

STAR GATE!

USING THE DRAWMER DS201 DUAL GATE

There's more to gating than just getting rid of unwanted noise: the humble noise gate is capable of truly creative studio trickery. DAVID MELLOR reveals some of the unusual uses for your Drawmer DS201, but if you don't own a DS201, don't despair: these tips can be adapted for most good quality gates.

It is every hi-tech manufacturer's dream to produce a piece of equipment that will become so essential that every studio will just have to have one if it wants to be seen as a serious player. The Yorkshire company Drawmer has done that and more besides — it's not uncommon to see two, three or even more Drawmer DS201 Dual Gates in the racks of

studios, and in PA circles, DS201s are bought in bulk, to eliminate unwanted noise getting from microphone to speaker. This, ostensibly, is their main function: cutting out unwanted noise when there is no wanted signal coming through — although there are other very useful things you can do with them, as you'll see after reading this article.

GET STUCK IN

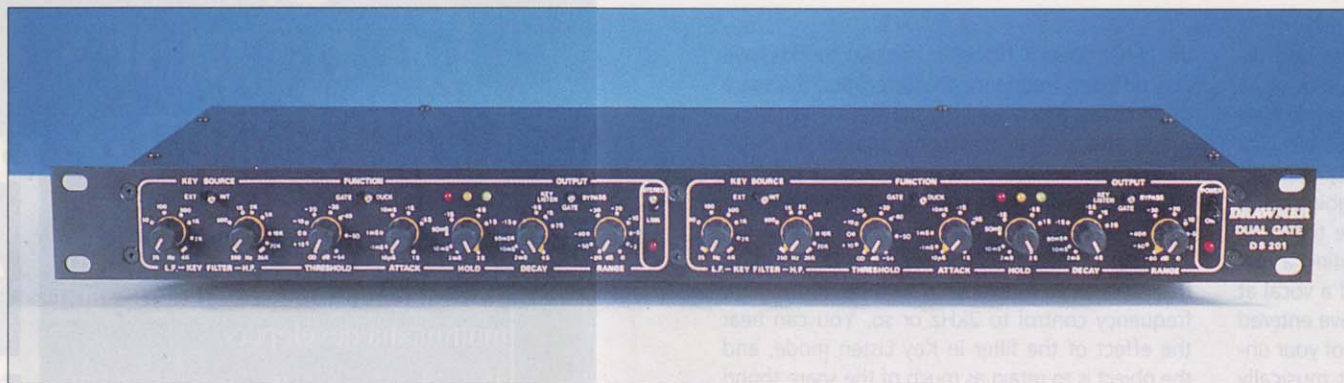
The noise gate is normally employed on a single unmixed signal (which may be stereo) rather than on a complete mix, although this can be done if you feel it's what you need to clean up starts and ends. Figure 1 shows how the gate is connected to the insert points of the mixer channel you want to gate; as with equalisers and compressors, gates are not used via the aux send and return loop. If you're working without a full patchbay, you might have to make up a special adaptor (Y) lead if your console has the usual single stereo jack send/return insert point.

For the gate to be able to do anything useful, there must, of course, be silent passages in the signal, or passages that *should*, at least, be silent. The aim is to silence that noisy guitar amp or chorus unit when the instrument isn't playing. Since you can't just twiddle the controls at random on a noise gate and expect to get a sensible result, you'll need a starting point of some kind. Figure 2 shows the starting point I use on my own Drawmer DS201 (bought several years ago, battered and distinctly secondhand, from a hire company and still working absolutely perfectly). In order to know how to proceed from here, since this initial setting is unlikely to sound totally correct, you'll need to understand what each control does.

THE MAIN CONTROLS

While playing your sound source, experiment as follows:

- Turn the Threshold control slowly up and down. You will hear that as you turn clockwise (effectively lowering the Threshold level) you can hear more of the signal, and also the noise in the gaps where all should be quiet. As you turn counter-clockwise, you'll find that eventually all of the signal is gated out and you don't hear anything. In between there will be an ideal setting where you hear all the signal you want,



and all the signal you don't want is cut off. Don't bother writing down this setting since it will be different each time you use the gate.

- Next, try out the Range control and find out why it is set to -80dB nearly all the time during normal gating. This control sets the degree of attenuation when the gate is closed; -80dB is as near as makes no difference to completely off. With lower attenuation settings you'll hear some of the noise coming through between the wanted sections of the signal; this might seem pretty pointless in the studio, but it can have uses when full gating sounds too obvious and also when you are 'ducking' rather than gating.
- Now onto the Hold control. If you set this to minimum, you may well hear what is known as 'jitter', and you'll know why from the sound. This happens when the gate can't decide whether it should be open or closed and therefore opens and closes very quickly several times in succession. I know of no musical uses for this sound (yet!). I usually tend to set Hold to around 50mS, or the shortest time I can get away with without jitter, and leave it there.
- Of more importance are the Attack and Decay controls. With these you can shape the envelope of the sound as it starts and finishes, the aim being to transfer gracefully between silence and signal, and back from signal to silence. Get these settings wrong and you'll either hear a little bit of noise as the sound starts and finishes, or the sound will be noticeably clipped. It can take a little time to set up a gate, more if you're using it in conjunction with a compressor, but time spent making careful and precise adjustments will be amply repaid in the quality of the result. Before I move on, I'll just mention that if you're gating a stereo signal, you'll need to press the Stereo Link switch down (it's confusingly labelled). This forces both channels of the gate to open and close at the same time, which is absolutely essential for stereo gating.

EXPERT MODE

This is where you achieve something a little more ambitious than basic gating! In my previous simple explanation, I assumed that you had a simple sound source, such as a guitar with a noisy amplifier.

VITAL FOR VOCALS

A clever use of the DS201's external triggering via the Key input (see 'Further Adventures' section in the main text) is making particular parts start and finish at the same time. It's common with backing vocals, once you start layering them up, that the starts and ends of the lines can get messy — perhaps some start a fraction early, some end a fraction late. To deal with this, mix the whole lot into a subgroup (or two for stereo) and send it through the gate. Use the backing vocal with the best timing as the trigger for the gate and you'll find that the whole thing has tightened up considerably. This technique won't do anything for discrepancies in timing during the line, but the start and finish are really the most important things to get right

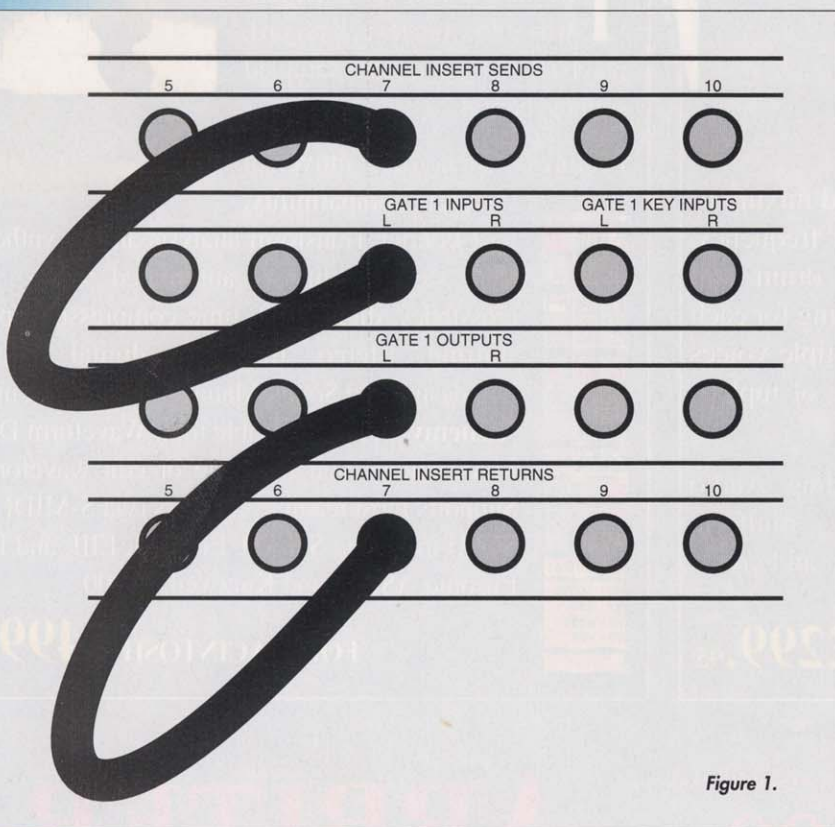


Figure 1.

► In this case, it isn't a problem for the gate to decide whether it should be on or off, as long as you've set the controls correctly, and you do have a little margin for error. But if you have a complex source, you may have more difficulty. By 'complex source', I mean two or more sounds going on at the same time, one of which you're trying to separate out. This happens when gating a real drum kit, or when you have recorded a vocal at home and some extraneous noises have entered through the windows, walls and door of your un-soundproofed studio. The gate isn't musically

the hi-hat doesn't. However, the two sounds have very different frequency characteristics; the snare drum covers pretty well the full frequency range, while the hi-hat is strong mainly at high frequencies. It seems obvious that if you can prevent the high frequencies from getting through to the triggering circuitry, only the lower frequencies of the snare will open the gate. In this case, all you need do is turn down the high frequency control to 2kHz or so. You can hear the effect of the filter in Key Listen mode, and the object is to retain as much of the snare sound

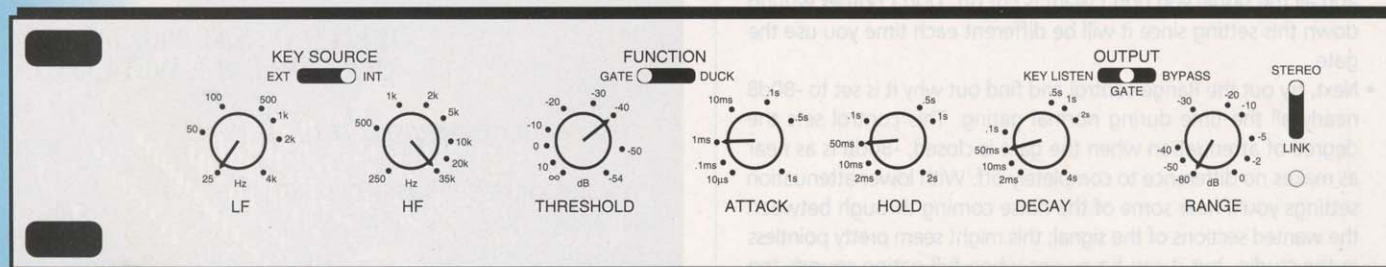


Figure 2.

aware and can't tell the difference between wanted and unwanted sounds; it opens whenever the incoming level exceeds the Threshold. To help the gate decide when to open and close, you can use the two Filter controls. As you can see in Figure 2, these are initially set to the two extreme

positions, where no filtering takes place. If you don't need them, leave them in this position, as extreme settings can slow the gate down a little. Newcomers to gating sometimes twiddle these controls at random, expecting something miraculous to happen. Nothing miraculous, (or even mildly awe-inspiring), will happen unless you have twigged what the Filters are for and how they affect the gate's performance. The Filters only affect the Key signal driving the gate, not the sound being processed, and Drawmer have thoughtfully added a Key Listen feature which allows the effect of the Filters to be heard when setting up. If the external Key input isn't being used, the main input also feeds the side-chain, so you'll hear a filtered version of the input in Key Listen mode. If the unit is set for External Keying, you'll hear the external signal processed via the Filters.

To illustrate how the Filters might be used is best achieved by example: suppose, for instance, that you're gating a snare drum and want to stop the hi-hat (which is bleeding through into the snare mic at quite a high level) from opening the gate. Without the Filters, you can't find a Threshold level where the snare drum opens the gate and

as possible, while removing or reducing the contribution from the hi-hat. You'll have to tinker with the Threshold again, in all probability, but there's now a good chance that you'll be able to gate out the hi-hat completely, with no unwanted false triggering.

My next example concerns vocals: much of the background noise entering a vocal mic is probably low frequency in character, since low frequencies tend to leak more readily than high. The human voice, on the other hand, has very strong harmonics between about 1kHz and 5kHz, so set the LF and HF controls to these frequencies respectively. Achieving a precise setting may be difficult, because you may now find that 's' and 'f' sounds at the beginnings of lines don't have enough energy between 1kHz and 5kHz to trigger the gate. In this case, lower the frequency of the LF Filter until the gate triggers reliably but the low-frequency spill is still excluded. For very low-frequency spill, a lower Filter setting of around 250Hz might be more appropriate and is less likely to cause the gate to 'miss' wanted sections of vocal.

FURTHER ADVENTURES

A creative trick that the DS201 tackles extremely well is gating one sound from another. This has become known as the 'Shamen sound', since they appear to like it a lot, but you can use it successfully on many styles of music.

If you take a look at your DS201, you'll notice a switch on the left of the front panel called 'Key Source'. The key is the signal that opens the gate, and in normal operation it will be the same signal that you're gating. But it doesn't have to be — you can send one signal through the gate and use a completely different signal to switch the gate on and off, and you can automate it via MIDI even though the DS201 doesn't have a single 5-pin DIN. Let's try an example...

► Let's suppose you have a track half-finished on your multitrack tape, on which you have timecode or a sync track. Strap on your battered old guitar and plug it into a fuzz box (or set your multi-effects unit to a distortion preset, if you want to be push). Record chords that change only in line with the melody/harmony, one chord per change of harmony, without introducing any rhythm at all. Now get out your drum machine and create a closed hi-hat pattern in any rhythm you choose. It doesn't have to be hi-hats but the hi-hat sound is suitably short. Synchronise the drum machine (or sequencer) to the tape and get it playing along in time to the music. I'll assume that you are already familiar with synchronising this type of equipment and you don't have any problems achieving this.

- Patch the guitar track through the noise gate, as shown in Figure 1.
- Patch the output from the drum machine supplying the hi-hat sound to the Key input of the same channel of the gate.
- Switch the key source to 'Ext' and set everything in motion.

You'll find that the guitar sound is chopped up into the rhythm of the hi-hat. You may need to adjust the Threshold setting from the starting position to get this working cleanly, but you won't be far away. To fine tune the effect you may want to adjust the Attack, Hold and Decay. Since the hi-hat is a very short sound (at least, I hope you used a short one) you shouldn't have any trouble with jitter, and you'll have complete freedom to set the envelope of the guitar sound according to the needs of the track. If you set a long Attack, you might need to advance the hi-hat so the gate opens a little bit earlier. Hold, you will find, sets the length of time

the gate will stay fully open, after which it will close abruptly. Decay sets the time it takes for the gate to go between fully open and fully closed once the level of the triggering signal has descended below the Threshold. This allows you to experiment with various envelope shapes; gates with no Hold control are a little more restrictive in this department.

But what if you don't synchronise MIDI equipment to tape? How can you achieve a similar effect? Well, you could always open and close the gate manually. Just patch a synth into the key input. A sustained sound at a constant level with a quick attack and decay will give you a switch with which you can open and close the gate at will — more convenient and quieter than using a console's muting or routing switches. Or you can try something a little more clever:

- Find, among the drum tracks on the tape, a drum with a suitable rhythm — maybe the bass drum for starters. It's probably better if it's by itself and not mixed in with anything else, but it's

not the end of the world if it isn't.

- Feed this into a digital delay and adjust the delay and feedback controls so that you get repeat echoes in time with the track.
- Now apply these repeat echoes to the Key input of the gate. You will have to fiddle around with the Threshold of the gate and the degree of feedback applied to the echoes, but you should find that this triggers the gate quite nicely and chops up your guitar chords into a pattern of eighth or sixteenth notes.

Producing a particular rhythm with this technique might not be possible in the same way as when you synchronise a drum machine, but there are still lots of things you can do — and we're not finished yet.

DEEP BASS

Staying with my non-MIDI example of a multitrack recording for the moment, you may find that the bass drum you recorded didn't really have the depth of sound or produce the degree of satisfaction you were looking for. You could, by other means, replace the bass drum with a triggered sample, but then you'd lose the natural sound and the subtlety of real drumming (and even after all these years of MIDI, good drummers are still worth their weight in gold). Another solution is to find a low-frequency sine wave from somewhere — from your console's oscillator, your Akai S1000 or synthesizer — and patch it to the gate's input. Route the real bass drum to the key input (while still including it in the mix) and carry out the external triggering procedure as before. Now you'll get the bass drum plus a low-frequency pulse to mix in to provide all the beef you need. You'll probably want to experiment with the frequency of the sine wave (don't blow your speakers!) and with the Attack, Hold and Decay of the gate, so that the addition of the sine wave isn't too obvious.

AND FINALLY

Just to finish off, let's take a look at that good old standby — gated reverb. Nowadays, we invariably use the gated reverb preset on our trusty multi-effects units, but sometimes the traditional ways are still best. The easy way to produce real gated reverb would be to apply the signal plus reverb to the gate's input and use internal triggering, ignoring the key input. With the DS201 however, this limits the settings of the Hold control available to you, since you'll sometimes get jitter. A better way is to feed the dry signal to the key input and the dry signal plus reverb — or even the reverb only — to the normal input. In this way you have full control over the gating, and you can get a very wide range of reverb envelopes, which are normally not available with multi-effects units. You can also use this technique with real reverb — if your bathroom or stairwell is big enough. There is a wonderful world of sounds available to the person willing to experiment with the Drawmer DS201, and even if you're the owner of a different type of gate, many of the techniques discussed still apply.

I'd say that the principal reason for Drawmer's success is that they brought out the DS201 at a time when noise gates were thin on the ground, and most importantly, they sold it at the right price.

CONTACT DETAILS

A Drawmer Distribution Ltd,
Charlotte Street Business Centre,
Charlotte Street, Wakefield,
West Yorkshire.
T 01924 378669.
F 01924 290460.

THE SECRET OF THEIR SUCCESS?

This article is centred around the Drawmer DS201, which, as mentioned at the start, is almost a studio standard. But what's the reason for Drawmer's success? Is it that their gate is better than everyone else's? The DS201 is certainly very good, and reassuringly predictable in operation, but I don't think that's the sole reason, as there are good gates around from other manufacturers. I'd say that the principal reason for Drawmer's success is that they brought out the DS201 at a time when noise gates were thin on the ground, and most importantly, they sold it at the right price. I have heard comment in industry circles to the effect that Drawmer could have charged more and still had a success on their hands. One thing is certain; Drawmer set the pattern for how a noise gate should perform and how much it should cost.