set RESONANCE to min, CUTOFF to max, type to LP, FILTER LFO DEPTH to 12 o'clock and VOLUME to max. Set HARD SYNC left and PITCH LINK right. In DRONE II set OSC MIX to 12 o'clock, SUB OSC to -1, X-WAVE to Square, OSC LFO DEPTH knob to 12 o'clock and PITCH to 1 o'clock. Set RESONANCE to 3 o'clock, CUTOFF to 2 o'clock, type to LP, FILTER LFO DEPTH to 2 o'clock and VOLUME to 2 o'clock. In the MIXER set AUX IN LEVEL to 12 o'clock, DELAY mix to 12 o'clock, TIME to 12 o'clock, DELAY LFO SOURCE to WAVE II and DELAY LFO DEPTH to 2 o'clock.

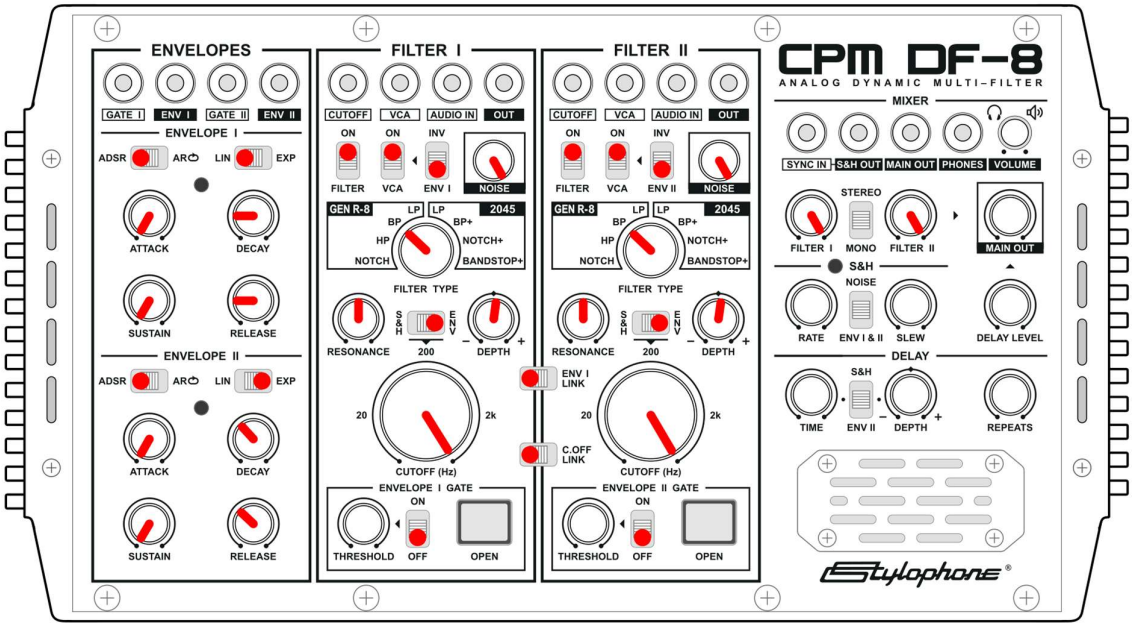
Here the LFO (right) is being **RESET** with DRONE I **OUT** making it produce an audio rate output which is heard through the AUX IN. Adjust attenuators to alter the amount of **RATE** and **PWM** modulation respectively. Experiment with DRONE I PITCH (right) to change the LFO audio rate, also adjust WAVE I and WAVE II (right) to change timbre.

CHAPTER 3

Single DF-8 patches

HI-HATS

Play two different Hi-hat sounds on the two filters sections.



Play these sounds with the GATE OPEN buttons or via the **GATE I/II** patch points.

Set ENVELOPE I mode switches to ADSR and LIN. Set ATTACK and SUSTAIN to minimum, set DECAY and RELEASE to 9 o'clock. Set ENVELOPE II mode switches to ADSR and EXP. Set ATTACK and SUSTAIN to minimum, set DECAY and RELEASE to 10 o'clock.

Both FILTER sections are set up the same. Set the FILTER and VCA switches to up (on), the ENV switch to down (ENV I/II) and NOISE to maximum. Set FILTER TYPE to GEN R-8 BP, RESONANCE to 12 o'clock, the routing switch to ENV, the DEPTH to just above 12 o'clock, the CUTOFF to maximum and the auto-trigger switch to OFF.

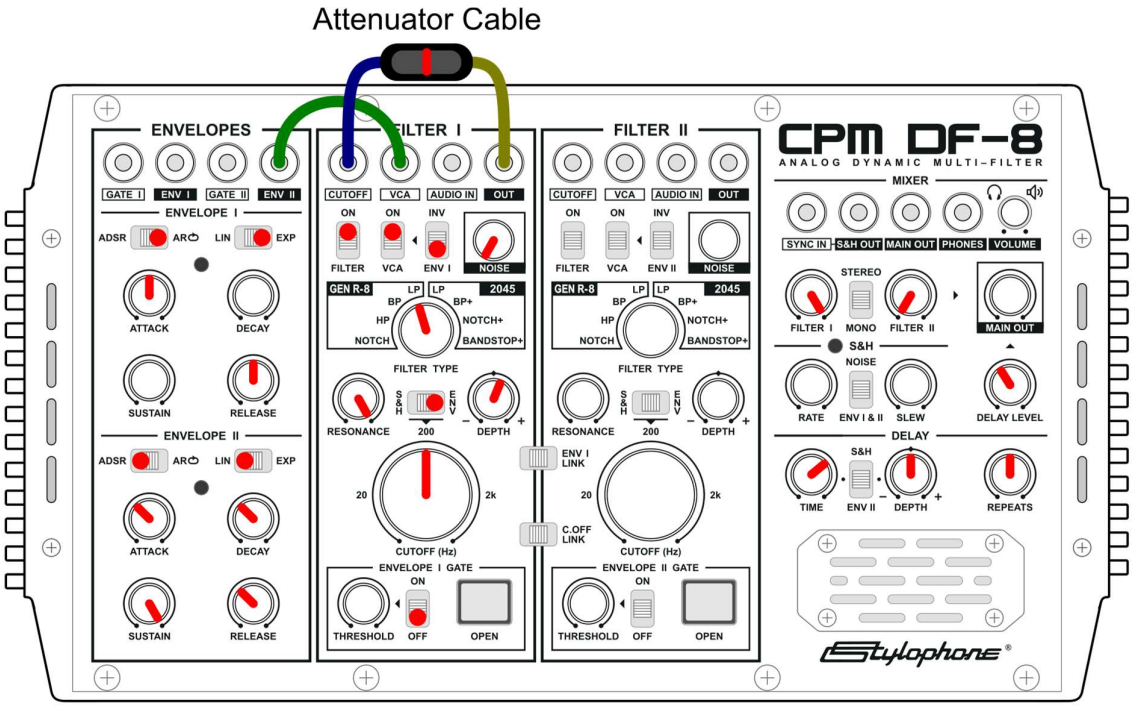
Set the ENV I LINK and C.OFF LINK switches left (off). In MIXER set the output levels for FILTER I and II to maximum

You should be able to play a short "Closed Hi-hat" and a longer "Open Hi-hat" sound with the two GATE OPEN buttons. This works because we have two separate signal paths on the DF-8 which in this example both use the envelope to open the VCA and move the CUTOFF control. We also have two noise sources which are being processed by the filters here to create the Hi-hat sounds.

Experiment with different ENVELOPE settings to change how long the sounds will play for. Also try different FILTER types and CUTOFF settings to get very different tonal results. A few more of single DF-8 patch examples play two different sounds on the two signal paths so these can be mixed and matched however you like.

DUB SIREN

Play a Dub Siren sound with a looping ENVELOPE.



Play this sound with the ENVELOPE II GATE OPEN button or via the **GATE II** patch point.

Patch **ENV II** to FILTER I **VCA**, FILTER I **OUT** to the attenuator cable then patch its output to FILTER I **CUTOFF**. Set the attenuator cable at 50%.

Set ENVELOPE I mode switches to AR (loop) and EXP. Set ATTACK and RELEASE to 12 o'clock. Set ENVELOPE II mode switches to ADSR and LIN. Set ATTACK, DECAY and RELEASE to 10 o'clock, set SUSTAIN to maximum.

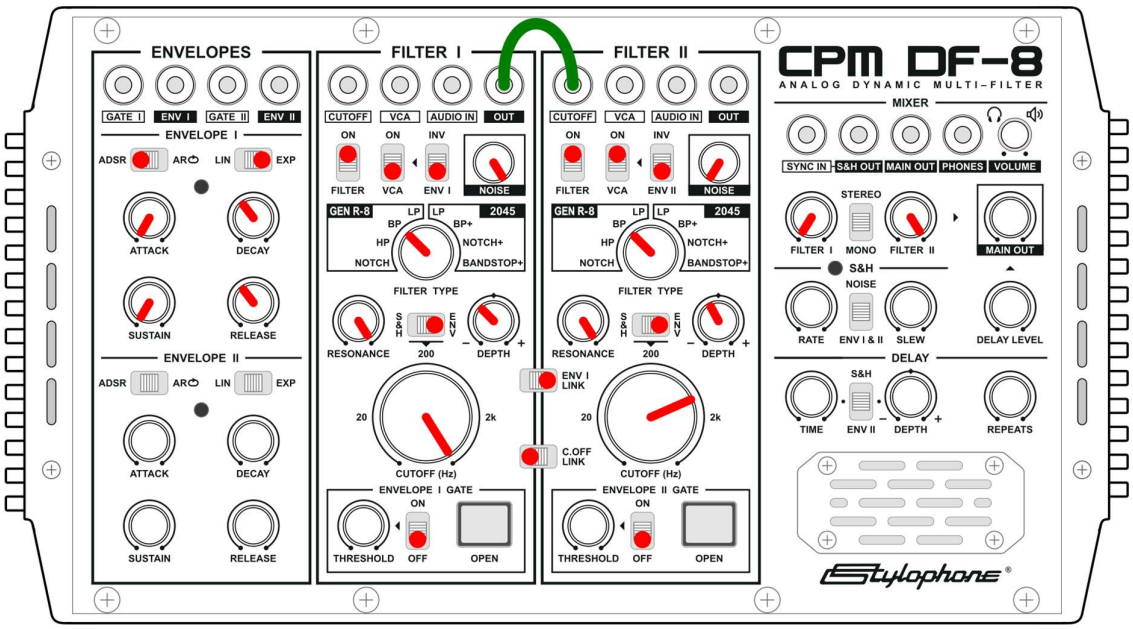
On FILTER I set the FILTER and VCA switches to up (on), the ENV switch to ENV I and NOISE to maximum. Set FILTER TYPE to GEN R-8 LP, RESONANCE to maximum, the routing switch to ENV, the DEPTH to 1 o'clock, the CUTOFF to 12 o'clock and the auto-trigger switch to OFF.

In MIXER set the output levels for FILTER I to maximum and FILTER II to minimum. Set DELAY LEVEL to 11 o'clock, TIME to 1 o'clock, DEPTH to 12 o'clock (off) and REPEATS to 12 o'clock.

Here ENVELOPE I is set to loop which moves the CUTOFF back and forth in a similar way to an LFO. The high resonance of the filter means it produces an audible tone. The connection through the attenuator creates an audio rate modulation feedback loop which brightens the tone. ENVELOPE II takes control of the FILTER I volume via the **VCA** patch point. Experiment with the attenuator cable slider. Higher values make a brighter tone with a higher pitch, and lower values make a much mellower sine wave with a lower pitch. Try adjusting the ENVELOPE I settings and see how this affects the sound too.

8 BIT SNARE

Play a crunchy sounding 8 bit like snare sound.



Play this sound with the ENVELOPE I GATE OPEN button or via the **GATE I** patch point.

Patch FILTER I **OUT** to FILTER II **CUTOFF**.

Set ENVELOPE I mode switches to ADSR and EXP. Set ATTACK and SUSTAIN to minimum, set DECAY and RELEASE to 10 o'clock

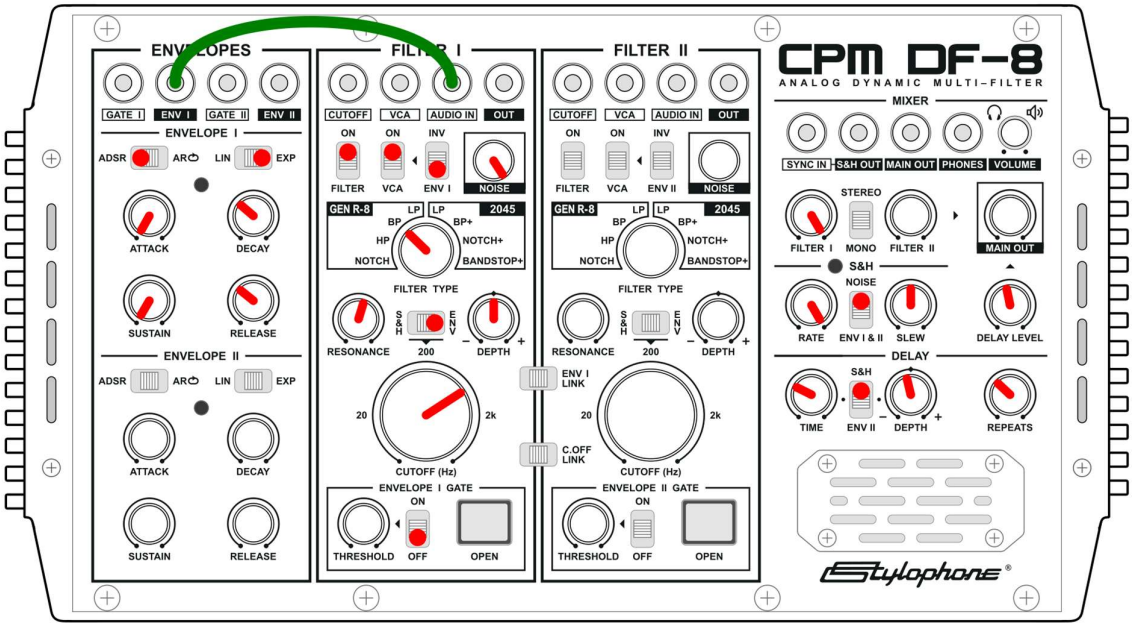
On FILTER I set the FILTER switch to up (on), the VCA switch to down (open), the ENV switch to ENV I and NOISE to maximum. Set FILTER TYPE to GEN R-8 BP, RESONANCE to maximum, the routing switch to ENV, the DEPTH to 11 o'clock, the CUTOFF to maximum and the auto-trigger switch to OFF. On FILTER II set the FILTER and VCA switch to up (on), the ENV switch to ENV II and NOISE to maximum. Set FILTER TYPE to GEN R-8 BP, RESONANCE to maximum, the routing switch to ENV, the DEPTH to 11 o'clock, the CUTOFF to 2 o'clock auto-trigger switch to OFF.

Set the ENV I LINK switch right (on) and the C.OFF LINK switch left (off). In MIXER set the output levels for FILTER I to minimum and FILTER II to maximum.

Here noise is produced in the FILTER I section which is processed by FILTER I in bandpass mode. Because of the connection made with the patch cable, the audio from FILTER I then moves the FILTER II CUTOFF around creating a complex tone. Due to this it can be described as a 'FILTER FM' sound. The CUTOFF and VCA in each section are controlled by ENVELOPE I because of the ENV I LINK setting. Experiment with the FILTER TYPE knobs to create a big variety of sounds. Lengthen the ENVELOPE I times to create a sound like a rocket taking off.

CLAP

Play a punchy drum machine clap sound.



Play this sound with the ENVELOPE I GATE OPEN button or via the **GATE I** patch point.

Patch **ENV I** to FILTER I **AUDIO IN**.

Set ENVELOPE I mode switches to ADSR and EXP. Set ATTACK and SUSTAIN to minimum, set DECAY and RELEASE to 10 o'clock

On FILTER I set the FILTER and VCA switches to up (on), the ENV switch to ENV I and NOISE to maximum. Set FILTER TYPE to GEN R-8 BP, RESONANCE 1 o'clock, the routing switch to ENV, the DEPTH to 12 o'clock, the CUTOFF to 2 o'clock and the auto-trigger switch to OFF.

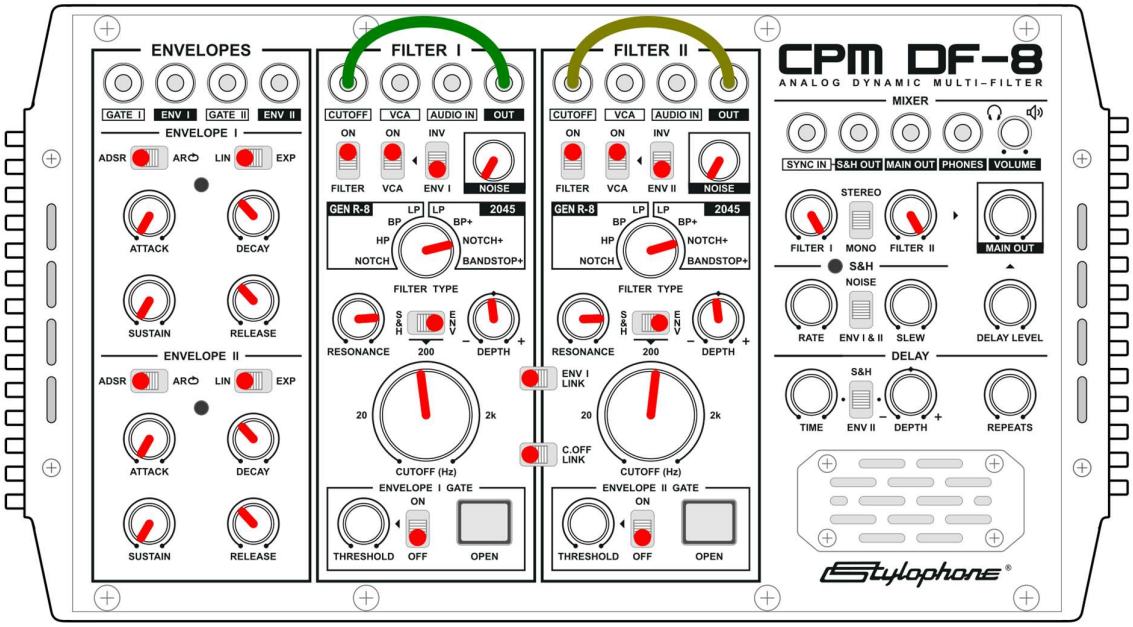
In MIXER set the output levels for FILTER I to maximum. Set the RATE to maximum, the S&H source switch to NOISE, SLEW to 12 o'clock. Set the DELAY LEVEL to 11 o'clock, TIME to 10 o'clock, the DELAY modulation source to S&H, DEPTH to just below 12 o'clock and REPEATS to 11 o'clock.

The patch from **ENV I** to FILTER I **AUDIO IN** in this example makes the output of the envelope audible. This is not normally used as an audio source but because of its short attack it can be used as a transient 'pop'. The DELAY settings simulate the sounds of a small space but because of the DEPTH settings, the S&H (sample and hold) module randomly moves the DELAY TIME setting subtly. The effect is that the clap sounds slightly different every time it's played giving it a humanised feel.

Try turning down NOISE to hear the transient 'pop' more clearly. Also experiment with the DELAY DEPTH control for 'splashier' sounding claps.

HAND DRUMS

Play a pair of aggressive sounding hand drums.



Play these sounds with the GATE OPEN buttons or via the **GATE I/II** patch points.

Patch **CUTOFF** and into **OUT** on both FILTER I and II.

Both envelopes are set up the same. Set the mode switches to ADSR and LIN. Set the ATTACK and SUSTAIN to minimum, set the DECAY and RELEASE to 10 o'clock.

On FILTER I set the FILTER and VCA switches to up (on), the ENV switch to ENV I and NOISE to minimum. Set FILTER TYPE to 2045 NOTCH+, RESONANCE 3 o'clock, the routing switch to ENV, the DEPTH to just below 12 o'clock, the CUTOFF to below 12 o'clock and the auto-trigger switch to OFF. Match these setting for FILTER II but change the FILTER II CUTOFF to above 12 o'clock.

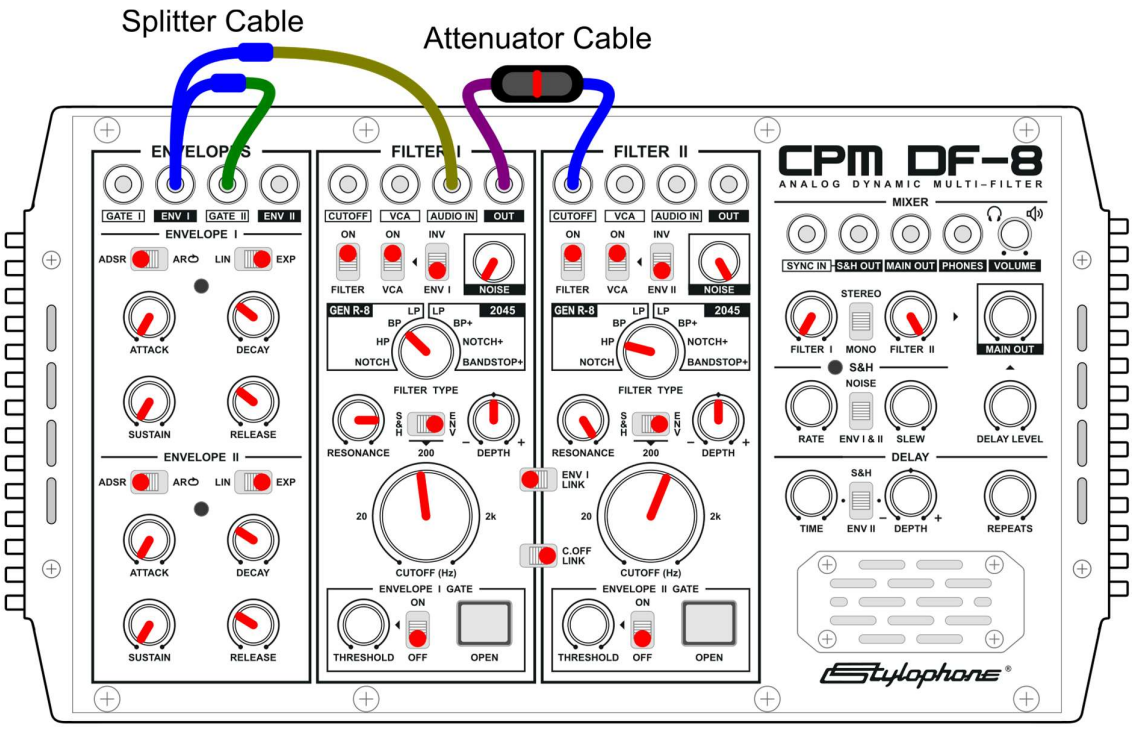
Set the ENV I LINK and C.OFF LINK switches left (off). In MIXER set the output levels for FILTER I and II to maximum

You should be able to play a sound on each GATE button which sounds a bit like a drum being struck by hand. This example uses filter modulation feedback loops like in the Dub Siren example, but this time as a bright percussive sound. The NOTCH+ FILTER TYPE has two resonant peaks so this can sound particularly aggressive. Also, the ENVELOPE settings mean the VCA (volume control) and feedback will decay quickly.

As the feedback decays the pitch changes. This is compensated for with the CUTOFF DEPTH settings so experiment with this to hear how it changes the sound. Try turning up RESONANCE and adjusting ENVELOPE times for an even more aggressive tone. Adjust the CUTOFF knobs to create different pitched drums to taste.

FM SNARE

Play a classic analogue drum machine snare sound.



Play this sound with the ENVELOPE I GATE OPEN button or via the **GATE I** patch point.

Patch **ENV I** to the splitter cable, then its outputs to **GATE I** and FILTER I **AUDIO IN**. Patch the attenuator cable to FILTER I **OUT** and its output to FILTER II **CUTOFF**. Set the attenuator cable slider to 50%.

Both envelopes are set up the same. Set the mode switches to ADSR and EXP. Set the ATTACK and SUSTAIN to minimum, set the DECAY and RELEASE to 10 o'clock.

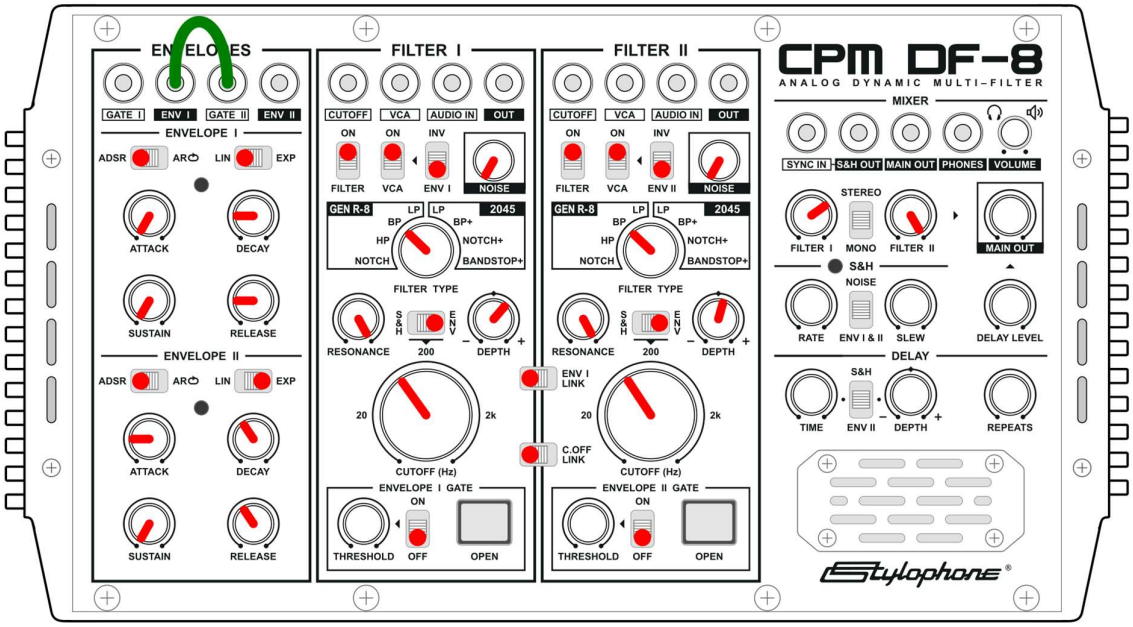
On FILTER I set the FILTER and VCA switches to up (on), the ENV switch to ENV I and NOISE to minimum. Set FILTER TYPE to GEN R-8 BP, RESONANCE to 3 o'clock, the routing switch to ENV, the DEPTH to 12 o'clock, the CUTOFF to below 12 o'clock and the auto-trigger switch to OFF. On FILTER II set the FILTER and VCA switches to up (on), the ENV switch to ENV II and NOISE to maximum. Set FILTER TYPE to GEN R-8 HP, RESONANCE to maximum, the routing switch to ENV, the DEPTH to 12 o'clock, the CUTOFF to below 1 o'clock and the auto-trigger switch to OFF.

Set the ENV I LINK left (off) and C.OFF LINK switch right (on). In MIXER set the output levels for FILTER I to minimum and FILTER II to maximum

The envelopes are patches together meaning playing the GATE I button will trigger both envelopes. FILTER I produces a transient 'bop' sound like snare a skin being hit, FILTER II produces noise like snares. FILTER I moves the FILTER II CUTOFF around combining the sounds. Experiment with the ENVELOPE settings for longer or snappier snare sounds.

2 LAYER KICK

Play a classic analogue drum machine kick sound.



Play this sound with the ENVELOPE I GATE OPEN button or via the **GATE I** patch point.

Patch **ENV I** to **GATE II**

Set ENVELOPE I mode switches to ADSR and LIN. Set ATTACK and SUSTAIN to minimum, set DECAY and RELEASE to 9 o'clock. Set ENVELOPE II mode switches to ADSR and EXP. Set ATTACK to 9 o'clock, SUSTAIN to minimum, set DECAY and RELEASE to 11 o'clock.

On FILTER I set the FILTER and VCA switches to up (on), the ENV switch to ENV I and NOISE to minimum. Set FILTER TYPE to GEN R-8 BP, RESONANCE to maximum, the routing switch to ENV, the DEPTH to 1 o'clock, the CUTOFF to below 11 o'clock and the auto-trigger switch to OFF. Match these settings for FILTER II but set the DEPTH knob to just above 12 o'clock

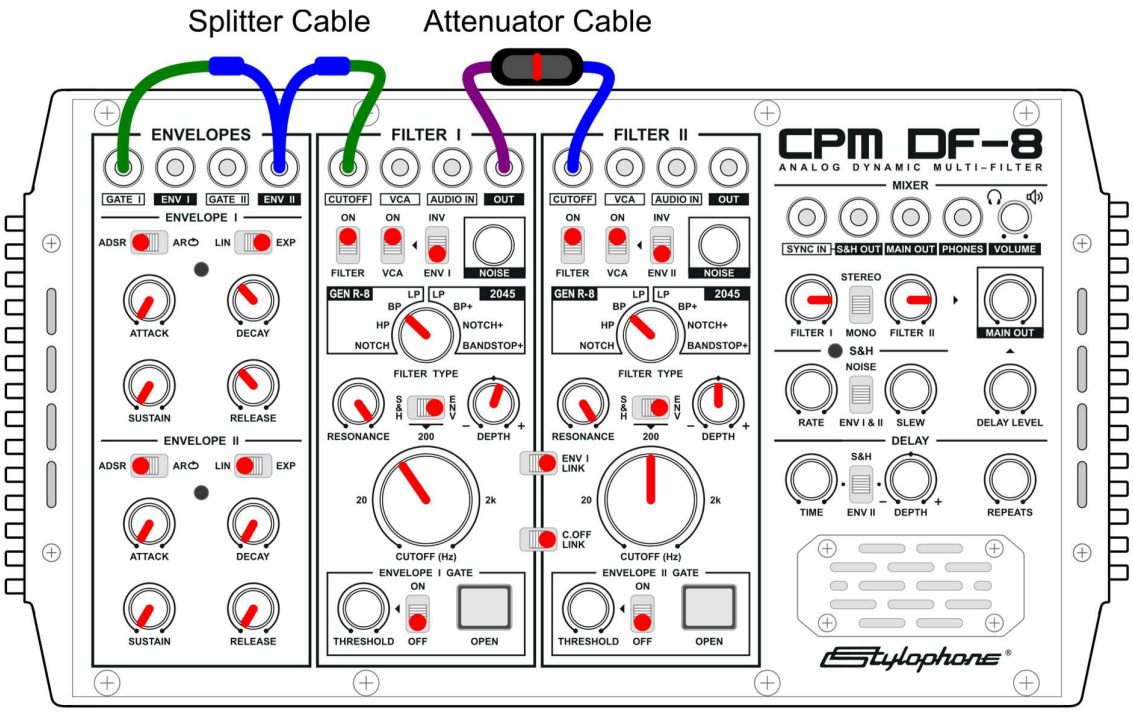
Set the ENV I LINK and C.OFF LINK switches left (off). In MIXER set the output levels for FILTER I to 2 o'clock and FILTER II to maximum

ENVELOPE I triggers ENVELOPE II like in the FM Snare example, but here the two different signal paths are combined in the MIXER. This is considered a parallel setup. FILTER I creates a short transient like a kick drum beater hitting its skin and FILTER II creates a deep 'boom' like the air resonating inside the kick drum. Because ENVELOPE II has a slight attack the boom is delayed slightly giving it a compressed kick like sound.

The ENVELOPE, FILTER DEPTH and CUTOFF knobs are particularly sensitive so experiment with those for lots of varied kick drum sounds.

FULL PHAT KICK

Play a deep and layered kick drum sound.



Play this sound with the ENVELOPE II GATE OPEN button or via the **GATE II** patch point.

Patch the splitter cable to **ENV II** and its outputs to **GATE I** and FILTER I **CUTOFF**. Patch the attenuator cable to FILTER I **OUT** and patch its output to FILTER II **CUTOFF.** Set the attenuator slider to 50%.

Set ENVELOPE I mode switches to ADSR and EXP. Set ATTACK and SUSTAIN to minimum, set DECAY and RELEASE to 10 o'clock. Set ENVELOPE II mode switches to ADSR and LIN. Set ATTACK, DECAY, SUSTAIN and RELEASE to minimum.

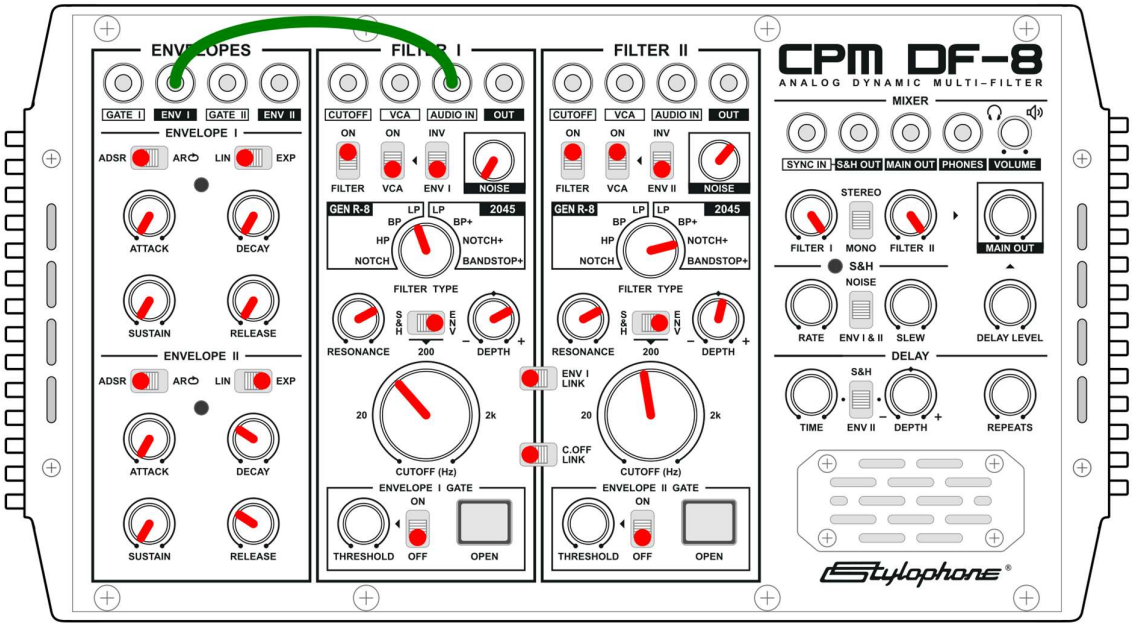
On FILTER I set the FILTER and VCA switches to up (on), the ENV switch to ENV I and NOISE to minimum. Set FILTER TYPE to GEN R-8 BP, RESONANCE to maximum, the routing switch to ENV, the DEPTH to 1 o'clock, the CUTOFF to 11 o'clock and the auto-trigger switch to OFF. Match these settings for FILTER II but set the DEPTH and CUTOFF to 12 o'clock.

Set the ENV I LINK and C.OFF LINK switches right (on). In MIXER set the output levels for FILTER I and II to 3 o'clock.

When ENVELOPE II is triggered, a fully formed kick drum is created on FILTER I with a transient and 'boom' due to both envelopes moving its CUTOFF. The audio from FILTER I also moves the FILTER II CUTOFF due to the patch cable between them creating an extra layer of 'boom'. This sound is very sensitive to the attenuator slider level so experiment with that, the FILTER II CUTOFF and mixer levels for variety.

KICK AND SNARE

A classic drum machine kick and snare in the same patch.



Play these sounds with the GATE OPEN buttons or via the **GATE I/II** patch points.

Patch **ENV I** to FILTER I **AUDIO IN**.

Set ENVELOPE I mode switches to ADSR and LIN. Set ATTACK, DECAY, SUSTAIN and RELEASE to minimum. Set ENVELOPE II mode switches to ADSR and EXP. Set ATTACK and SUSTAIN to minimum, set DECAY and RELEASE to 10 o'clock.

On FILTER I set the FILTER switch up (on), VCA switch down (open), the ENV switch to ENV I and NOISE to minimum. Set FILTER TYPE to GEN R-8 LP, RESONANCE to 2 o'clock, the routing switch to ENV, the DEPTH to 2 o'clock, the CUTOFF to 11 o'clock and the auto-trigger switch to OFF. On FILTER II set the FILTER and VCA switches up (on), the ENV switch to ENV II and NOISE to 1 o'clock. Set FILTER TYPE to 2045 NOTCH+, RESONANCE to 2 o'clock, the routing switch to ENV, the DEPTH to just above 12 o'clock, the CUTOFF to just below 12 o'clock and the auto-trigger switch to OFF.

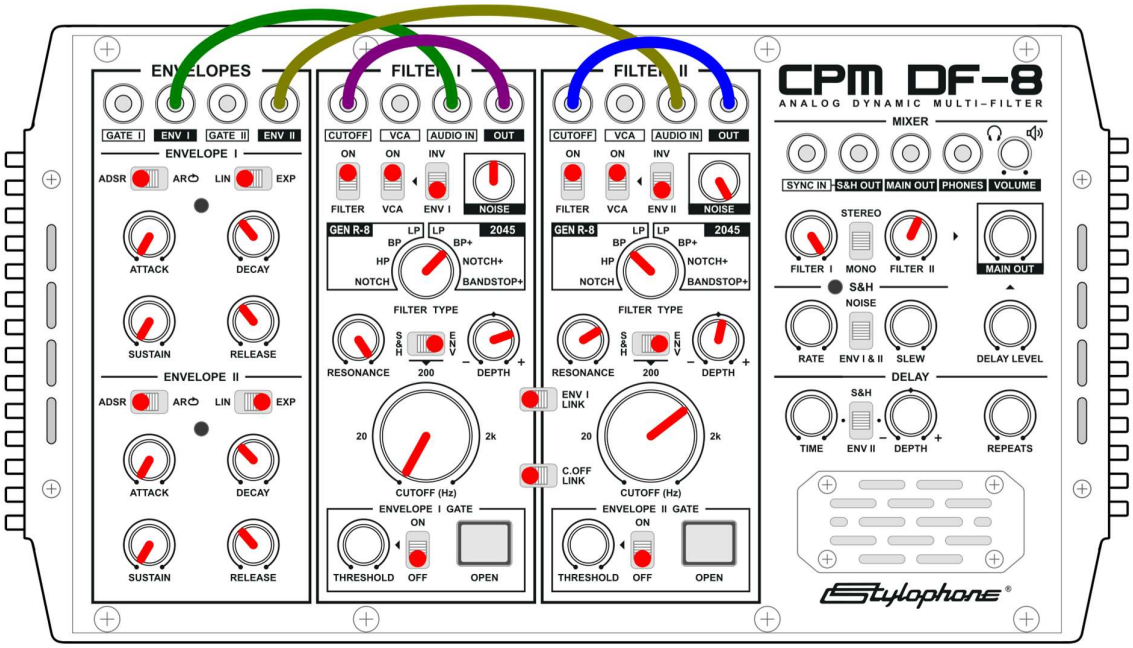
Set the ENV I LINK and C.OFF LINK switches left (off). In MIXER set the output levels for FILTER I and II to maximum.

In this example the VCA for FILTER I is bypassed meaning the filter is always audible. By using the short ENVELOPE I output as an audio transient we can 'ping' the filter, it will then ring out due to the high RESONACE setting creating the 'boom' we need for the body of the kick drum. If the RESONACE is turned up too high, it will continue to rumble in the background. The snare is created with NOISE filtered through the NOTCH+ filter which gives the body of the drum a tonal quality due to its double resonant peak.

Experiment with different FILTER TYPE settings and RESONANCE levels to create variety.

CRUNCHY KICK AND SNARE

Play an aggressive kick and snare in the same patch.



Play these sounds with the GATE OPEN buttons or via the **GATE I/II** patch points.

Patch **ENV I** to FILTER I **AUDIO IN**, **ENV II** to FILTER II **AUDIO IN**, FILTER I **OUT** to FILTER I **CUTOFF** and FILTER II **OUT** to FILTER II **CUTOFF**.

Set ENVELOPE I mode switches to ADSR and LIN. Set ATTACK and SUSTAIN to minimum, DECAY and RELEASE to 10 o'clock. Match these settings for ENVELOPE II but set the mode switches to ADSR and EXP.

On FILTER I set the FILTER and VCA switch up (on), the ENV switch to ENV I and NOISE to 12 o'clock. Set FILTER TYPE to 2045 BP+, RESONANCE to maximum, the routing switch to ENV, the DEPTH to 2 o'clock, the CUTOFF to minimum and the auto-trigger switch to OFF. On FILTER II set the FILTER and VCA switches up (on), the ENV switch to ENV II and NOISE to maximum. Set FILTER TYPE to GEN R-8 BP, RESONANCE to 2 o'clock, the routing switch to ENV, the DEPTH to just above 12 o'clock, the CUTOFF to 2 o'clock and the auto-trigger switch to OFF.

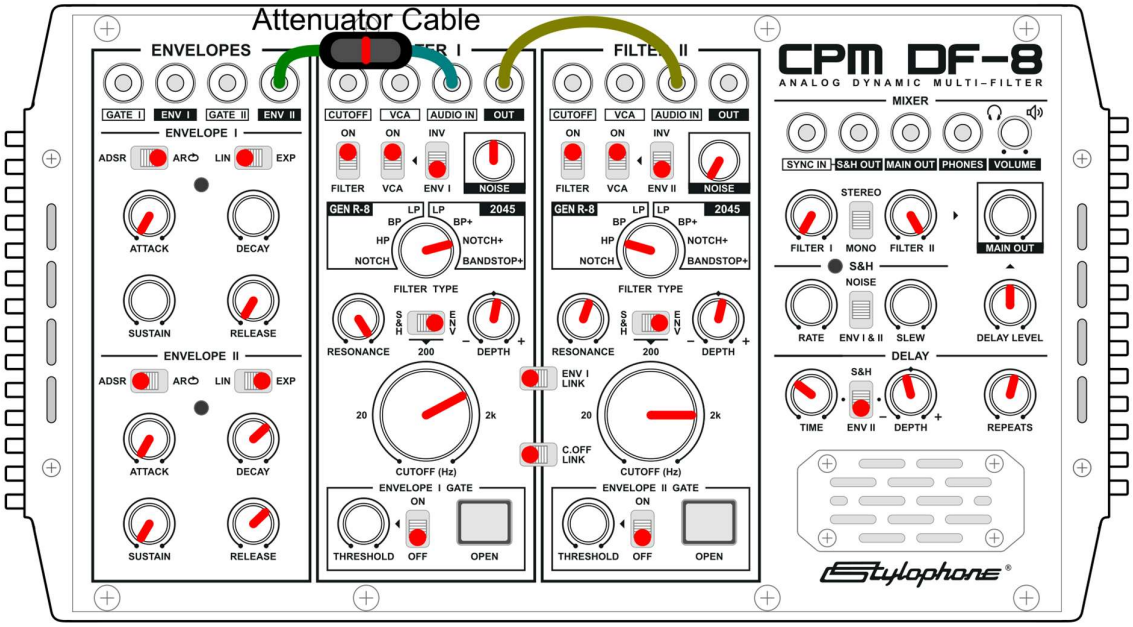
Set the ENV I LINK and C.OFF LINK switches left (off). In MIXER set the output levels for FILTER I to maximum and FILTER II to 1 o'clock.

You should be able to play an aggressive kick with the GATE I button and a bright crunchy snare with the GATE II button. Both sounds use the envelope as an audio transient and make the sound more aggressive using filter modulation feedback.

Try raising the FILTER I CUTOFF to make laser like sounds. Also, try adjusting the FILTER II NOISE and RESONACE to lower the 'crunchiness' of the snare sound.

RIDE CYMBAL

Play a metallic sounding ride cymbal.



Play this sound with the ENVELOPE II GATE OPEN button or via the **GATE II** patch point.

Patch **ENV II** to the attenuator cable then patch its output to FILTER I **AUDIO IN**. Set the attenuator slider at 50%. Patch FILTER I **OUT** into FILTER II **AUDIO IN**.

Set ENVELOPE I mode switches to AR (loop) and LIN. Set ATTACK and RELEASE to minimum. Set ENVELOPE II mode switches to ADSR and EXP. Set ATTACK and SUSTAIN to minimum, set DECAY and RELEASE to 1 o'clock.

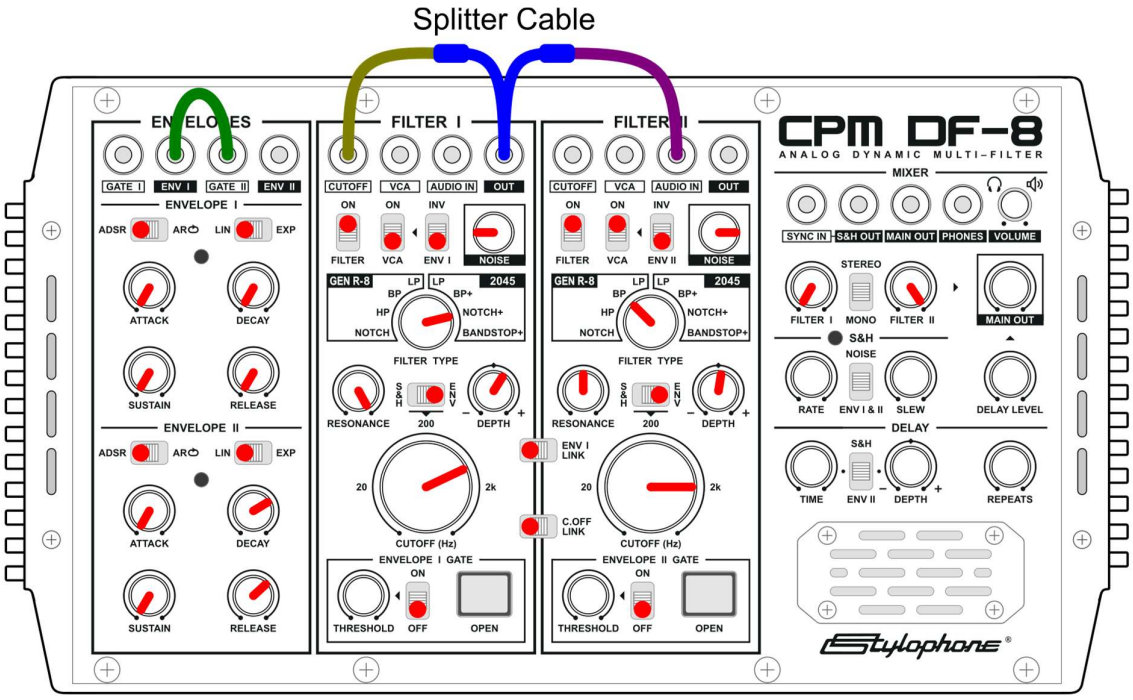
On FILTER I set the FILTER and VCA switch up (on), the ENV switch to ENV I and NOISE to 12 o'clock. Set FILTER TYPE to 2045 NOTCH+, RESONANCE to maximum, the routing switch to ENV, the DEPTH to just above 12 o'clock, the CUTOFF to 2 o'clock and the auto-trigger switch to OFF. On FILTER II set the FILTER and VCA switches up (on), the ENV switch to ENV II and NOISE to minimum. Set FILTER TYPE to GEN R-8 HP, RESONANCE to 1 o'clock, the routing switch to ENV, the DEPTH to just above 12 o'clock, the CUTOFF to 3 o'clock and the auto-trigger switch to OFF.

Set the ENV I LINK and C.OFF LINK switches left (off). In MIXER set the output levels for FILTER I to minimum and FILTER II to maximum. Set DELAY LEVEL to 12 o'clock TIME to 10 o'clock, the source switch to ENV II, Depth to 11 o'clock and REPEATS to 12 o'clock.

ENVELOPE I is looping very quickly which means its modulating the FILTER I CUTOFF and VCA at audio rate. Mixed with NOISE this creates a metallic ringing sound. The audio is then further processed by HP (High pass) filter and VCA in the FILTER II section. The attenuator cable routes ENVELOPE II into the filter as an audio source for a transient hit. This sound is very sensitive to the FILTER I depth knob so try adjusting it slightly. You can hear the metallic noise isolated by turning up the FILTER I level knob.

CRASH CYMBAL

Play a bright crash cymbal.



Play this sound with the ENVELOPE I GATE OPEN button or via the **GATE I** patch point.

Patch **ENV I** to GATE II. Patch FILTER I **OUT** to the splitter then its outputs to FILTER I **CUTOFF** and FILTER II **AUDIO IN**.

Set ENVELOPE I mode switches to ADSR and LIN. Set ATTACK, DECAY, SUSTAIN and RELEASE to minimum. Set ENVELOPE II mode switches to ADSR and LIN. Set ATTACK and SUSTAIN to minimum, set DECAY and RELEASE to 1 o'clock.

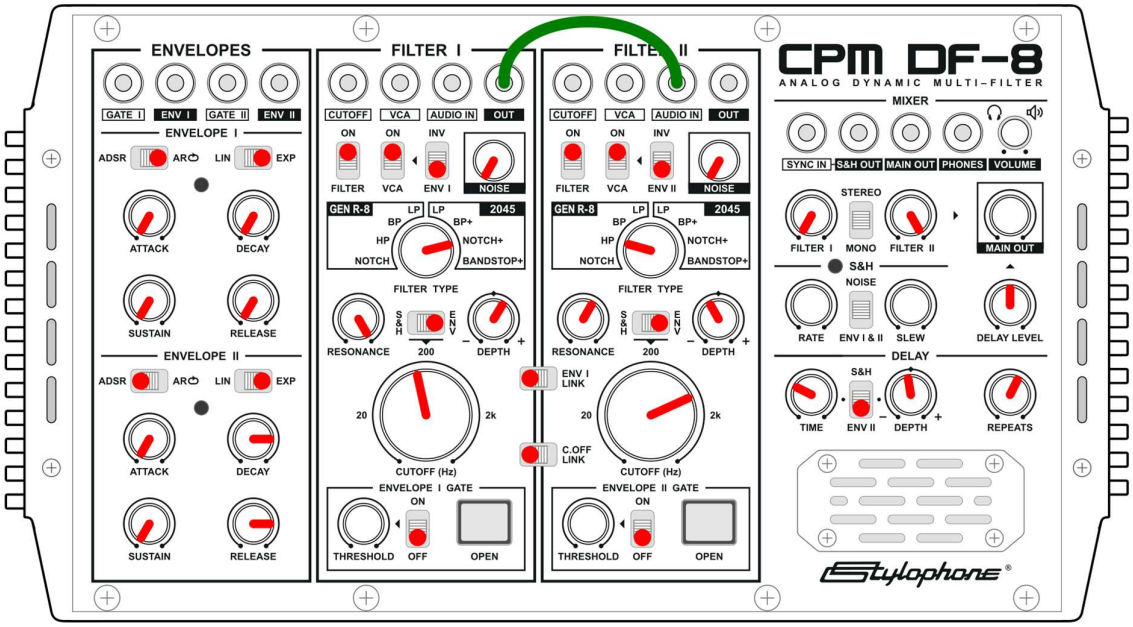
On FILTER I set the FILTER switch up (on), VCA switch down (open), the ENV switch to ENV I and NOISE to 9 o'clock. Set FILTER TYPE to 2045 NOTCH+, RESONANCE to maximum, the routing switch to ENV, the DEPTH to just above 12 o'clock, the CUTOFF to 2 o'clock and the auto-trigger switch to OFF. On FILTER II set the FILTER and VCA switches up (on), the ENV switch to ENV II and NOISE to 3 o'clock. Set FILTER TYPE to GEN R-8 BP, RESONANCE to 12 o'clock, the routing switch to ENV, the DEPTH to just above 12 o'clock, the CUTOFF to 3 o'clock and the auto-trigger switch to OFF.

Set the ENV I LINK and C.OFF LINK switches left (off). In MIXER set the output levels for FILTER I to minimum and FILTER II to maximum.

This patch works in a similar way to the Ride Cymbal patch but this time the metallic sound is produced with filter FM feedback in FILTER I which is then processed by FILTER II. Like the Ride sound this is considered a 'serial' setup. Try changing the two CUTOFF controls and turning down the two NOISE controls to make a huge variety of metallic sounds.

BELLS

Play a large bell chime like sound.



Play this sound with the ENVELOPE II GATE OPEN button or via the **GATE II** patch point.

Patch FILTER I **OUT** to FILTER II **AUDIO IN**.

Set ENVELOPE I mode switches to AR (loop) and EXP. Set ATTACK, DECAY, SUSTAIN and RELEASE to minimum. Set ENVELOPE II mode switches to ADSR and EXP. Set ATTACK and SUSTAIN to minimum, set DECAY and RELEASE to 3 o'clock.

On FILTER I set the FILTER and VCA switch up (on), the ENV switch to ENV I and NOISE to minimum. Set FILTER TYPE to 2045 NOTCH+, RESONANCE to maximum, the routing switch to ENV, the DEPTH to 1 o'clock, the CUTOFF to 11 o'clock and the auto-trigger switch to OFF. On FILTER II set the FILTER and VCA switches up (on), the ENV switch to ENV II and NOISE to minimum. Set FILTER TYPE to GEN R-8 HP, RESONANCE to 1 o'clock, the routing switch to ENV, the DEPTH to 11 o'clock, the CUTOFF to 2 o'clock and the auto-trigger switch to OFF.

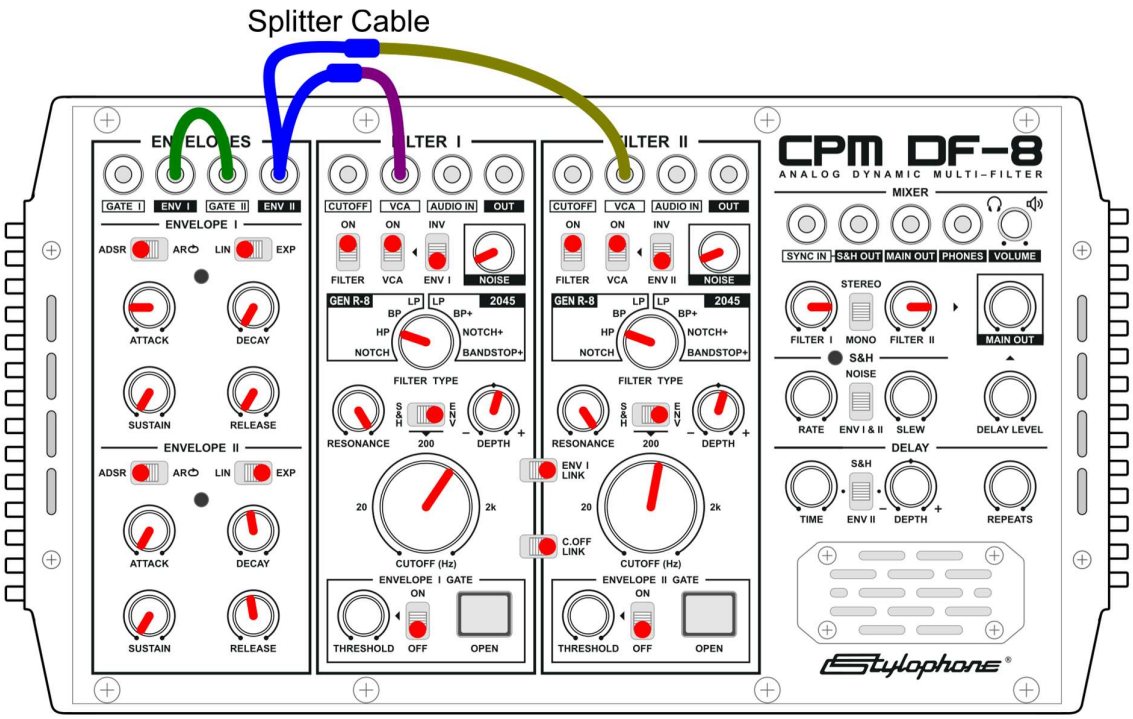
Set ENV I LINK and C.OFF LINK switches left (off). In MIXER set the output levels for FILTER I to minimum and FILTER II to maximum. Set DELAY LEVEL to 12 o'clock, TIME to 10 o'clock, the source switch to ENV II, DEPTH to 11 o'clock and REPEATS to 1 o'clock.

This is another serial setup. ENVELOPE I is running at audio rates again creating a clangourous sound with the FILTER I CUTOFF and VCA. This sound is processed in FILTER II, the CUTOFF of which is moved by ENVELOPE II shifting the tone over time. The DELAY settings create a copy that shifts in tone giving the bell sound even more movement.

Adjust FILTER I CUTOFF and DEPTH for a huge variety of bell tones. Try moving the FILTER I VCA down (bypass) for a different flavour.

COWBELL

Play a classic drum machine cowbell sound.



Play this sound with the ENVELOPE I GATE OPEN button or via the **GATE I** patch point.

Patch **ENV I** to **GATE II**. Patch ENV II to the splitter cable then its outputs to FILTER I **VCA** and FILTER II **VCA.**

Set ENVELOPE I mode switches to ADSR and LIN. Set ATTACK to 9 o'clock, set DECAY, SUSTAIN and RELEASE to minimum. Set ENVELOPE II mode switches to ADSR and EXP. Set ATTACK and SUSTAIN to minimum, set DECAY and RELEASE to 11 o'clock.

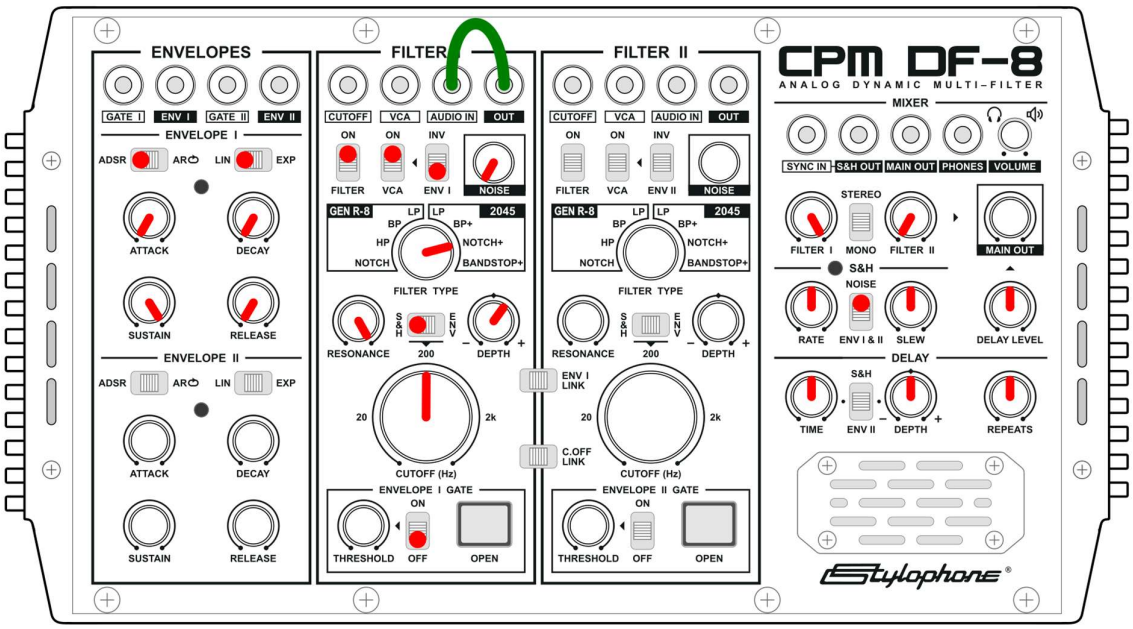
On FILTER I set the FILTER and VCA switch up (on), the ENV switch to ENV I and NOISE to 8 o'clock. Set FILTER TYPE to GEN R-8 HP, RESONANCE to maximum, the routing switch to ENV, the DEPTH to just above 12 o'clock, the CUTOFF to 1 o'clock and the auto-trigger switch to OFF. Match these setting for FILTER II but move the CUTOFF to just above 12 o'clock.

Set ENV I LINK and C.OFF LINK switches right (on). In MIXER set the output levels for FILTER I and FILTER II to 3 o'clock.

This is a very different approach to a bell like sound. The filters are setup as oscillators using high RESONANCE, the HP (High pass) option giving a fairly bright tone. The slight tuning difference between them with the FILTER II CUTOFF gives us the clangourous tone. ENVELOPE I is fast giving us a transient though the FILTER DEPTH controls, ENVELOPE II is patched to both VCAs to control. Try moving the FILTER I CUTOFF to shift the whole sound up and down in pitch. This works because of the C.OFF LINK control. Tweaking FILTER II CUTOFF can make the cowbell cleaner or more clangourous as needed.

SCI-FI COMPUTER

Play a classic beeping sci-fi computer sound.



Play this sound with the ENVELOPE I GATE OPEN button or via the **GATE I** patch point.

Patch FILTER I **OUT** to FILTER I **AUDIO IN**.

Set ENVELOPE I mode switches to ADSR and LIN. Set ATTACK, DECAY and RELEASE to minimum, set SUSTAIN to maximum.

On FILTER I set the FILTER and VCA switch up (on), the ENV switch to ENV I and NOISE to minimum. Set FILTER TYPE to 2045 NOTCH+, RESONANCE to maximum, the routing switch to S&H, the DEPTH to 1 o'clock, the CUTOFF to 12 o'clock and the auto-trigger switch to OFF.

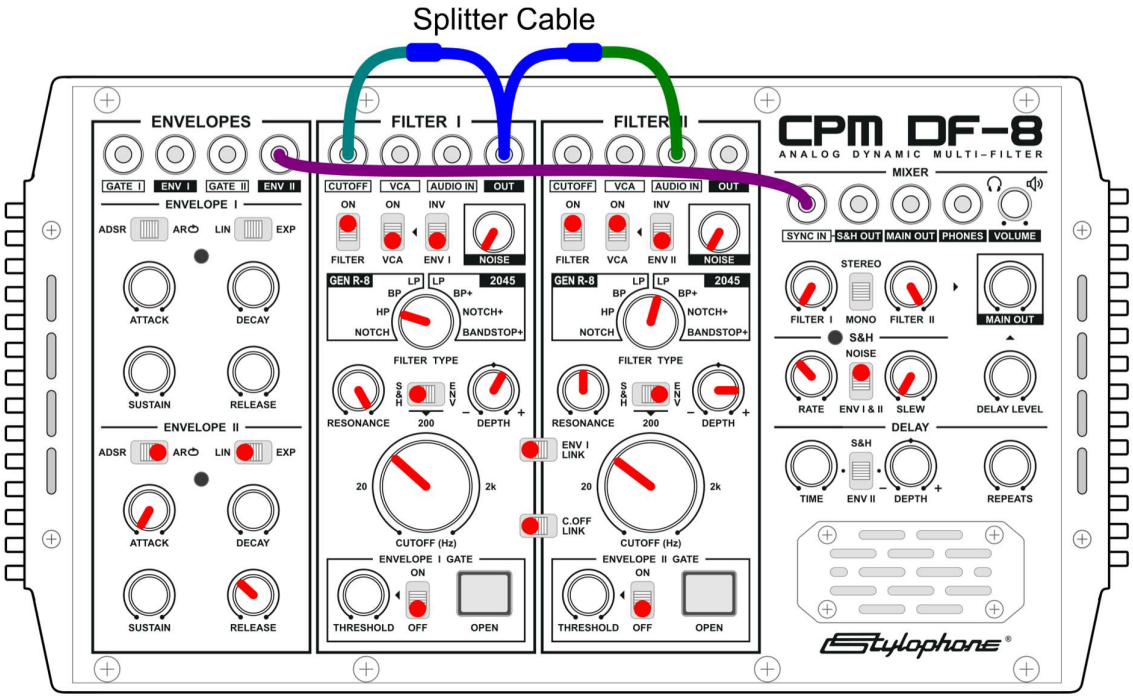
In MIXER set the output levels for FILTER I to maximum and FILTER II to minimum. Set the S&H source to NOISE. Set RATE, SLEW, DELAY LEVEL, TIME, DEPTH and REPEATS to 12 o'clock.

This patch uses audio feedback from **OUT** to **AUDIO IN** to create a raspier version of the resonant tone coming from the NOTCH+ FILTER TYPE. Because the FILTER I routing switch is set to S&H (Sample and Hold) its CUTOFF is moved around by the signal created in the S&H section. In this example the pitch is randomised as its sampling NOISE at the speed of the RATE control. The SLEW control slows down the change in the S&H circuits output, so the pitch has a slight portamento effect. The DELAY settings give it even more of a sci-fi tone.

Experiment with the FILTER I CUTOFF and DEPTH controls, plus the S&H RATE and SLEW controls to see how this changes the pitch as the sound plays.

BASS RANDOMISER

Create a looping randomised bass riff.



Patch **ENV II** to **SYNC IN**. Patch FILTER I **OUT** to the splitter cable then patch its outputs to FILTER I **CUTOFF** and FILTER II **AUDIO IN**.

Set ENVELOPE II mode switches to AR (loop) and LIN. Set ATTACK to minimum, and RELEASE to 10 o'clock.

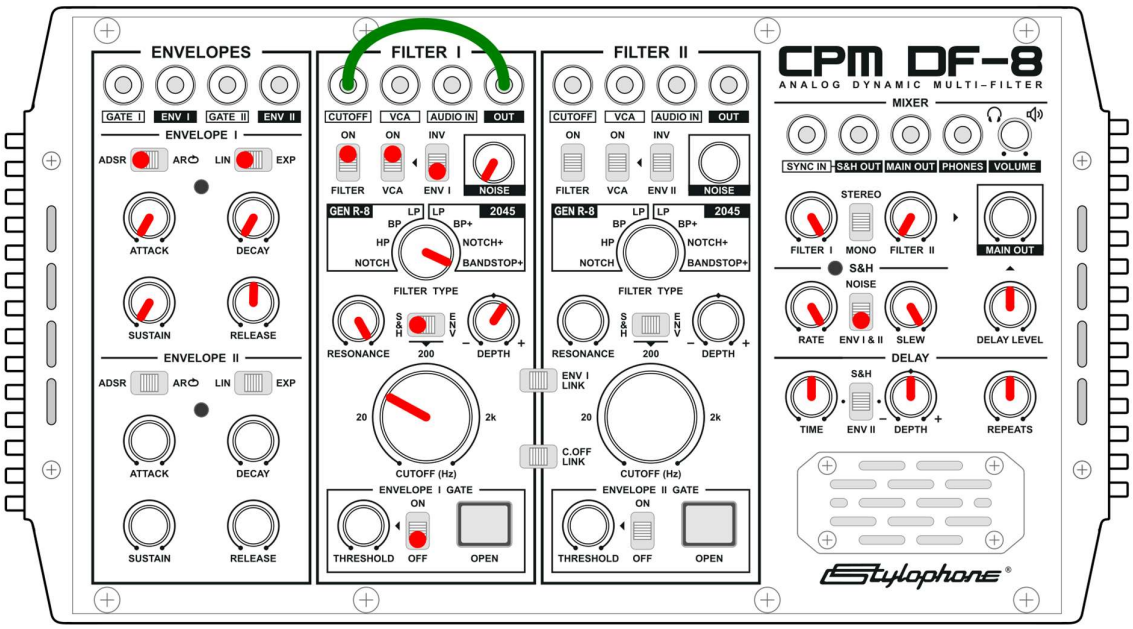
On FILTER I set the FILTER switch up (on), the VCA switch down (open), the ENV switch to ENV I and NOISE to minimum. Set FILTER TYPE to GEN R-8 HP, RESONANCE to maximum, the routing switch to S&H, the DEPTH to 1 o'clock, the CUTOFF to 10 o'clock and the auto-trigger switch to OFF. On FILTER II set the FILTER and VCA switches to up (on), the ENV switch to ENV II and NOISE to minimum. Set FILTER TYPE to 2045 LP, RESONANCE to 12 o'clock, the routing switch to ENV, the DEPTH to 3 o'clock, the CUTOFF to 10 o'clock and the auto-trigger switch to OFF.

Set ENV I LINK and C.OFF LINK switches left (off). In MIXER set the output levels for FILTER I to minimum and FILTER II to maximum. Set the S&H source to NOISE. Set RATE to 10 o'clock and SLEW to minimum.

ENVELOPE II is used as a clock source for the S&H and to modulate FILTER II CUTOFF. A bright tone is created at FILTER I using filter feedback which is processed with FILTER II. With a clock connected to the **SYNC IN** patch point the RATE control becomes a divider and multiplier of the connected clock signal, so it should be playing repeated notes due to the low RATE knob setting. Try changing the RATE setting to affect this. Try changing the ENVELOPE II mode to ADSR then lower the SUSTAIN and DECAY time, you should then be able to manually clock the SYNC IN with the ENVELOPE II GATE OPEN button.

SIREN

Play a siren sound with a rising pitch using the S&H.



Play this sound with the ENVELOPE I GATE OPEN button or via the **GATE I** patch point.

Patch FILTER I **OUT** to FILTER I **CUTOFF**

Set ENVELOPE I mode switches to ADSR and LIN. Set ATTACK, DECAY and SUSTAIN to minimum, set RELEASE to 12 o'clock.

On FILTER I set the FILTER and VCA switch to up (on) the ENV switch to ENV I and NOISE to minimum. Set FILTER TYPE to 2045 BANDSTOP+, RESONANCE to maximum, the routing switch to S&H, the DEPTH to 1 o'clock, the CUTOFF to 10 o'clock and the auto-trigger switch to OFF.

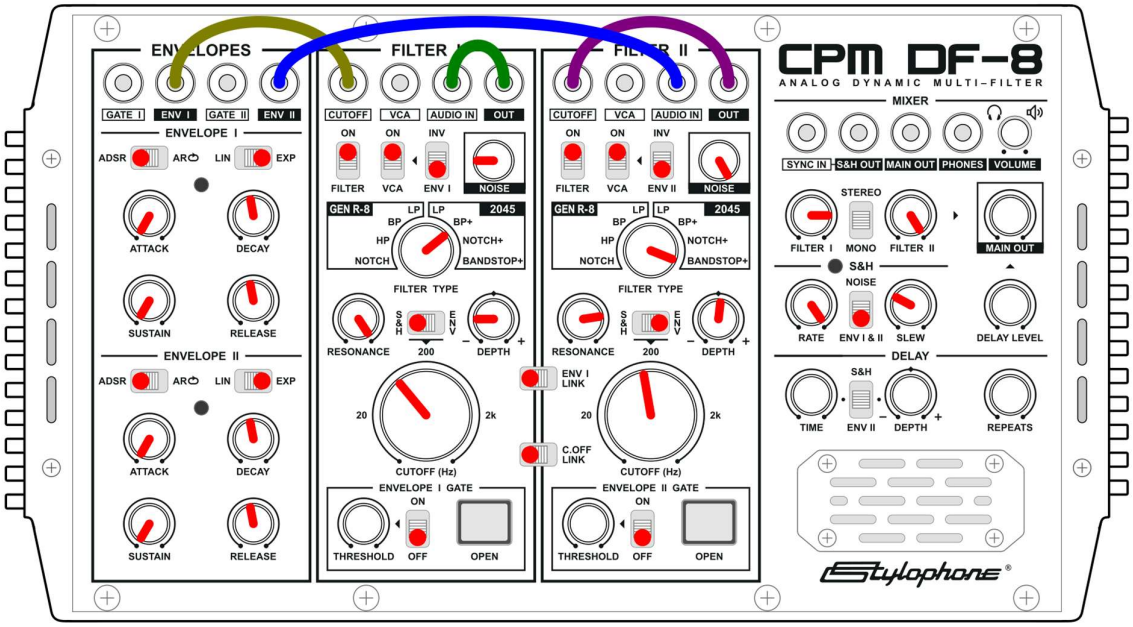
In MIXER set the output levels for FILTER I to maximum and FILTER II to minimum. Set the S&H source to ENV I &II. Set RATE and SLEW to maximum. Set the DELAY LEVEL, TIME, DEPTH and REPEATS to 12 o'clock.

Note how when the sound is triggered the volume reaches maximum instantly due to the ATTACK setting on ENVELOPE I, but the pitch takes a long time to rise. In this example we're only using one envelope, the difference is created in the S&H section. With the S&H source switch set to ENV I&II and SLEW at maximum, FILTER I receives a slowly changing copy of ENVELOPE I which is why the pitch rises gradually. The FILTER I VCA is receiving ENVELOPE I with an instant ATTACK, so it starts straight away.

Try setting a version of this sound on FILTER II. The S&H section will send FILTER II a slowed down version of ENVELOPE II instead so we can derive 4 different envelope shapes from just two envelopes.

ZAP KICK AND BRIGHT SNARE

Play a zappy kick with the S&H and a bright feedback snare.



Play these sounds with the GATE OPEN buttons or via the **GATE I/II** patch points.

Patch **ENV I** to FILTER I **CUTOFF** and **ENV II** to FILTER II **AUDIO IN**. Patch FILTER I **OUT** to FILTER I **AUDIO IN** and FILTER II **OUT** to FILTER II **CUTOFF**.

Set ENVELOPE I and II mode switches to ADSR and EXP. Set ATTACK and SUSTAIN to minimum, set DECAY and RELEASE to 11 o'clock.

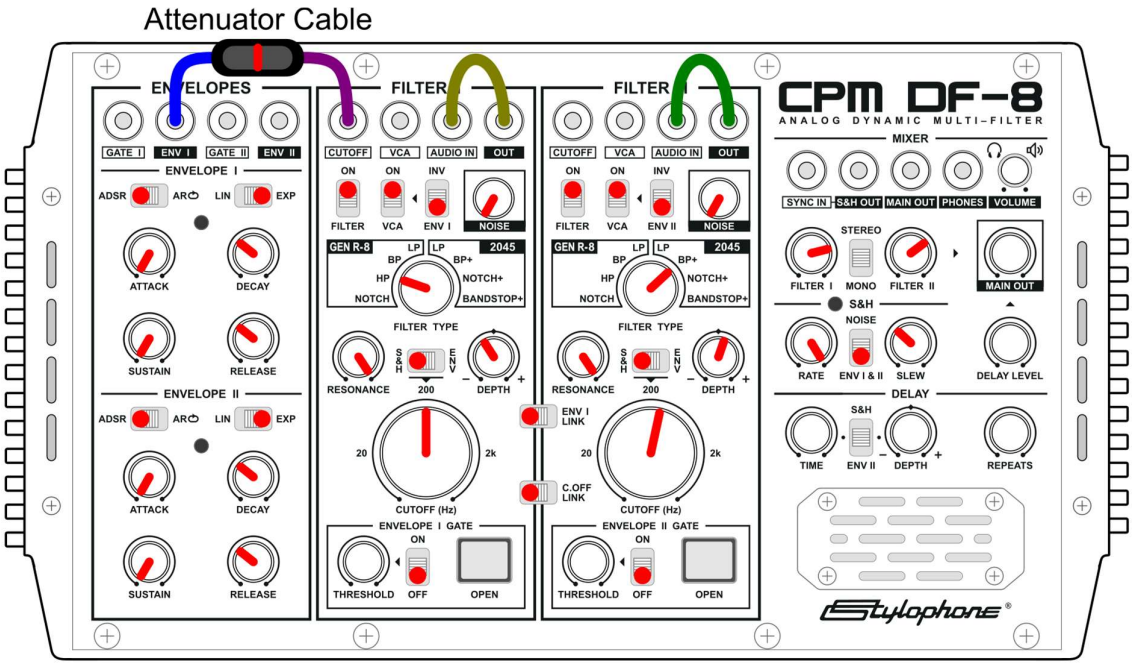
On FILTER I set the FILTER and VCA switch to up (on) the ENV switch to ENV I and NOISE to 9 o'clock. Set FILTER TYPE to 2045 BP+, RESONANCE to maximum, the routing switch to S&H, the DEPTH to 9 o'clock, the CUTOFF to 10 o'clock and the auto-trigger switch to OFF. On FILTER II set the FILTER and VCA switch to up (on) the ENV switch to ENV II and NOISE to maximum. Set FILTER TYPE to 2045 BANDSTOP+, RESONANCE to 3 o'clock, the routing switch to ENV, the DEPTH to just above 12 o'clock, the CUTOFF to 11 o'clock and the auto-trigger switch to OFF.

Set ENV I LINK and C.OFF LINK switches left (off). In MIXER set the output levels for FILTER I to 3 o'clock and FILTER II to maximum. Set the S&H source to ENV I &II. Set RATE to maximum and SLEW to 10 o'clock.

This is another use for a copy of ENVELOPE I processed through the SLEW. The FILTER I CUTOFF receives both the slowed down copy of ENVELOPE I due to the source switch being set to S&H, and the original ENVELOPE I via the patch to **CUTOFF**. But because DEPTH knob is a 9 o'clock these influence the CUTOFF in opposing directions. This almost cancels out the modulation just leaving the SLEW as a transient attack creating the 'zap'. Try playing the kick very fast and see what happens. This is due to the SLEW adding both an attack and a release to the envelope, so it needs time to reset between hits.

TOM AND CONGA

Play a classic drum machine tom and conga using the S&H slew.



Play these sounds with the GATE OPEN buttons or via the **GATE I/II** patch points.

Patch **ENV I** to the attenuator cable, then its output to FILTER I **CUTOFF.** Set the attenuator to 50%. Patch FILTER I **OUT** to FILTER I **AUDIO IN** and FILTER II **OUT** to FILTER II **AUDIO IN**.

Set ENVELOPE I and II mode switches to ADSR and EXP. Set ATTACK and SUSTAIN to minimum, set DECAY and RELEASE to 10 o'clock.

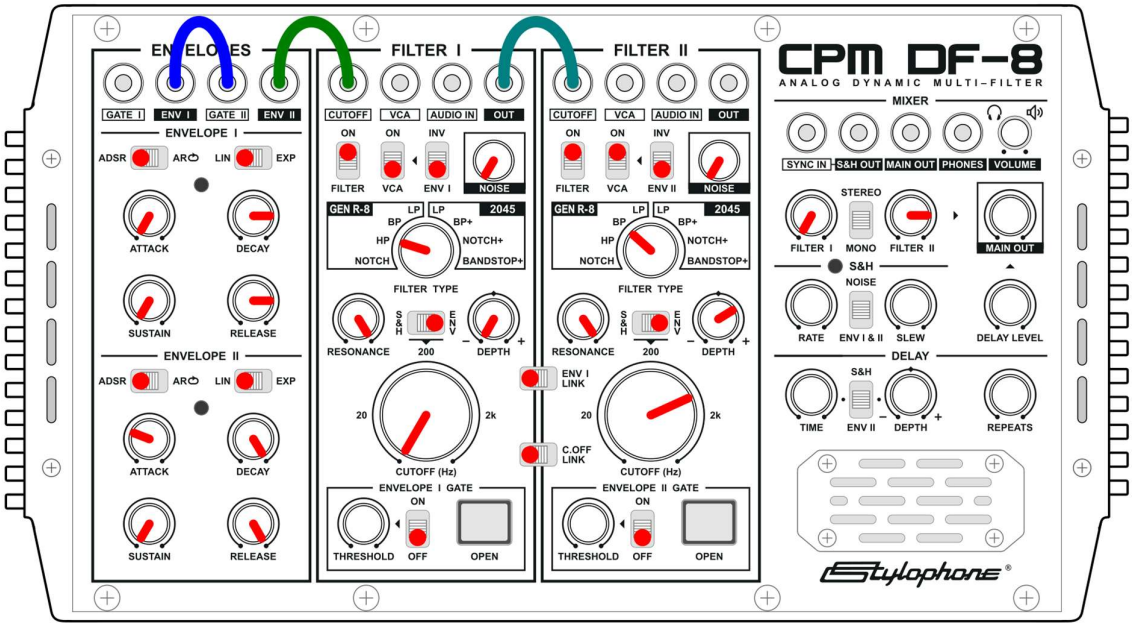
On FILTER I set the FILTER and VCA switch to up (on) the ENV switch to ENV I and NOISE to minimum. Set FILTER TYPE to GEN R-8 HP, RESONANCE to maximum, the routing switch to S&H, the DEPTH to 11 o'clock, the CUTOFF to 12 o'clock and the auto-trigger switch to OFF. On FILTER II set the FILTER and VCA switch to up (on) the ENV switch to ENV II and NOISE to minimum. Set FILTER TYPE to 2045 BP+, RESONANCE to maximum, the routing switch to S&H, the DEPTH to just above 12 o'clock, the CUTOFF to just above 12 o'clock and the auto-trigger switch to OFF.

Set ENV I LINK and C.OFF LINK switches left (off). In MIXER set the output levels for FILTER I to 3 o'clock and FILTER II to 2 o'clock. Set the S&H source to ENV I &II. Set RATE to maximum and SLEW to 10 o'clock.

The tom works in a similar way to the kick drum in the Zap Kick and Bright Snare example, but the attenuator reduces the amount ENVELOPE I moves the CUTOFF giving a mellower sound. The conga uses a slewed version of ENVELOPE II to move FILTER II cutoff giving a slight upward pitch bend producing a 'bop' sound. Both of the **OUT** to **AUDIO IN** patch cables help to produce a more controlled sound, try removing these to hear the difference.

ARCADE MACHINE

Play a complex FX tone using audio rate filter modulation.



Play this sound with the ENVELOPE I GATE OPEN button or via the **GATE I** patch point.

Patch **ENV I** to **GATE II**, **ENV II** to FILTER I **CUTOFF** and FILTER I **OUT** to FILTER II **CUTOFF**.

Set ENVELOPE I mode switches to ADSR and LIN. Set ATTACK and SUSTAIN to minimum, set DECAY and RELEASE to 3 o'clock. Set ENVELOPE II mode switches to ADSR and LIN. Set DECAY and RELEASE to maximum, ATTACK to 10 o'clock, SUSTAIN to minimum.

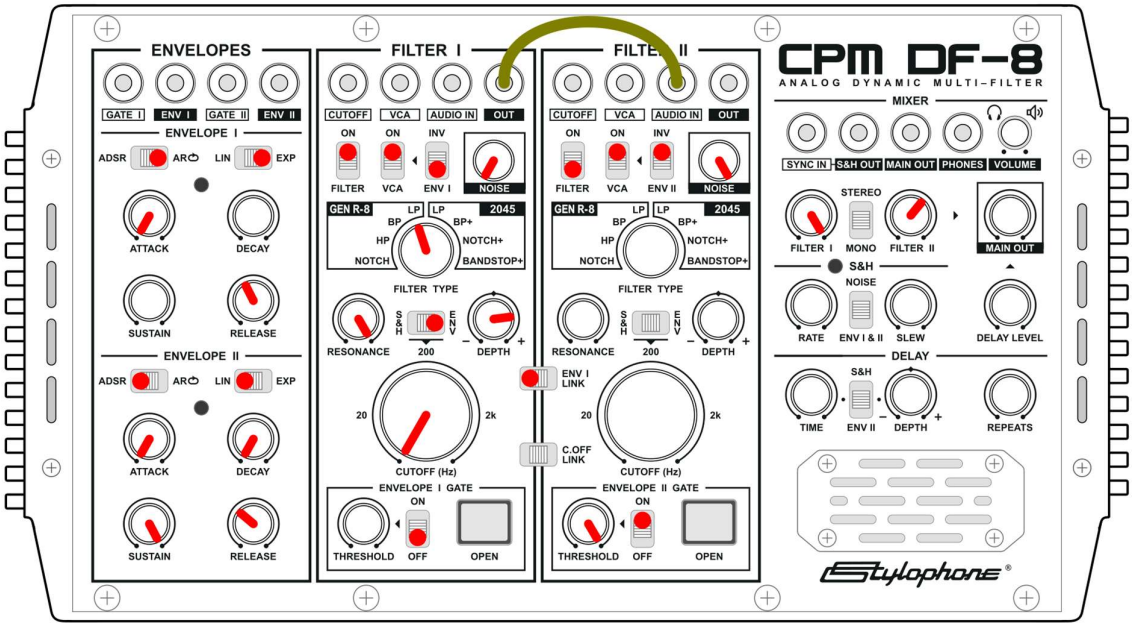
On FILTER I set the FILTER to up (on), VCA switch to down (open) the ENV switch to ENV I and NOISE to minimum. Set FILTER TYPE to GEN R-8 HP, RESONANCE to maximum, the routing switch to ENV, the DEPTH to minimum, the CUTOFF to minimum and the auto-trigger switch to OFF. On FILTER II set the FILTER and VCA switch to up (on) the ENV switch to ENV II and NOISE to minimum. Set FILTER TYPE to GEN R-8 BP, RESONANCE to maximum, the routing switch to ENV, the DEPTH to just above 2 o'clock, the CUTOFF to 2 o'clock and the auto-trigger switch to OFF.

Set ENV I LINK and C.OFF LINK switches left (off). In MIXER set the output levels for FILTER I minimum and FILTER II to 3 o'clock.

Triggering this sound plays a long, complex and evolving tone. Both FILTER I and II CUTOFF controls are being moved by ENVELOPE I and II respectively, but ENVELOPE II is also patched into FILTER I, and the **OUT** of FILTER I is moving FILTER II CUTOFF. This produces complex audio rate filter modulation because of the high FILTER I RESONANCE setting. Experiment with the FILTER II DEPTH control for a huge range of tones.

SELF SIDECHAIN

Create a looping kick drum that sidechains noise.



Patch FILTER I **OUT** to FILTER II **AUDIO IN**.

Set ENVELOPE I mode switches to AR (loop) and EXP. Set ATTACK to minimum and RELEASE to 11 o'clock. Set ENVELOPE II mode switches to ADSR and LIN. Set ATTACK and DECAY to minimum, SUSTAIN to minimum and RELEASE to 10 o'clock.

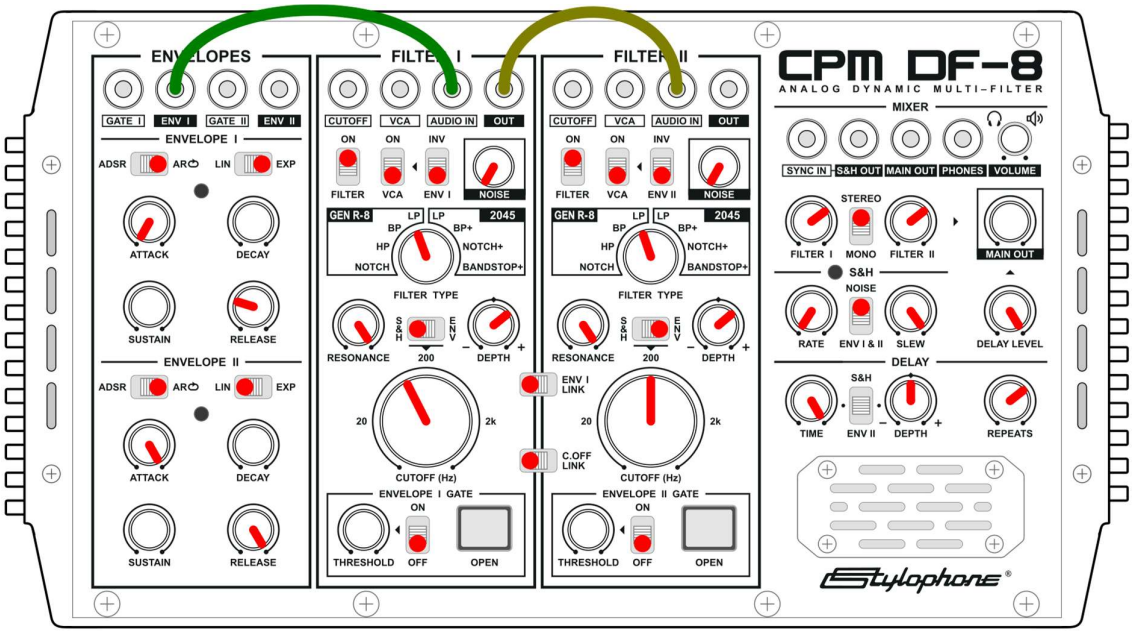
On FILTER I set the FILTER and VCA switches to up (on), the ENV switch to ENV I and NOISE to minimum. Set FILTER TYPE to GEN R-8 LP, RESONANCE to maximum, the routing switch to ENV, the DEPTH to 3 o'clock, the CUTOFF to minimum and the auto-trigger switch to OFF. On FILTER II set the FILTER switch to down (off), the VCA switch to up (on), the ENV switch to INV and NOISE to maximum. Set the auto-trigger switch to ON and THRESHOLD to maximum.

Set ENV I LINK left (off). In MIXER set the output levels for FILTER I maximum and FILTER II to 1 o'clock.

ENVELOPE I is looping which due to the high RESONANCE and DEPTH settings in FILTER I this produces a kick drum sound. This is fed to the MIXER but is also connected to the FILTER II **AUDIO IN** via a patch cable. Because the auto-trigger switch is set to ON, signals connected to the **AUDIO IN** will trigger ENVELOPE II when they reach the THRESHOLD level. Also, because the ENV switch is set to INV, ENVELOPE II turns down the NOISE heard from FILTER II whenever the kick drum plays. Adjust the ENVELOPE II ATTACK and RELEASE to get different side chain effects. Try turning the auto-trigger switch to OFF to hear the noise playing unaffected. Also try setting the ENV switch to ENV II, this will cause the two sounds to play together rather than opposite to each other.

ENVELOPE DRONE

Create a self-playing drone using an envelope as a sound source.



Patch **ENV I** to FILTER I **AUDIO IN** and FILTER I **OUT** to FILTER II **AUDIO IN**.

Set ENVELOPE I mode switches to AR (loop) and EXP. Set ATTACK to minimum and RELEASE to 10 o'clock. Set ENVELOPE II mode switches to AR (loop) and LIN. Set ATTACK and RELEASE to maximum.

On FILTER I set the FILTER switch up, VCA down (bypass), the ENV switch to ENV I and NOISE to minimum. Set FILTER TYPE to GEN R-8 LP, RESONANCE to maximum, the routing switch to S&H, the DEPTH to 2 o'clock, the CUTOFF to 11 o'clock and the auto-trigger switch to OFF. Match these setting for FILTER II but set the routing switch to ENV and CUTOFF to 12 o'clock.

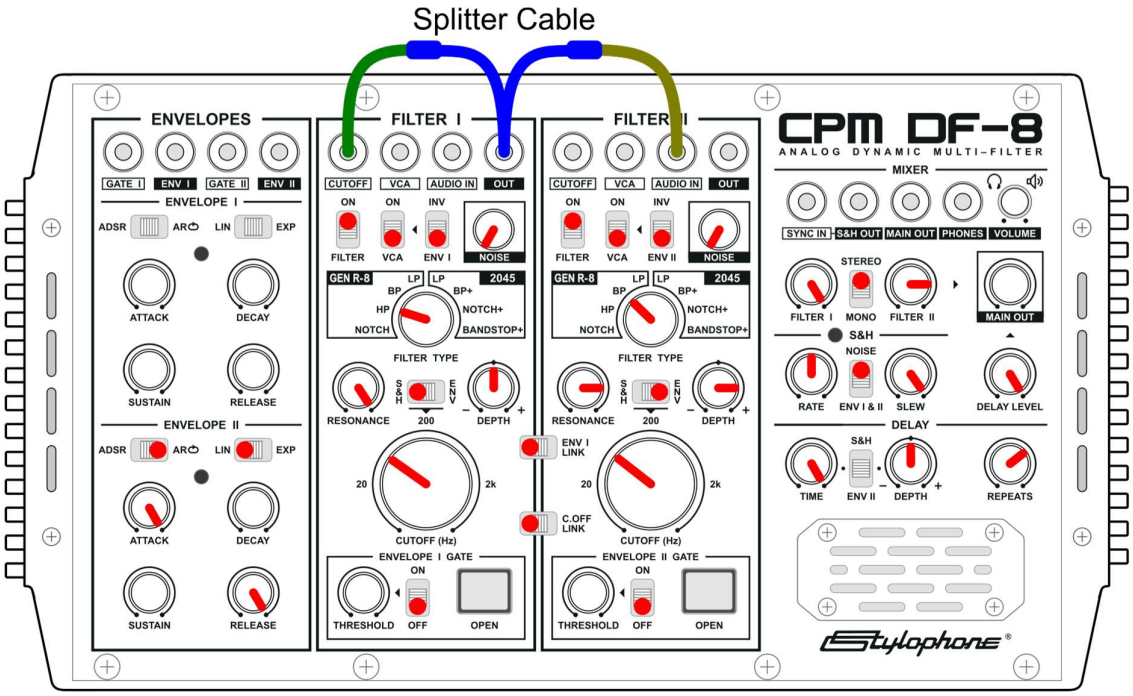
Set ENV I LINK and C.OFF LINK left (off). In MIXER set the output levels for FILTER I and FILTER II to 2 o'clock, the output type to STEREO and the S&H source to NOISE. Set SLEW, DELAY LEVEL and TIME to maximum, RATE to minimum, DEPTH to 12 o'clock (off) and REPEATS to 2 o'clock.

This example use ENVELOPE I as an oscillator which is processed by both FILTER I and FILTER II. FILTER I CUTOFF is modulated by a slow and very slewed random output from the S&H module, FILTER II CUTOFF is modulated by ENVELOPE II in AR (loop) mode. The high RESONACE levels mean that the internal connection to the DELAY distorts slightly making the occasional gritty texture as the filter sweep around.

Try increasing the RATE control and tweaking the ENVELOPE II controls for a faster moving drone sound.

HOWLING DRONE

Create a self-playing drone using feedback as a sound source.



Patch FILTER I **OUT** to a splitter cable, then patch its outputs to FILTER I **CUTOFF** and FILTER II **AUDIO IN**.

Set ENVELOPE II mode switches to AR (loop) and LIN. Set ATTACK and RELEASE to maximum.

On FILTER I set the FILTER switch up, VCA down (bypass), the ENV switch to ENV I and NOISE to minimum. Set FILTER TYPE to GEN R-8 HP, RESONANCE to maximum, the routing switch to S&H, the DEPTH to approximately 12 o'clock (see below), the CUTOFF to 10 o'clock and the auto-trigger switch to OFF. Match these setting for FILTER II but set the FILTER TYPE to GEN R-8 BP, RESONANCE to 3 o'clock, the routing switch to ENV and DEPTH to 3 o'clock.

Set ENV I LINK and C.OFF LINK left (off). In MIXER set the output level for FILTER I to maximum and FILTER II to 3 o'clock, the output type to STEREO and the S&H source to NOISE. Set SLEW, DELAY LEVEL and TIME to maximum, RATE and DEPTH to 12 o'clock (off) and REPEATS to 2 o'clock.

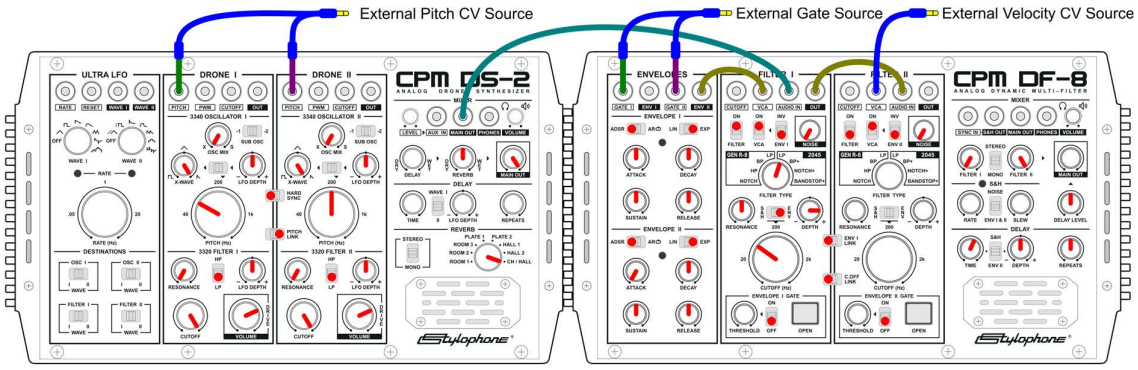
The connection from FILTER I **OUT** to **CUTOFF** creates feedback in FILTER I producing a bright tone. The FILTER I DEPTH control is at 12 o'clock but because of the sensitive nature of the feedback path, unless DEPTH is perfectly in the middle this will cause subtle fluctuations in pitch coming from the S&H source connection to CUTOFF which is great for drone sounds. The output of DRONE I is further processed by FILTER II giving us the 'howling' tone. Experiment with the FILTER I FILTER TYPE setting for different tones created by feedback.

CHAPTER 4

DS-2 with DF-8 patches

2 OSC LEAD WITH VELOCITY

Play a classic lead sound from an external keyboard or sequencer.



Audio is heard from the DF-8 in this example.

Patch an external pitch CV source to the splitter cable then patch its outputs to **PITCH** on DRONE I and II. Patch an external gate source into a splitter, patch its outputs into **GATE I** and **GATE II**. If available, patch an external velocity CV source into FILTER II **VCA**. Patch **MAIN OUT** (DS-2) into FILTER I **AUDIO IN**, patch **ENV II** into FILTER I **VCA** and FILTER I **OUT** into FILTER II **AUDIO IN**.

DS-2:

In DRONE I set the OSC MIX knob to X (x-wave), the X-WAVE knob to Saw, the OSC LFO DEPTH knob to 12 o'clock (off) and PITCH to 10 o'clock. Set FILTER RESONANCE to minimum, CUTOFF to maximum, type to LP, FILTER LFO DEPTH to 12 o'clock (off) and VOLUME to 2 o'clock. Match these settings for DRONE II but set the PITCH to 12 o'clock. Set HARD SYNC to the left (off) and PITCH LINK to the right (on). In the MIXER set REVERB MIX to 12 o'clock, MAIN OUT to maximum and REVERB TYPE to CH/HALL.

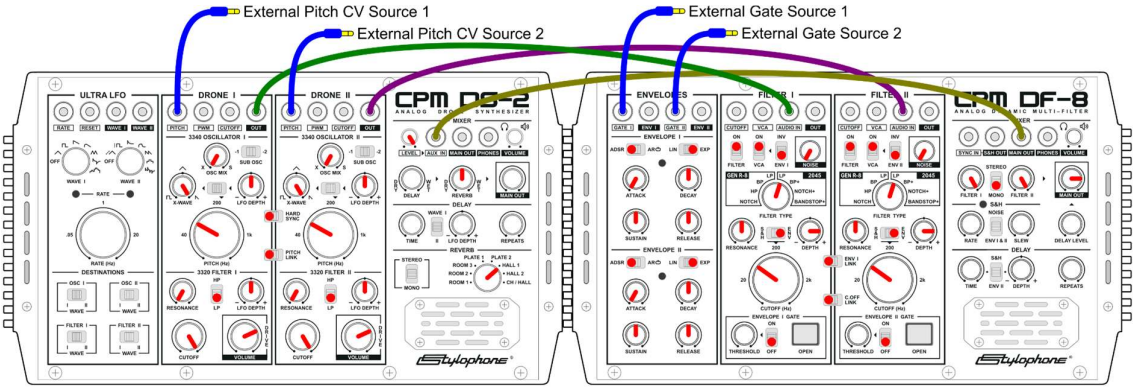
DF-8:

Set ENVELOPE I mode switches to ADSR and EXP. Set all knobs to 12 o'clock. Match these setting for ENVELOPE II but set ATTACK to minimum. On FILTER I set the FILTER and VCA switch to up (on) the ENV switch to ENV I and NOISE to minimum. Set FILTER TYPE to 2045 LP, RESONANCE to 12 o'clock, the routing switch to ENV, the DEPTH to 3 o'clock, the CUTOFF to 10 o'clock and the auto-trigger switch to OFF. On FILTER II set the FILTER switch to down (off) and VCA switch to up (on) the ENV switch to ENV II, NOISE to minimum and the auto-trigger switch to OFF. Set ENV I LINK and C.OFF LINK switches left (off). In MIXER set the output levels for FILTER I to minimum and FILTER II to maximum. Set DELAY LEVEL, DELAY DEPTH and REPEATS to 12 o'clock. Set TIME to 1 o'clock.

This is a classic two oscillator (DRONE II and II), two envelope (ENVELOPE I and II) single filter (FILTER I) and single VCA (FILTER I) monosynth setup. The FILTER II VCA scales the output of FILTER I at the level of the external velocity CV if connected. This adds velocity to volume expression. Try tweaking settings in all sections to create a huge variety of sounds. Try turning on FILTER II to process the tone further. Also try patching in the LFO.

2 FULL SYNTH VOICES

Play two full synth voices from external keyboards or sequencers.



Audio is heard from the DS-2 in this example.

Patch an external pitch CV into DRONE I **PITCH** and an external gate into **GATE I**. From a second source, repeat this for DRONE II **PITCH** and **GATE II** (If you only have a single source, you can use splitters as shown in the '2 Osc Lead with Velocity' example for a layered patch instead). Patch DRONE I **OUT** to FILTER I **AUDIO IN**, DRONE II **OUT** to FILTER II **AUDIO IN** and **MAIN OUT** (DF-8) to **AUX IN**.

DS-2:

On DRONE I and II, set the OSC MIX knob to X (x-wave), the X-WAVE knob to Saw, the OSC LFO DEPTH knob to 12 o'clock (off) and PITCH to 10 o'clock. Set FILTER RESONANCE to minimum, CUTOFF to maximum, type to LP, FILTER LFO DEPTH to 12 o'clock (off) and VOLUME to 2 o'clock. Set HARD SYNC and PITCH LINK to the left (off). In the MIXER set AUX IN LEVEL to maximum, REVERB MIX to 12 o'clock and REVERB TYPE to HALL 1.

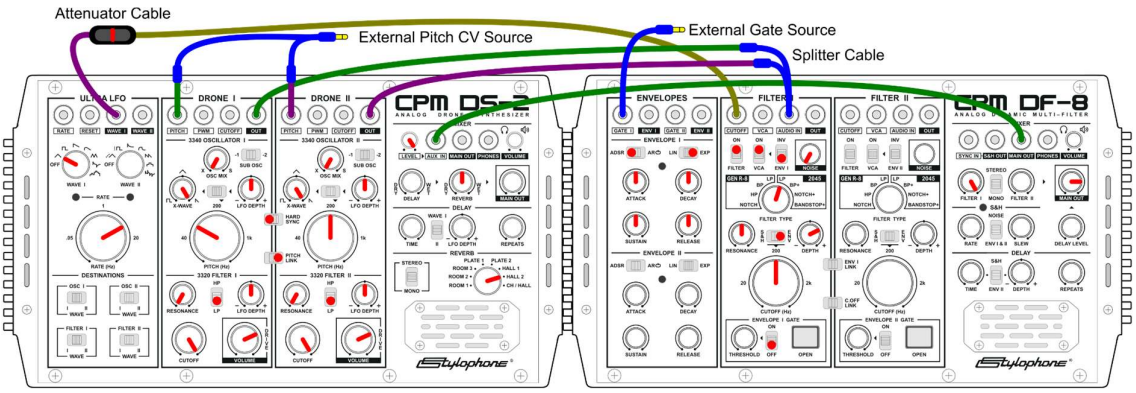
DF-8:

On ENVELOPE I and II, set the mode switches to ADSR and EXP. Set SUSTAIN to 12 o'clock then ATTACK, DECAY and RELEASE to 12 o'clock. On FILTER I and II set the FILTER and VCA switch to up (on), the ENV switch to ENV I/II and NOISE to minimum. Set FILTER TYPE to 2045 LP, RESONANCE to 12 o'clock, the routing switch to ENV, the DEPTH to 3 o'clock, the CUTOFF to 10 o'clock and the auto-trigger switch to OFF. Set ENV I LINK and C.OFF LINK switches left (off). In MIXER set the output levels for FILTER I and FILTER II to maximum. Set the output to MONO and the MAIN OUT to 3 o'clock.

You should be able to play two separate synth voices from two external sources, or a layered sound if you are using splitter cables. Reverb is added on the DS-2. These voices use a single oscillator and a single envelope unlike the '2 Osc Lead with Velocity' example. Many classic synths use this setup except here we have two to play with! They are setup identically for simplicity but try tweaking them to make the two voices sound different. Once again, the LFO is not being used so try introducing that to one of more of the voices. If you have an external mixer, try patching directly into it from FILTER I and II **OUT**.

2 OSC LEAD WITH LFO TO FILTER

Play a classic lead sound with a ‘wobbly’ sounding filter effect.



Audio is heard from the DS-2 in this example.

Patch an external pitch CV source to a splitter cable, patch its outputs to **PITCH** on DRONE I and II. Patch an external gate source into **GATE I**. Patch a splitter cable to FILTER I **AUDIO IN** then connect its patch points to DRONE I and II **OUT.** Patch an attenuator cable into **WAVE I** then its output into FILTER I **CUTOFF**, set the slider at 50%. Patch **MAIN OUT** (DF-8) into **AUX IN**.

DS-2:

Set WAVE I to Triangle and RATE to 2 o’clock. In DRONE I set the OSC MIX knob to X (x-wave), the X-WAVE knob to Saw, the OSC LFO DEPTH knob to 12 o’clock (off) and PITCH to 10 o’clock. Set FILTER RESONANCE to minimum, CUTOFF to maximum, type to LP, FILTER LFO DEPTH to 12 o’clock (off) and VOLUME to 2 o’clock. Match these settings for DRONE II but set the PITCH to 12 o’clock. Set HARD SYNC left (off) and PITCH LINK to the right (on). In the MIXER set AUX IN LEVEL to maximum, REVERB MIX to 12 o’clock and REVERB TYPE to HALL 2.

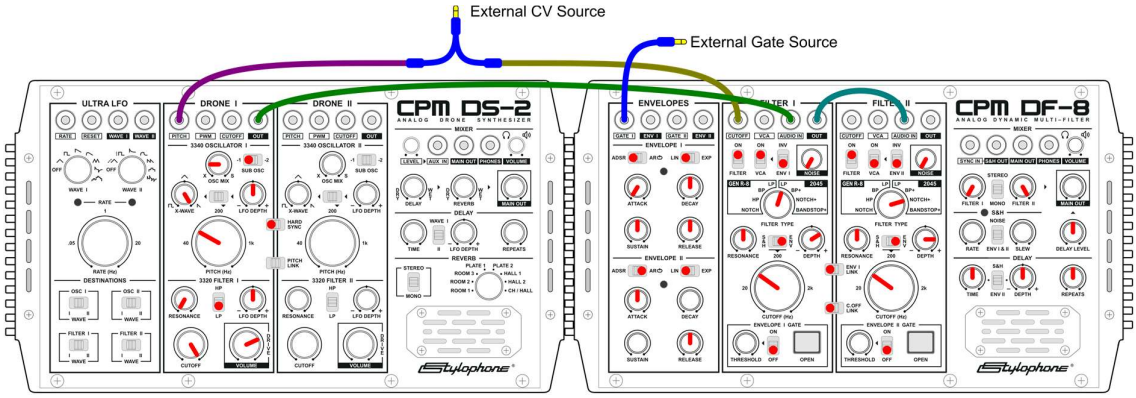
DF-8:

Set ENVELOPE I mode switches to ADSR and EXP. Set all knobs to 12 o’clock. On FILTER I set the FILTER and VCA switch to up (on) the ENV switch to ENV I and NOISE to minimum. Set FILTER TYPE to 2045 LP, RESONANCE to 12 o’clock, the routing switch to ENV, the DEPTH to 2 o’clock, the CUTOFF to 12 o’clock and the auto-trigger switch to OFF. In MIXER set the output levels for FILTER I to maximum and the MAIN OUT to 3 o’clock.

This setup uses two oscillators processed by a single filter and VCA which are controlled by a single envelope. Note how it uses a splitter to route DRONE I and II into the **AUDIO IN** rather than the **MAIN OUT** like the ‘2 Osc Lead with Velocity’ example. This means we can route the DF-8 output back to the DS-2 to add reverb to the whole sound. FILTER I CUTOFF is modulated by ENVELOPE I and is also receiving WAVE I via the **CUTOFF** patch point, so the cutoff moves when the ENVELOPE is triggered but also ‘wobbles’ around due to the LFO connection. Try adjusting the attenuator cable slider, ULTRA LFO WAVE I and RATE knobs to vary the filter modulation effect.

PHASER BASS WITH FILTER TRACKING

Play a shifting bass sound from an external keyboard or sequencer.



Audio is heard from the DF-8 in this example.

Patch an external pitch CV source to the splitter cable, patch its outputs to DRONE I **PITCH** and FILTER I **CUTOFF**. Patch an external gate source into **GATE I**. Patch DRONE I **OUT** to FILTER I **AUDIO IN** and FILTER I **OUT** to FILTER II **AUDIO IN**.

DS-2:

In DRONE I set the OSC MIX knob to 9 o'clock, SUB OSC to -1, X-WAVE knob to Saw, OSC LFO DEPTH knob to 12 o'clock (off) and PITCH to 10 o'clock. Set FILTER RESONANCE to minimum, CUTOFF to maximum, type to LP, FILTER LFO DEPTH to 12 o'clock (off) and VOLUME to 2 o'clock.

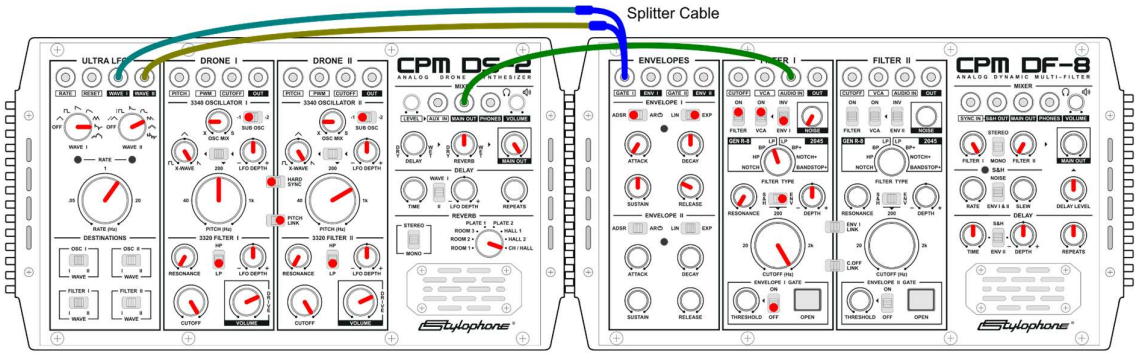
DF-8:

Set ENVELOPE I mode switches to ADSR and LIN. Set ATTACK to minimum, SUSTAIN, DECAY and RELEASE to 12 o'clock. Set ENVELOPE II mode switches to AR (loop) and LIN. Set ATTACK and RELEASE to 12 o'clock. On FILTER I set the FILTER and VCA switch to up (on) the ENV switch to ENV I and NOISE to minimum. Set FILTER TYPE to 2045 LP, RESONANCE to 12 o'clock, the routing switch to ENV, the DEPTH to 2 o'clock, the CUTOFF to 10 o'clock and the auto-trigger switch to OFF. On FILTER II set the FILTER switch to up (on), VCA switch to down (off) the ENV switch to ENV II and NOISE to minimum. Set FILTER TYPE to NOTCH+, RESONANCE to 12 o'clock, the routing switch to ENV, DEPTH to 3 o'clock, CUTOFF to 10 o'clock and the auto-trigger switch to OFF. Set ENV I LINK and C.OFF LINK switches left (off). In MIXER set the output levels for FILTER I to minimum and FILTER II to maximum. Set DELAY LEVEL, TIME, DELAY DEPTH and REPEATS to 12 o'clock.

In this example the external CV source controls PITCH but also CUTOFF so higher notes will sound brighter and lower notes darker. This is a useful technique to make filtered sounds more lifelike. FILTER II is being used a phaser effect to process FILTER I due to the NOTCH+ FILTER TYPE and its CUTOFF being moved back and forth with the looping ENVELOPE II. Try turning up FILTER II NOISE to hear the phaser effect clearly.

TRANCE GATE

Create a classic gated sound associated with trance music.



Audio is heard from the DF-8 in this example.

Patch **WAVE I** and **WAVE II** to the splitter cable, patch its output to **GATE I**. Patch **MAIN OUT** (DS-2) into FILTER I **AUDIO IN**.

DS-2:

Set WAVE I to Double Speed Exponential Up/Down Sawtooth, WAVE II to Double Speed Sawtooth and RATE to 1 o'clock. In DRONE I set OSC MIX to 9 o'clock, SUB OSC to -1, X-WAVE to Saw, OSC LFO DEPTH to 12 o'clock (off) and PITCH to 12 o'clock. Set FILTER RESONANCE to minimum, CUTOFF to maximum, type to LP, FILTER LFO DEPTH to 12 o'clock (off) and VOLUME to 2 o'clock. Match these settings for DRONE II but set the PITCH to 2 o'clock. Set HARD SYNC left (off) and PITCH LINK to the right (on). In the MIXER set MAIN OUT to maximum, REVERB MIX to 12 o'clock and REVERB TYPE to CH/HALL.

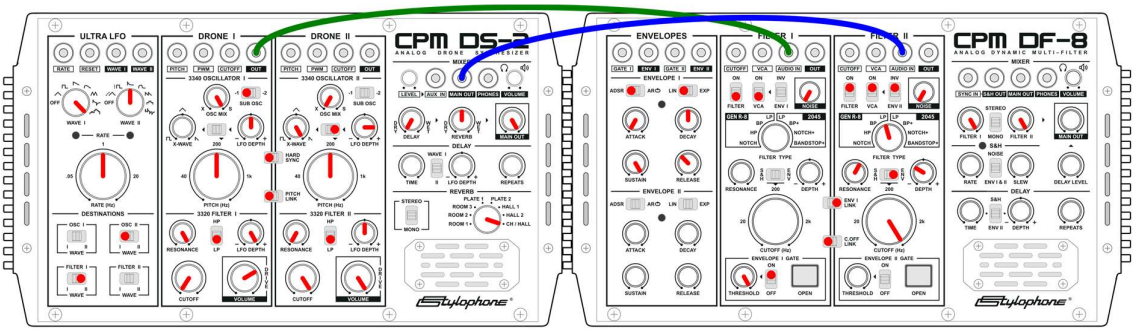
DF-8:

Set ENVELOPE I mode switches to ADSR and EXP. Set ATTACK to minimum, DECAY and SUSTAIN to 12 o'clock and RELEASE to 10 o'clock. On FILTER I set the FILTER and VCA switch to up (on) the ENV switch to ENV I and NOISE to minimum. Set FILTER TYPE to GEN-R8 LP, RESONANCE to minimum, the routing switch to ENV, the DEPTH to 12 o'clock (off), the CUTOFF to maximum and the auto-trigger switch to OFF. In MIXER set FILTER I to maximum, FILTER II to minimum, then DELAY LEVEL, TIME, DELAY DEPTH and REPEATS to 12 o'clock.

The sound produced should be a pleasant-sounding chord produced by DRONE I and II processed through FILTER I. If the chord does not sound nice, tune DRONE II PITCH to correct this. The combination of DRONE I and II oscillators, DRONE I and II sub oscillators and some chorus added from the CH/HALL reverb create a rich sound from the DS-2. The gated effect take place because the mixed output of the ULTRA LFO is triggering ENVELOPE I which in turn controls the FILTER I VCA. Mixing the LFO outputs in this way works like an "AND gate", the LFO will only trigger the ENVELOPE when both LEDs are lit so complex patterns can be formed. Experiment with different LFO waveforms to get different patterns. Also try sweeping the CUTOFF in FILTER I for some extra classic dance music style control of the sound.

EXTERNAL SIDECHAIN AND AUTO FILTER

Use the DF-8 to sidechain and auto-filter one audio source with another.



Audio is heard from the DF-8 in this example.

Patch DRONE I **OUT** to FILTER I **AUDIO IN** and **MAIN OUT** (DS-2) to FILTER II **AUDIO IN**.

DS-2:

Set WAVE I to Quad Speed Square Pattern, WAVE II to Exponential Sawtooth, RATE to 12 o'clock, OSC II DESTINATION switch to WAVE I and FILTER I DESTINATION switch to WAVE II. In DRONE I set OSC MIX to maximum, SUB OSC to -1, OSC LFO DEPTH to 12 o'clock (off) and PITCH to 12 o'clock. Set FILTER RESONANCE to maximum, CUTOFF to maximum, type to LP, FILTER LFO DEPTH to maximum and VOLUME to 2 o'clock. On DRONE II set OSC MIX to minimum, X-WAVE to Saw, LFO DEPTH ROUTING switch right (pitch), LFO DEPTH knob to 3 o'clock and PITCH to 12 o'clock. Set FILTER RESONANCE to minimum, CUTOFF to maximum, type to LP, LFO DEPTH to 12 o'clock (off) and VOLUME to maximum. Set HARD SYNC and PITCH LINK to the left (off). In the MIXER set DELAY mix to minimum, REVERB MIX to 12 o'clock, MAIN OUT to maximum and REVERB TYPE to CH/HALL.

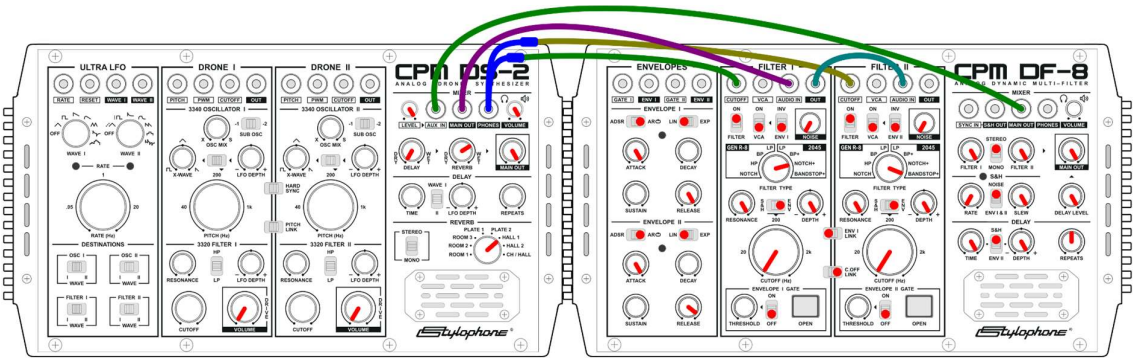
DF-8:

Set ENVELOPE I mode switches to ADSR and LIN. Set ATTACK to minimum, DECAY to 12 o'clock, SUSTAIN to maximum and RELEASE to 11 o'clock. On FILTER I set the FILTER, VCA and ENV switches down and NOISE to minimum. Set the auto-trigger switch to ON and THRESHOLD to maximum. On FILTER II set FILTER and VCA switches up (on) and ENV to INV. Set FILTER TYPE to GEN R-8 LP, RESONANCE to 1 o'clock, routing switch to ENV, DEPTH to 10 o'clock and CUTOFF to maximum. Set ENV I LINK right (on) and C.OFF LINK switches left (off). In MIXER set FILTER I and II to maximum.

DRONE II is being side chained by a kick drum from DRONE I. This happens because DRONE I is connected to FILTER I **AUDIO IN**. When the kick is loud enough to pass the auto-trigger THRESHOLD, ENVELOPE I is triggered. DRONE II is patched to the **AUDIO IN** on FILTER II with the envelope switch set to INV so the VCA turns down the audio level each time ENVELOPE I is triggered. Experiment with the DRONE I VOLUME control to change the kick level, this will alter how ENVELOPE I is triggered. The audio sources connected to bot AUDIO IN patch points can be swapped for external sources.

SCI-FI SOUNDSCAPE

Create a self-playing experimental soundscape.



Audio is heard from the DF-8 in this example.

Patch **MAIN OUT** (DS-2) to FILTER II **AUDIO IN**. Patch **PHONES** (DS-2) to a splitter, then its outputs to FILTER I and I **AUDIO IN**. Patch FILTER I **OUT** to FILTER II **AUDIO IN** and **MAIN OUT** (DF-8) to AUX IN.

DS-2:

Set DRONE I and II VOLUME to minimum. In the MIXER set AUX IN LEVEL, VOLUME and MAIN OUT to maximum. Set DELAY MIX to minimum, REVERB MIX to 2 o'clock, and REVERB TYPE to HALL 1.

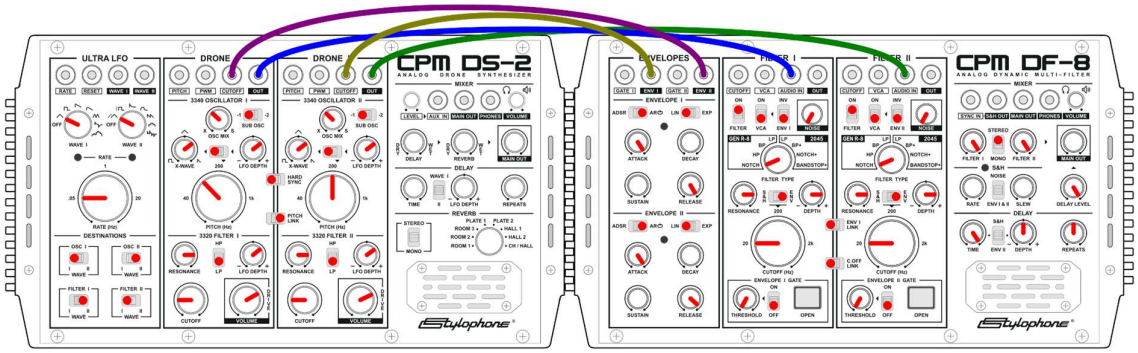
DF-8:

Set ENVELOPE I mode switches to AR (loop) and LIN. Set ATTACK and RELEASE to maximum. Match these settings for FILTER II but set RELEASE to 4 o'clock. On FILTER I set the FILTER switch up, VCA and ENV switches down and NOISE to minimum. Set FILTER TYPE to NOTCH+, RESONANCE to maximum, routing switch to ENV, DEPTH to maximum, CUTOFF to minimum and the auto-trigger switch to OFF. Match these settings for FILTER II but set the FILTER TYPE to BANDSTOP+. Set ENV I LINK to the left (off) and C.OFF LINK switches right (on). In MIXER set FILTER I and II, MAIN OUT, SLEW, DELAY LEVEL, TIME and DEPTH to maximum. Set RATE to minimum and REPEATS to 12 o'clock. Set the output type to STEREO, S&H source to NOISE and the DELAY modulation source to S&H.

You should hear an aggressive shifting soundscape. In this example a feedback path is created where the **MAIN OUT** of the DF-8 is connected to the **AUX IN** on the DS-2, the DS-2 **PHONES** patch point controls the **CUTOFF** of both FILTER I and II, and the **MAIN OUT** on the DS-2 feeds the **AUDIO IN** on FILTER I. FILTER I **OUT** is also connected to FILTER II. Both ENVELOPES are looping with slightly different speeds plus S&H is used to control the DELAY TIME through the DEPTH control. The NOTCH+ and BANDSTOP+ filter types have double resonant peaks which gives this drone an aggressive tone, so try different filter settings for an array of different drone sounds. The high-pitched element comes from the REVERB TYPE and REVERB MIX so adjust these too for different drone types.

RESONANT DRONE

Create a self-playing ominous drone sound.



Audio is heard from the DF-8 in this example.

Patch DRONE I **OUT** to FILTER I **AUDIO IN** and DRONE II **OUT** to FILTER II **AUDIO IN**. Patch **ENV I** to DRONE II **CUTOFF** and **ENV II** to DRONE I **CUTOFF**

DS-2:

Set WAVE I to Triangle, WAVE II to Triangle (90° phase shifted), RATE to 9 o'clock, OSC I DESTINATION switch to WAVE I, OSC II DESTINATION switch to WAVE II, FILTER I DESTINATION switch to WAVE II and FILTER II DESTINATION switch to WAVE I. In DRONE I set OSC MIX to 10 o'clock, SUB OSC to -1, X-WAVE to 2 o'clock, OSC LFO DEPTH routing switch to the left (x-wave), OSC LFO DEPTH to 2 o'clock and PITCH to 11 o'clock. Set FILTER RESONANCE to 3 o'clock, CUTOFF to 9 o'clock, type to LP, FILTER LFO DEPTH to 2 o'clock and VOLUME to 2 o'clock. Match these settings for DRONE II but set PITCH to 12 o'clock. Set HARD SYNC to the left (off) and PITCH LINK to the right (on).

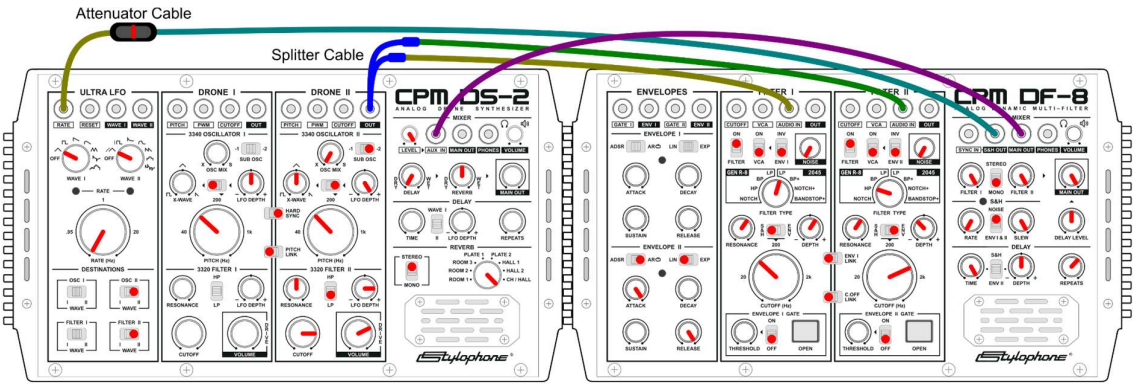
DF-8:

Set ENVELOPE I mode switches to AR (loop) and LIN. Set ATTACK and RELEASE to maximum. Match these settings for ENVELOPE II but set RELEASE to 4 o'clock. On FILTER I set the FILTER switch up, VCA and ENV switches down and NOISE to minimum. Set FILTER TYPE to NOTCH, RESONANCE to 3 o'clock, routing switch to ENV, DEPTH to 3 o'clock, CUTOFF to 9 o'clock and the auto-trigger switch to OFF. Match these settings for FILTER II. Set ENV I LINK and C.OFF LINK switches left (off). In MIXER set FILTER I and II, DELAY LEVEL and TIME to maximum. Set DEPTH and REPEATS to 12 o'clock. Set the output type to STEREO.

This example will play a drone that has a fixed pitch but has lots of movement tonally. This is accomplished by using the two ENVELOPES in loop mode and the two outputs of the ULTRA LFO to move the filters and X-WAVE controls on the DS-2, plus the filters on the DF-8. All three modulation sources run at different speeds, so the movement is unsynchronised. The NOTCH filters on the DF-8 were used for their subtle effect so try changing the FILTER TYPE settings for more extreme sounds.

HARD SYNC DRONE

Create a self-playing tonally shifting drone sound.



Audio is heard from the DS-2 in this example.

Patch DRONE II **OUT** to a splitter cable the patch its outputs to FILTER I and II **AUDIO IN**. Patch **MAIN OUT** (DF-8) to **AUX IN**. Patch **S&H OUT** to an attenuator cable then patch its output to **RATE**. Set the attenuator to 50%.

DS-2:

Set WAVE I to Triangle, WAVE II to Triangle (90° phase shifted), RATE to minimum, OSC II DESTINATION switch to WAVE II and FILTER II DESTINATION switch to WAVE II. In DRONE I set the OSC LFO DEPTH routing switch to the left (x-wave), OSC LFO DEPTH to 12 o'clock (off) and PITCH to 10 o'clock. Set HARD SYNC to the right (on) and PITCH LINK to the left (off). In DRONE II set OSC MIX to minimum, X-WAVE to Triangle, LFO DEPTH ROUTING switch right (pitch), LFO DEPTH knob to maximum and PITCH to 10 o'clock. Set FILTER RESONANCE to 12 o'clock, CUTOFF to 3 o'clock, type to LP, LFO DEPTH to 3 o'clock and VOLUME to 2 o'clock. In the MIXER set AUX IN LEVEL to maximum, DELAY MIX to minimum, REVERB MIX to 12 o'clock, output type to STEREO and REVERB TYPE to CH/HALL.

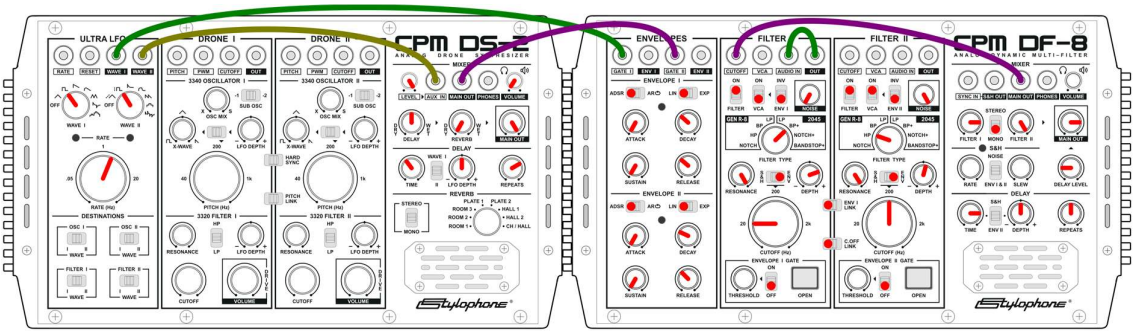
DF-8:

Set ENVELOPE II mode switches to AR (loop) and LIN. Set ATTACK and RELEASE to maximum. On FILTER I set the FILTER switch up, VCA and ENV switches down and NOISE to minimum. Set FILTER TYPE to 2045 LP, RESONANCE to 1 o'clock, routing switch to S&H, DEPTH to 1 o'clock, CUTOFF to 10 o'clock and the auto-trigger switch to OFF. Match these settings for FILTER II but set FILTER TYPE to HP, routing switch to ENV, DEPTH to 10 o'clock and CUTOFF to 2 o'clock. Set ENV I LINK and C.OFF LINK switches left (off). In MIXER set FILTER I and II, MAIN OUT, SLEW and TIME to maximum. Set DELAY LEVEL and DEPTH to 12 o'clock. Set RATE to minimum and REPEATS to 1 o'clock. Set the S&H source to NOISE and output type to MONO.

This example uses the shifting tone of the HARD SYNC option to create a drone. The S&H random output also changes the LFO speed for lots of variety. Try lowering DRONE II DEPTH for a mellower overall sound.

DELAY AS GATE PROCESSOR

Create interesting rhythms by processing an LFO with delay.



Audio is heard from the DF-8 in this example.

Patch **WAVE I** to **GATE I**, **WAVE II** to **AUX IN**, **MAIN OUT** (DS-2) to **GATE II**, FILTER I **OUT** to FILTER I **AUDIO IN** and **MAIN OUT** (DF-8) to FILTER I **CUTOFF**.

DS-2:

Set WAVE I to Square, WAVE II to Square (90° phase shifted), and RATE to 1 o'clock. In the MIXER set AUX IN LEVEL to maximum, VOLUME to minimum, DELAY MIX to 12 o'clock, REVERB MIX to minimum, MAIN OUT to maximum, TIME to 11 o'clock, LFO DEPTH to 12 o'clock (off) and REPEATS to 2 o'clock.

DF-8:

Set ENVELOPE II mode switches to ADSR and LIN. Set ATTACK and SUSTAIN to minimum, DECAY and RELEASE to 10 o'clock. Match these setting on ENVELOPE II but set RELEASE to 11 o'clock. On FILTER I set the FILTER switch up, VCA and ENV switches down and NOISE to minimum. Set FILTER TYPE to 2045 BP+, RESONANCE to maximum, routing switch to ENV, DEPTH to 2 o'clock, CUTOFF to 9 o'clock and the auto-trigger switch to OFF. On FILTER II set the FILTER and VCA switches up, ENV switches down and NOISE to maximum. Set FILTER TYPE to GEN R-8 HP, RESONANCE to maximum, routing switch to ENV, DEPTH to 1 o'clock, CUTOFF to 12 o'clock and the auto-trigger switch to OFF. Set ENV I LINK and C.OFF LINK switches left (off). In MIXER set FILTER I to 3 o'clock, FILTER II to maximum, MAIN OUT to 3 o'clock, DELAY LEVEL to 9 o'clock, TIME to 3 o'clock, DEPTH and REPEATS to 12 o'clock. Set the output type to MONO.

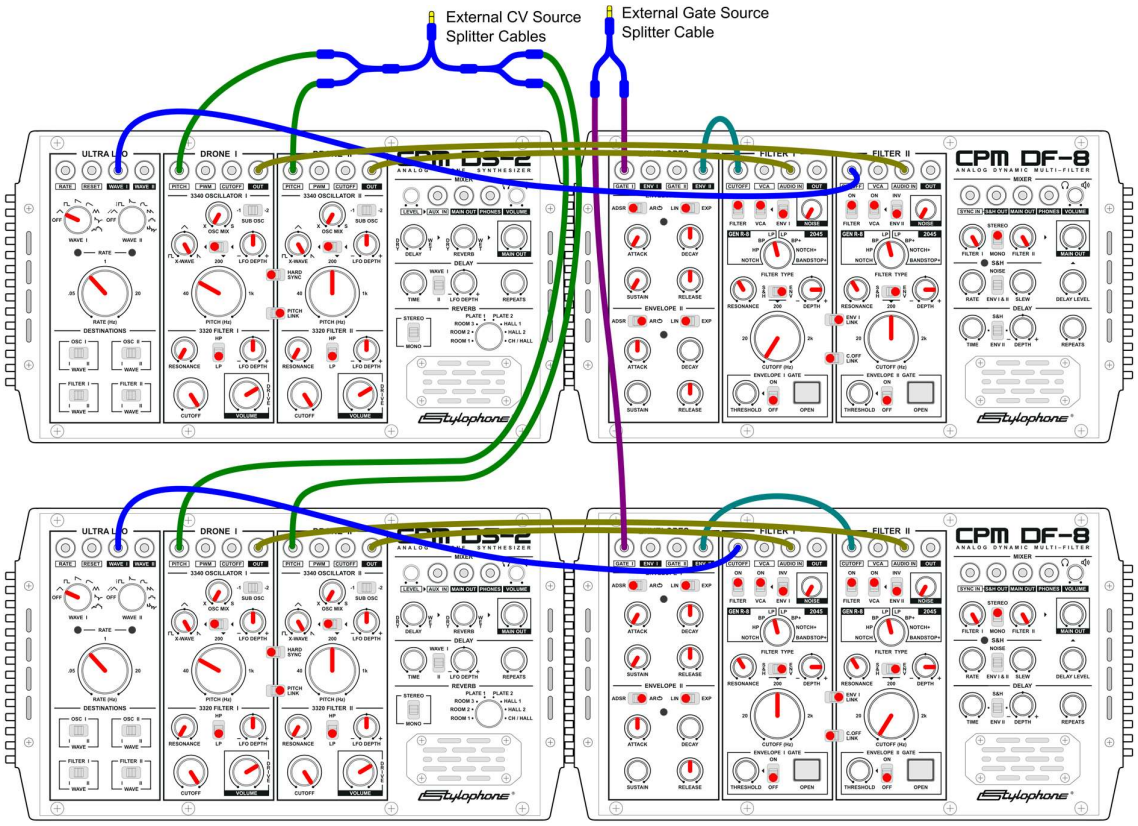
You should hear a kick drum from FILTER I and a hi-hat sound from FILTER II. The **WAVE II** to **AUX IN** connection means the output of the LFO is being processed as if it were audio. Adding delay to this signal in the DS-2 Mixer section means we can add delayed gate signals. This creates extra rhythmic complexity as the signal coming from the DS-2 **MAIN OUT** triggers ENVELOPE II via the **GATE II** connection. Another trick is that the DF-8 **MAIN OUT** is being used as a source of modulation via the FILTER I **CUTOFF** connection. Tweak the DF-8 MAIN OUT level so see how this affects the kick drum. Tweak the DS-2 DELAY MIX, TIME and REPEATS as well as the WAVE II control to change how the rhythm is affected. Turn up DS-2 VOLUME to hear the effect the DELAY has on the LFO output.

CHAPTER 5

4-Voice CPM patches

QUADRAPHONIC VOICE

Play a large single voice with four independent outputs.



Audio is heard from both DF-8s in this example.

Patch three splitter cables together, connect this to an external CV source and connect its outputs to **PITCH** in all DRONE sections. Patch a splitter into an external gate source and connect its outputs to **GATE I** on both DF-8s. Patch DRONE I and II **OUT** to FILTER I and II **AUDIO IN** on both pairs of units. On the upper pair of units, patch **WAVE I** to FILTER II **CUTOFF** and **ENV II** to FILTER I **CUTOFF**. On the lower pair of units, patch **WAVE I** to FILTER I **CUTOFF** and **ENV II** to FILTER II **CUTOFF**.

Upper DS-2:

Set WAVE I to Triangle and RATE to 11 o'clock. In DRONE I set OSC MIX to minimum, X-WAVE to saw, OSC LFO DEPTH routing switch to the left (x-wave), OSC LFO DEPTH to 12 o'clock (off) and PITCH to 10 o'clock. Set FILTER RESONANCE to minimum, CUTOFF to maximum, type to LP, FILTER LFO DEPTH to 12 o'clock (off) and VOLUME to 2 o'clock. Match these settings for DRONE II but set PITCH to 12 o'clock. Set HARD SYNC to the left (off) and PITCH LINK to the right (on).

Upper DF-8:

Set ENVELOPE I mode switches to ADSR and LIN. Set ATTACK and SUSTAIN to

minimum, DECAY and RELEASE to 12 o'clock. Set ENVELOPE II mode switches to AR (loop) and LIN. Set ATTACK and RELEASE to 12 o'clock. In FILTER I set the FILTER and VCA switches up, ENV switch down and NOISE to minimum. Set FILTER TYPE to GEN R-8 LP, RESONANCE 11 o'clock, routing switch to ENV, DEPTH to 3 o'clock, CUTOFF to minimum and the auto-trigger switch to OFF. Match these settings for FILTER II but set CUTOFF to 12 o'clock. Set ENV I LINK right (on) and C.OFF LINK left (off). In MIXER set the output type to STEREO, FILTER I and II to maximum.

Lower DS-2 and DF-8:

Match the setting to the upper pair of units but set the DF-8 FILTER I CUTOFF to 12 o'clock and FILTER II CUTOFF to minimum.

In this example all four units are controlled by a single external CV and gate signal. The result is a patch that uses four oscillators, four filters controlled by two envelopes and four LFOs, two from the ULTRA LFO section and two more from the ENVELOPE II sections set to AR (loop). The output is heard in stereo from both units so the voice has four independent outputs. The tone of each of these outputs will also independently change creating lots of movement due to the separate modulation sources. Because the LFO and AR (loop) modulation sources work slightly differently (the LFO sources are bipolar, the AR sources are unipolar) the CUTOFF settings on upper and lower DS-2s are different to compensate. Therefore, the patching is reversed on each unit to keep the stereo field balanced.

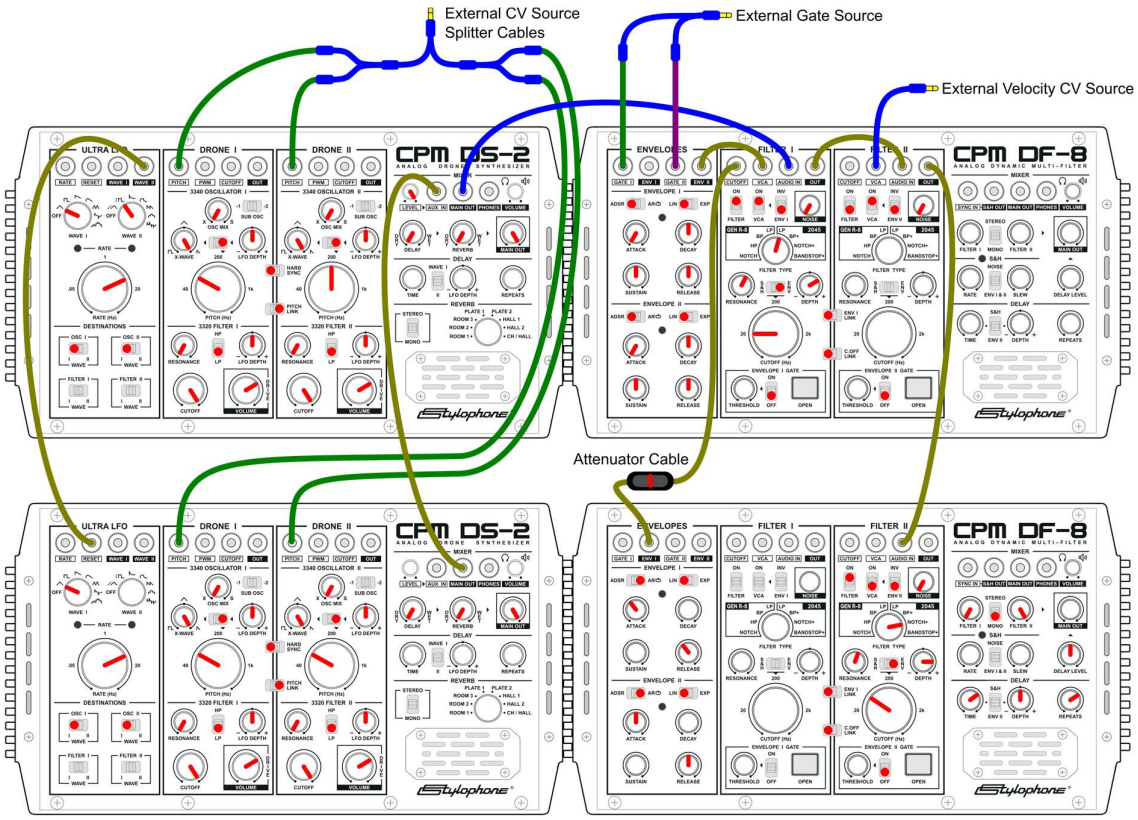
If all oscillators are tuned the same the result will be a large sounding single voice with multiple outputs. Experiment by moving the PITCH LINK controls left (off) and tuning each PITCH knob separately. With careful adjustment four note chords can be formed.

Also try changing the ENVELOPE I and FILTER DEPTH controls on one of the DF-8s, this will make the sound between the two pairs interact differently with a slowly changing sound on one pair and a short plucky sound on the other pair for example.

As with some of the other general synth setups, use this as a starting point but experiment making your own sounds by tweaking controls in the DRONE, ENVELOPE, FILTER and MIXER sections.

4-OSCILLATOR MEGA SYNTH

Play a large single voice with optional velocity, vibrato, phaser and filter modulation.



Audio is heard from the lower DF-8 in this example.

Patch three splitter cables together, connect this to an external pitch CV source and connect its outputs to **PITCH** in all DRONE sections. Patch a splitter into an external gate source and connect its outputs to **GATE I** and **GATE II** (upper DF-8). Optionally patch an external velocity CV source into **VCA** (upper DF-8). Patch **WAVE II** (upper DS-2) to **RESET** (lower DS-2), **MAIN OUT** (lower DS-2) to **AUX IN** (upper DS-2), **MAIN OUT** (upper DS-2) to FILTER I **AUDIO IN** (upper DF-8). Patch an attenuator cable to **ENV I** (lower DF-8) and patch its output to FILTER I **CUTOFF** (upper DF-8), FILTER II **OUT** (upper DF-8) to FILTER II **AUDIO IN** (lower DF-8). On the upper DF-8, patch **ENV II** to FILTER I **VCA** and FILTER I **OUT** to FILTER II **AUDIO IN**. Set the attenuator to 50%.

Upper and lower DS-2:

Set WAVE I to Triangle, WAVE II to Square (90° phase shifted), RATE to 2 o'clock, OSC I and II DESTINATION switch to WAVE I. In DRONE I set OSC MIX to minimum, X-WAVE to Saw, OSC LFO DEPTH routing switch to the right (pitch), OSC LFO DEPTH to 12 o'clock and PITCH to 10 o'clock. Set FILTER RESONANCE to minimum, CUTOFF to maximum, type to LP, FILTER LFO DEPTH to 12 o'clock (off) and VOLUME to 2 o'clock. Match these settings for DRONE II but set PITCH to 12 o'clock. Set HARD SYNC to the left (off) and

PITCH LINK to the right (on). In the MIXER set AUX IN level to maximum, DELAY MIX and REVEB mix to minimum, MAIN OUT to maximum.

Upper DF-8:

Set ENVELOPE I mode switches to ADSR and LIN. Set ATTACK to minimum, SUSTAIN, DECAY and RELEASE to 12 o'clock. Match these settings for ENVELOPE II. In FILTER I set the FILTER and VCA switches up, ENV switch down and NOISE to minimum. Set FILTER TYPE to 2045 LP, RESONANCE 11 o'clock, routing switch to ENV, DEPTH to 2 o'clock, CUTOFF to 9 o'clock and the auto-trigger switch to OFF. In FILTER II set the FILTER switch down, VCA switch up, ENV switch down and auto-trigger switch to OFF. Set ENV I LINK and C.OFF LINK left (off).

Lower DF-8:

Set ENVELOPE I mode switches to AR (loop) and LIN. Set ATTACK and RELEASE to 11 o'clock. Match these settings for ENVELOPE II but set ATTACK and RELEASE to 12 o'clock. In FILTER II set the FILTER switch up, VCA and ENV switch down and NOISE to minimum. Set FILTER TYPE to 2045 NOTCH+, RESONANCE 1 o'clock, routing switch to ENV, DEPTH to 3 o'clock, CUTOFF to 10 o'clock and the auto-trigger switch to OFF. Set ENV I LINK and C.OFF LINK left (off). In MIXER set FILTER I minimum, FILTER II to maximum, DELAY LEVEL and DEPTH to 12 o'clock, TIME and REPEATS to 2 o'clock. Set the output type to MONO.

This example is a great all-purpose synth voice with lots of options. We have four oscillators being fed into a single filter with independent filter and volume envelopes, optional velocity, vibrato, filter modulation, phaser and delay.

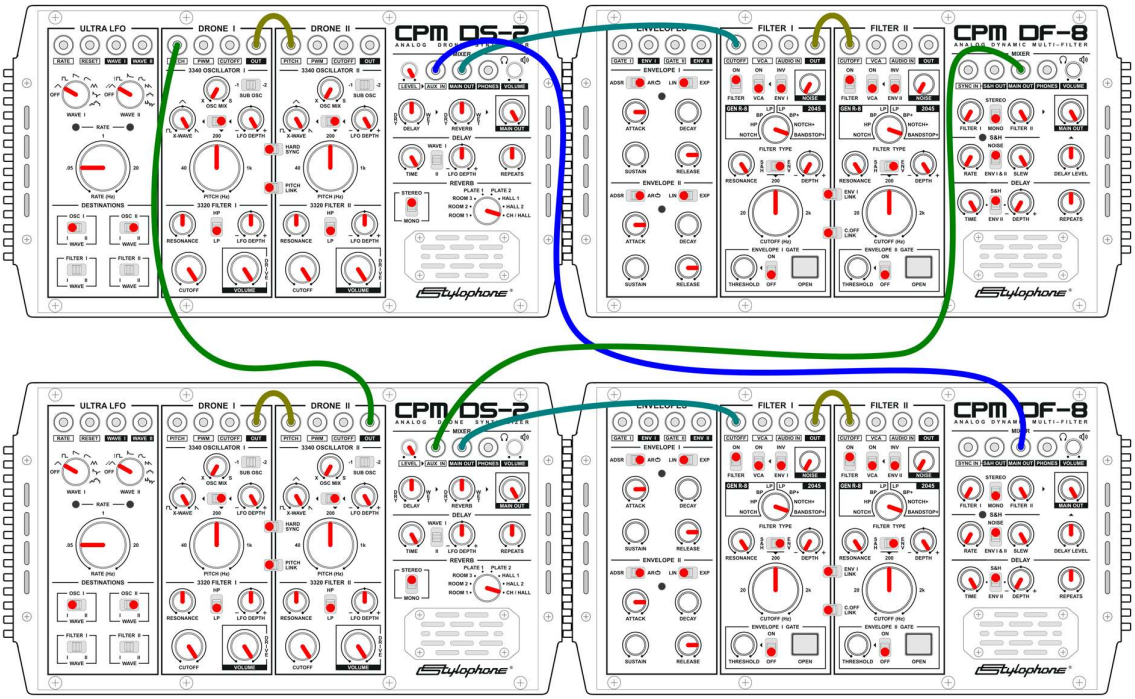
All four drone oscillators are controlled by a single external pitch CV, ENVELOPE I and II on the upper DF-8 are trigger by a single external gate, these control FILTER I on the upper DF-8 which handles filtering and the VCA to shape volume. ENVELOPE I controls the FILTER and ENVELOPE II controls the VCA. FILTER II on the upper DF-8 gives us optional velocity to volume using its VCA. The output from here is fed into FILTER II on the lower DF-8 which adds a phaser effect. ENVELOPE II on the lower DF-8 controls the phaser speed while ENVELOPE I gives us filter modulation with the attenuator setting the depth. The upper DS-2 sends a signal to the **RESET** patch point on the lower DS-2 which helps keep both ULTRA LFOs in time. By adjusting the DRONE LFO DEPTH controls we can add vibrato. Because our LFOs are being synced with the **RESET** patch point the vibrato will also be in sync in all DRONE sections. To stop the vibrato completely, set WAVE I to OFF on both DS-2s.

This is a great general starting point but try experimenting with the oscillator settings in all four DRONE sections.

FILTER I on the lower DF-8 remains unused. As an exercise, try adding it into the signal chain to create another filter in series. Optionally can be controlled by ENVELOPE I on the upper DF-8 using an attenuator cable to control the modulation amount.

4-VOICE CHAOS

Create a chaotic evolving soundscape using audio rate modulation.



Audio is heard from the upper DS-2 in this example.

On upper and lower units patch DRONE I **OUT** to DRONE II **PITCH**, **MAIN OUT** (DS-2) to FILTER I **CUTOFF** and FILTER I **OUT** to FILTER II **CUTOFF**. Patch **MAIN OUT** (upper DF-8) to **AUX IN** (lower DS-2), **MAIN OUT** (lower DF-8) to **AUX IN** (upper DS-2), DRONE II **OUT** (lower DS-2) to DRONE I **PITCH** (upper DS-2).

Upper and lower DS-2:

Set WAVE I to Triangle, WAVE II to Triangle (90° phase shifted), RATE to 9 o'clock, OSC I DESTINATION switch to WAVE I, OSC II DESTINATION switch to WAVE II. In DRONE I set OSC MIX to minimum, X-WAVE to Saw, OSC LFO DEPTH routing switch to the right (pitch), OSC LFO DEPTH to maximum and PITCH to 12 o'clock. Set FILTER RESONANCE to 12 o'clock, CUTOFF to maximum, type to LP, FILTER LFO DEPTH to 12 o'clock and VOLUME to maximum. Match these settings for DRONE II. Set HARD SYNC and PITCH LINK to the left (off). In the MIXER set AUX IN LEVEL, MAIN OUT and TIME to maximum, DELAY MIX, REVERB MIX and REPEATS to 12 o'clock, output type to STEREO and REVERB TYPE to CH/HALL.

Upper and lower DF-8:

Set ENVELOPE I and II mode switches to AR (loop) and LIN. Set ATTACK and RELEASE to 3 o'clock. On FILTER I set the FILTER switch up, VCA and ENV switches down and NOISE

to minimum. Set FILTER TYPE to BANDSTOP+, RESONANCE to maximum, routing switch to ENV, DEPTH to minimum, CUTOFF to 12 o'clock and the auto-trigger switch to OFF. Match these settings for FILTER II but set DEPTH to maximum. Set ENV I LINK and C.OFF LINK switches left (off). In MIXER set FILTER I, RATE and DEPTH to minimum. Set FILTER II, MAIN OUT, SLEW and TIME to maximum. Set DELAY LEVEL and REPEATS to 12 o'clock. Set the output type to MONO, S&H source to NOISE and DELAY modulation source to S&H.

This example creates a very chaotic sound using the oscillators as both audio sources and as modulation sources. It can be thought of as consisting of two sections. The oscillators in the DS-2 units modulate each other in series starting from DRONE I in the lower DS-2 and ending in DRONE II in the upper DS-2. The result of this is heard at the MAIN OUT of the upper DS-2 which is then fed into the upper DF-8 as a modulation source and passes round the lower units and is then patched back into the upper DS-2 creating a large ring of feedback as modulation and audio.

In addition, there are eight LFO modulation sources moving PITCH and CUTOFF around, four of which are coming from the ULTRA LFO and four from the ENVELOPES set to AR (loop).

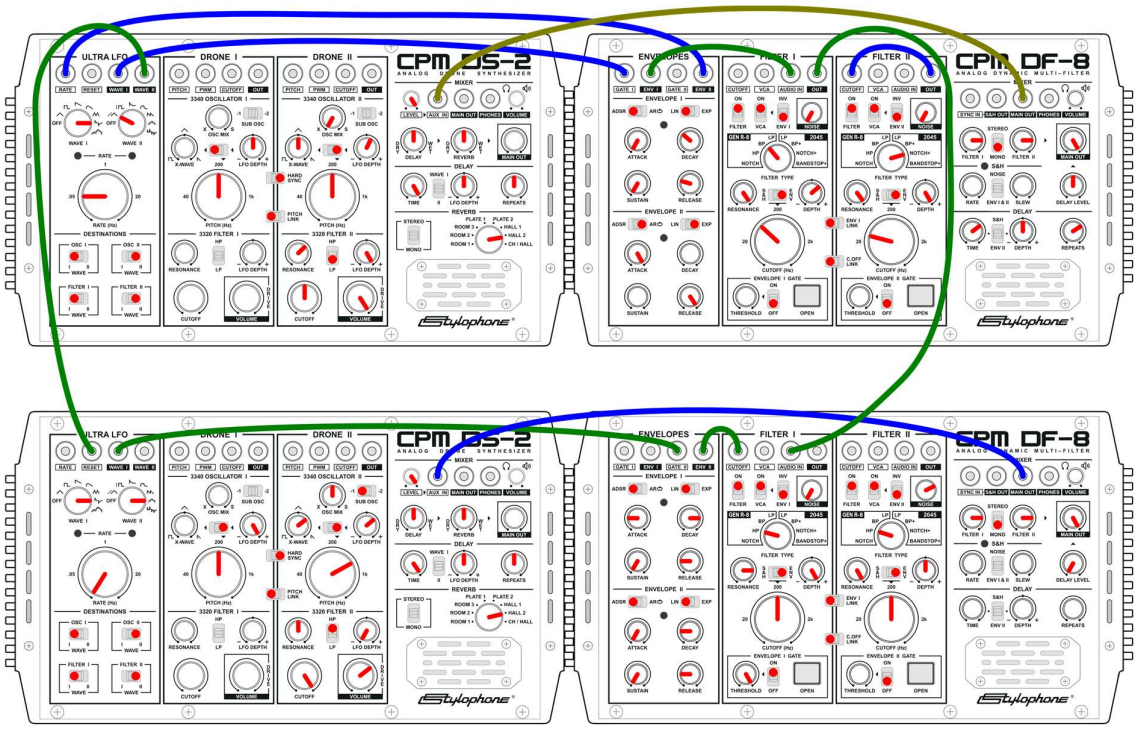
Try turning down the upper DS-2 DRONE II VOLUME to hear just the DF-8s output or turning down the lower DF-8 MAIN OUT to hear the DS-2 output.

Experiment by turning up the DRONE FILTER section DEPTH controls and lowering the DRONE FILTER CUTOFF knobs to introduce even more harshness.

Also try changing the FILTER I and II TYPE and introducing NOISE on the DF-8 units. This can produce a huge variety of aggressive sounds.

ALIEN WEAPON

Create a self-playing, self-triggering patch.



Audio is heard from both DS-2s in this example.

On the upper DS-2, patch **WAVE I** to **GATE I** (upper DF-8) and **WAVE II** to **RESET** (lower DS-2). On the upper DF-8, patch **ENV I** to FILTER I **AUDIO IN**, FILTER II **OUT** to FILTER II **CUTOFF**, **ENV II** to **RATE** (upper DS-2), FILTER I **OUT** to FILTER I **AUDIO IN** (lower DF-8) and **MAIN OUT** to **AUX IN** (upper DS-). On the lower DS-2, patch **WAVE I** to **GATE I** (lower DF-8). On the lower DF-8, patch **ENV II** to FILTER I **CUTOFF** and **MAIN OUT** to **AUX IN** (lower DS-2).

Upper DS-2:

Set WAVE I to Double Exponential Up/Down Sawtooth, WAVE II to Triangle (90° phase shifted), RATE to 9 o'clock, OSC I DESTINATION switch to WAVE I, OSC II DESTINATION switch to WAVE II, FILTER I DESTINATION switch to WAVE I and FILTER II DESTINATION switch to WAVE II. In DRONE I set the OSC LFO DEPTH routing switch to the left (x-wave), OSC LFO DEPTH to 12 o'clock and PITCH to 12 o'clock. In DRONE II set OSC MIX to minimum, X-WAVE to Triangle, OSC LFO DEPTH routing switch to the right (pitch), OSC LFO DEPTH to 1 o'clock and PITCH to 12 o'clock. Set FILTER RESONANCE to 1 o'clock, CUTOFF to 12 o'clock, type to LP, FILTER LFO DEPTH to maximum and VOLUME to maximum. Set HARD SYNC to the right (on) and PITCH LINK to the left (off). In the MIXER set AUX IN LEVEL, and TIME to maximum, DELAY MIX, REVERB MIX, REPEATS and LFO DEPTH to 12 o'clock, and REVERB TYPE to HALL 2.

Upper DF-8:

Set ENVELOPE I mode switches to ADSR and LIN. Set ATTACK and SUSTAIN to minimum, DECAY to 11 o'clock and RELEASE to 10 o'clock. Set ENVELOPE II mode switches to AR (loop) and EXP. Set ATTACK and RELEASE to maximum. In FILTER I set the FILTER and VCA switches up, ENV switch down and NOISE to minimum. Set FILTER TYPE to GEN R-8 BP, RESONANCE maximum, routing switch to ENV, DEPTH to 2 o'clock, CUTOFF to 11 o'clock and the auto-trigger switch to OFF. In FILTER II set the FILTER and VCA switches up, ENV switch down and NOISE to minimum. Set FILTER TYPE to 2045 NOTCH+, RESONANCE maximum, routing switch to ENV, DEPTH to maximum, CUTOFF to 10 o'clock and the auto-trigger switch to OFF. Set ENV I LINK and C.OFF LINK left (off). In MIXER set the output type to MONO, FILTER I and II to 3 o'clock. Set MAIN OUT to maximum, DELAY LEVEL and DEPTH to 12 o'clock, TIME and REPEATS to 2 o'clock.

Lower DS-2:

Set WAVE I to Double Exponential Up/Down Sawtooth, WAVE II to Double Speed Square Pattern, RATE to minimum, OSC I DESTINATION switch to WAVE I, OSC II DESTINATION switch to WAVE II, FILTER I DESTINATION switch to WAVE I and FILTER II DESTINATION switch to WAVE II. In DRONE I set OSC LFO DEPTH routing switch to the right (pitch), OSC LFO DEPTH to maximum and PITCH to 12 o'clock. In DRONE II set OSC MIX to 12 o'clock, OSC MIX to 12 o'clock, SUB OSC to -1, X-WAVE to 2 o'clock, OSC LFO DEPTH routing switch to the right (pitch), OSC LFO DEPTH to 2 o'clock and PITCH to 2 o'clock. Set FILTER RESONANCE to 12 o'clock, CUTOFF to maximum, type to HP, FILTER LFO DEPTH to minimum and VOLUME to 2 o'clock. Set HARD SYNC to the right (on) and PITCH LINK to the left (off). In the MIXER set AUX IN LEVEL, and TIME to maximum, DELAY MIX, REVERB MIX, REPEATS and LFO DEPTH to 12 o'clock, and REVERB TYPE to HALL 2.

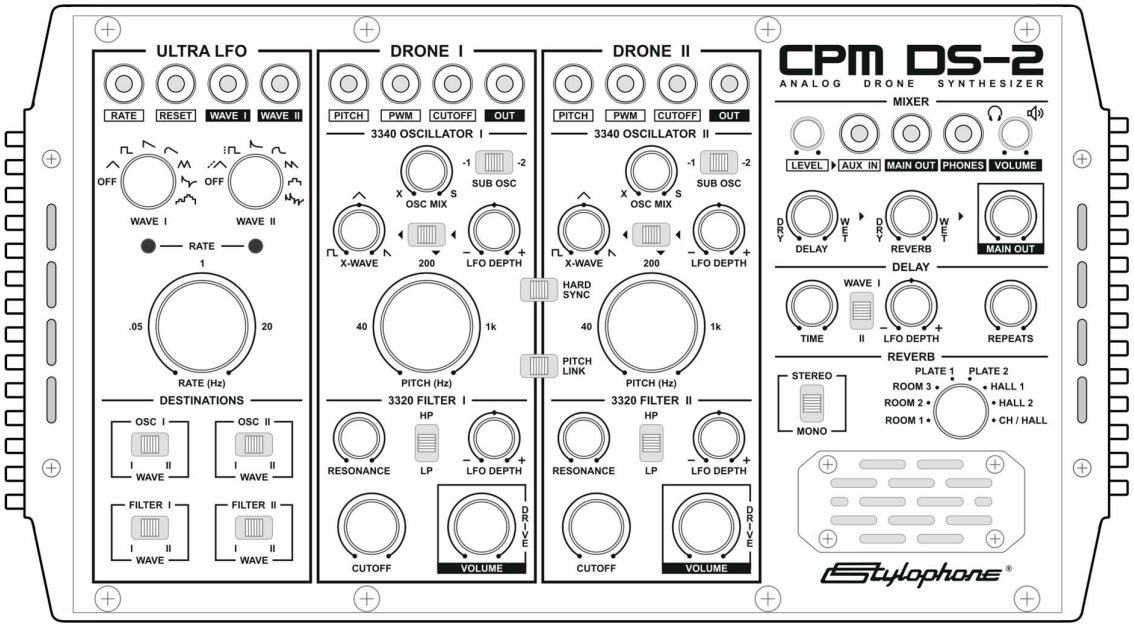
Lower DF-8:

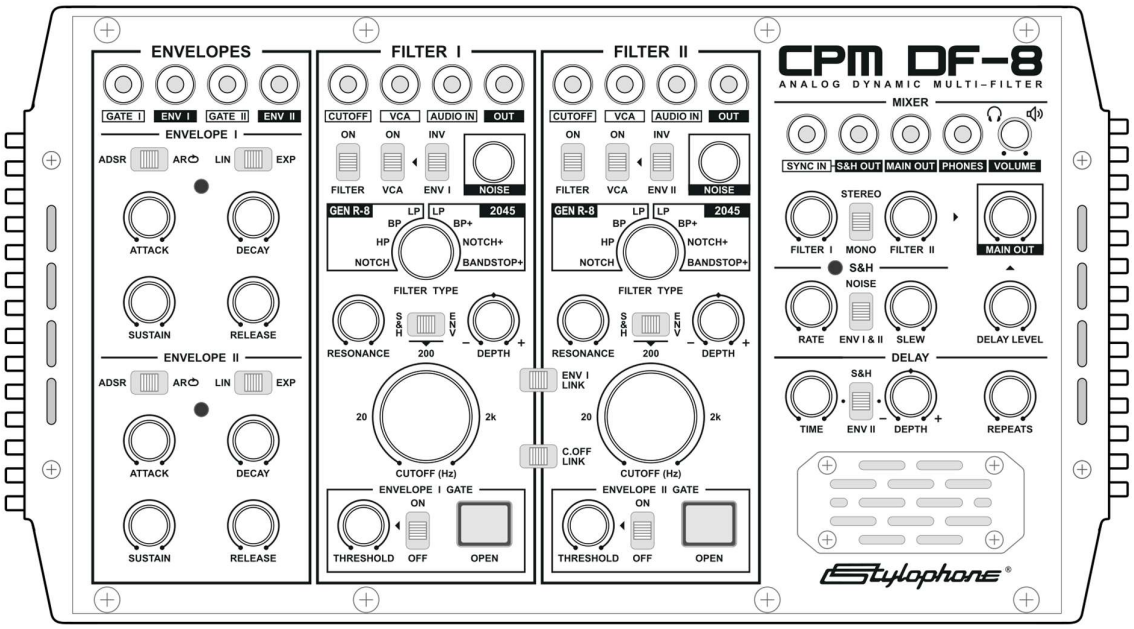
Set ENVELOPE I mode switches to ADSR and LIN. Set ATTACK and RELEASE to 9 o'clock, DECAY to 3 o'clock and SUSTAIN to minimum. Set ENVELOPE II mode switches to ADSR and LIN. Set ATTACK and SUSTAIN to minimum, DECAY and SUSTAIN to 9 o'clock. In FILTER I set FILTER and VCA switches up, ENV switch down and NOISE to minimum. Set FILTER TYPE to GEN R-8 HP, RESONANCE 3 o'clock, routing switch to ENV, DEPTH to maximum, CUTOFF to 12 o'clock, auto-trigger switch to ON and THRESHOLD to maximum. In FILTER II set the FILTER and VCA switches up, ENV switch down and NOISE to 2 o'clock. Set FILTER TYPE to GEN R-8 HP, RESONANCE maximum, routing switch to ENV, DEPTH to 12 o'clock, CUTOFF to 12 o'clock and the auto-trigger switch to OFF. Set ENV I LINK and C.OFF LINK left (off). In MIXER set the output type to MONO, FILTER I and II to 3 o'clock. Set MAIN OUT to maximum and DELAY LEVEL to minimum.

This example sets up a complex patch, the timing of which is controlled by ENVELOPE II on the upper DF-8. Three of the DF-8 FILTER sections are used for percussive sounds and one is used for a drone that shifts in pitch. The DS-2 units are both being used for shifting background textures. As an exercise, try to trace all the connections between modules as the sound plays to see if you can work out how the various layers of sound are created and triggered. Start by turning down the DRONE VOLUME controls and the FILTER I and II controls in the DF-8 mixers to hear them separately.

CHAPTER 6

Blank patch sheets


ULTRA LFO
RATE
RESET
WAVE I
WAVE II
OFF
WAVE I
OFF
WAVE II
RATE
1
.05
20
RATE (Hz)
DESTINATIONS
OSC I
I II
WAVE
OSC II
I II
WAVE
FILTER I
I II
WAVE
FILTER II
I II
WAVE
DRONE I
PITCH
PWM
CUTOFF
OUT
3340 OSCILLATOR I
-1
-2
SUB OSC
X
S
OSC MIX
X-WAVE
200
LFO DEPTH
40
1k
PITCH (Hz)
3320 FILTER I
HP
RESONANCE
LP
LFO DEPTH
CUTOFF
VOLUME
DRIVE
DRONE II
PITCH
PWM
CUTOFF
OUT
3340 OSCILLATOR II
-1
-2
SUB OSC
X
S
OSC MIX
X-WAVE
200
LFO DEPTH
HARD SYNC
40
1k
PITCH (Hz)
PITCH LINK
3320 FILTER II
HP
RESONANCE
LP
LFO DEPTH
CUTOFF
VOLUME
DRIVE
CPM DS-2
ANALOG DRONE SYNTHESIZER
MIXER
LEVEL
AUX IN
MAIN OUT
PHONES
VOLUME
DRY
WET
DELAY
DRY
WET
REVERB
MAIN OUT
DELAY
WAVE I
II
TIME
LFO DEPTH
REPEATS
REVERB
STEREO
MONO
PLATE 1
PLATE 2
ROOM 3
HALL 1
ROOM 2
HALL 2
ROOM 1
CH / HALL
Stylophone®


ENVELOPES
GATE I
ENV I
GATE II
ENV II
ENVELOPE I
ADSR
AR
LIN
EXP
ATTACK
DECAY
SUSTAIN
RELEASE
ENVELOPE II
ADSR
AR
LIN
EXP
ATTACK
DECAY
SUSTAIN
RELEASE
FILTER I
CUTOFF
VCA
AUDIO IN
OUT
ON
ON
INV
FILTER
VCA
ENV I
NOISE
GEN R-8
LP
LP
2045
BP
BP+
HP
NOTCH+
NOTCH
BANDSTOP+
FILTER TYPE
RESONANCE
200
DEPTH
20
2k
CUTOFF (Hz)
ENVELOPE I GATE
ON
THRESHOLD
OFF
OPEN
FILTER II
CUTOFF
VCA
AUDIO IN
OUT
ON
ON
INV
FILTER
VCA
ENV II
NOISE
GEN R-8
LP
LP
2045
BP
BP+
HP
NOTCH+
NOTCH
BANDSTOP+
FILTER TYPE
RESONANCE
200
DEPTH
ENV I LINK
20
2k
CUTOFF (Hz)
C.OFF LINK
ENVELOPE II GATE
ON
THRESHOLD
OFF
OPEN
CPM DF-8
ANALOG DYNAMIC MULTI-FILTER
MIXER
SYNC IN
S&H OUT
MAIN OUT
PHONES
VOLUME
STEREO
FILTER I
MONO
FILTER II
MAIN OUT
S&H
NOISE
RATE
ENV I & II
SLEW
DELAY LEVEL
DELAY
S&H
TIME
ENV II
DEPTH
REPEATS
Stylophone®