

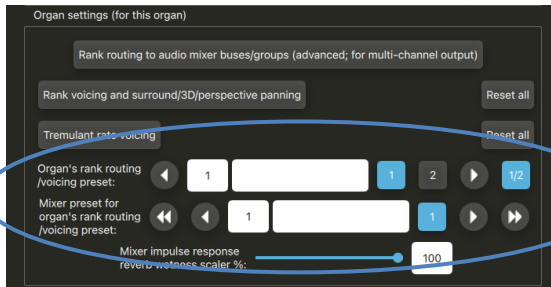
Example 2: surround/3D sound output, optionally plus a sub-woofer

(The following steps assume that your audio configuration and rank routing settings are at their defaults initially, but if they aren't, then you could optionally reset them back to their defaults using *General settings | General configuration wizard*, and then *Organ settings | Organ configuration wizard* with each applicable organ loaded in turn, respectively.)

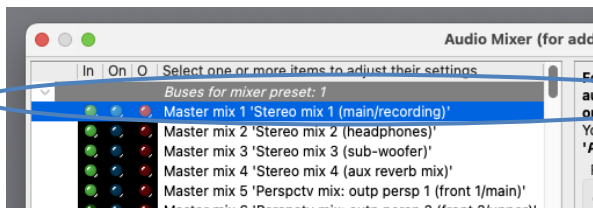
Let's say you want to use four pairs of speakers (main-front, upper-front, main-rear, upper-rear pairs) for 3D sound output, perhaps with an additional mono sub-woofer fed as a mix-down.

First decide which of the 128 mixer presets you want to configure, and which rank routing/voicing preset. We'll assume 1 for both (the default) for simplicity.

Load an organ (e.g. St. Anne's). Using the '*Settings | Audio ... routing*' tab on the Touch Menu (*View | Touch menu*), make sure that the currently-loaded organ is using (for this example) mixer preset 1:



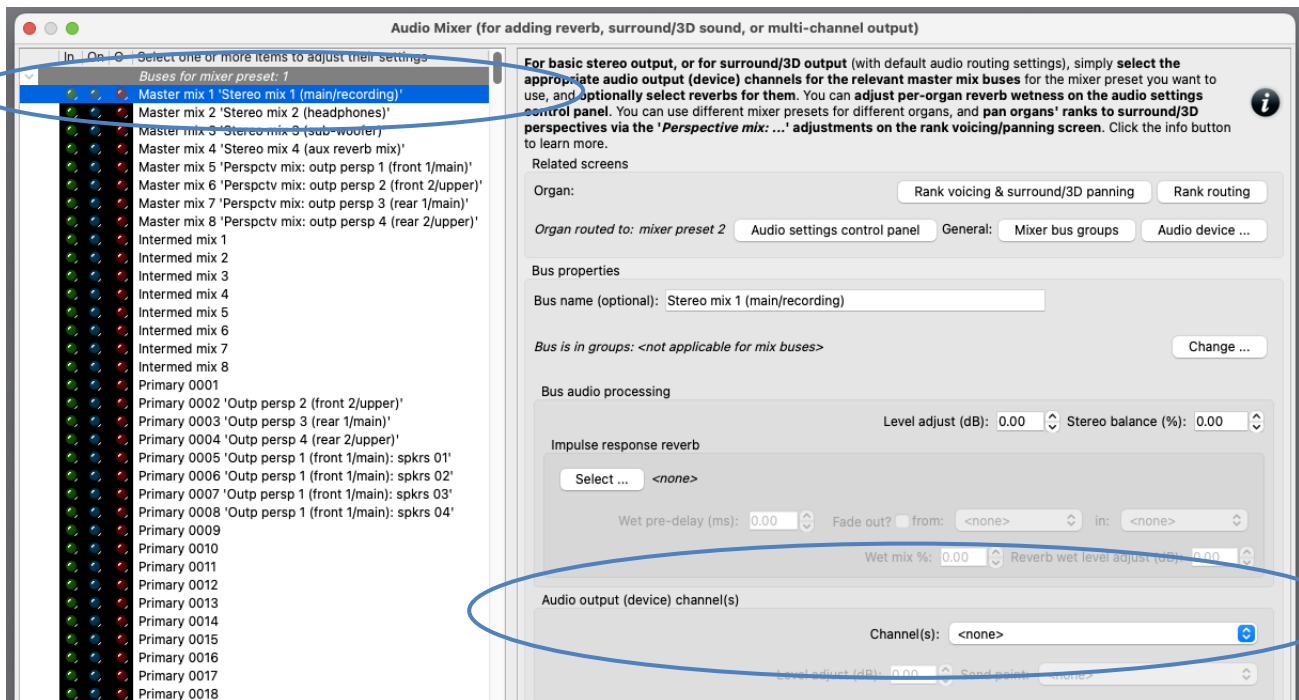
Now open the *General settings | Audio mixer* screen. Make sure that the '*Mixer buses for mixer preset 1*' node is expanded in the left-hand browse list:



Select the following entry (mixer bus) in the left-hand browse list:

- [Within the mixer preset 1 node]: *Master mix 1 'Stereo mix 1 (main/recording)'*.

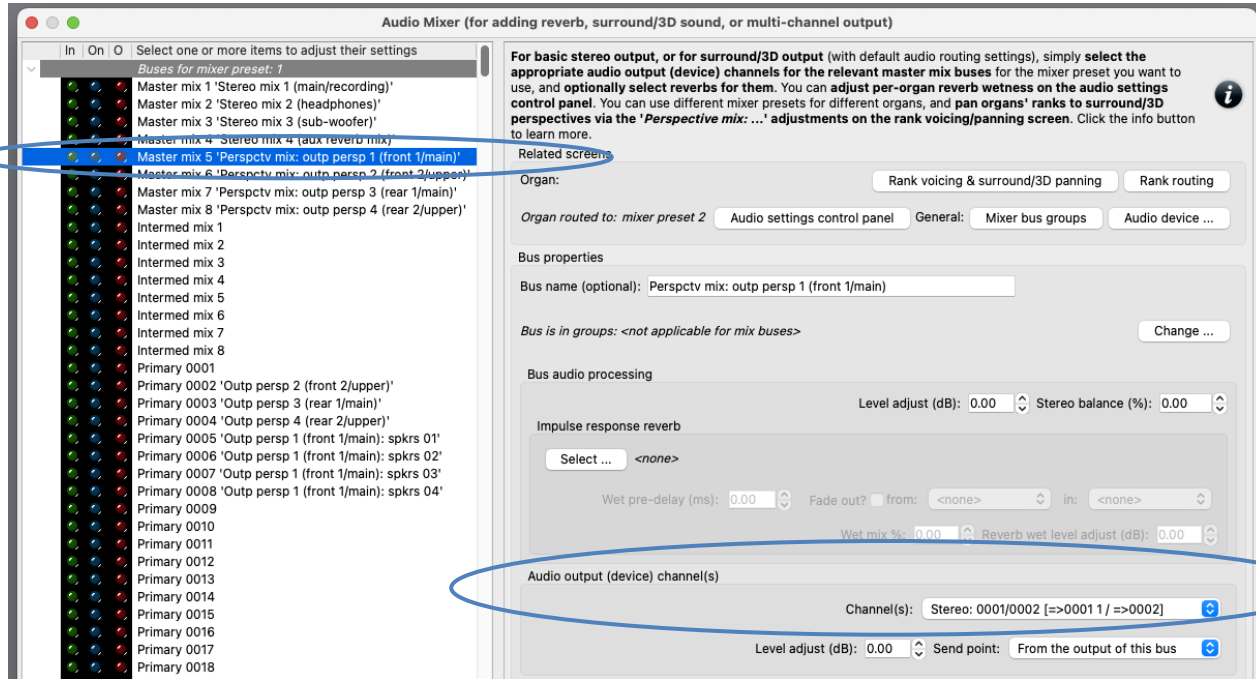
In the right-hand pane, set its '*Audio output (device) channel(s): Channel(s)*' setting to '<none>':



Now instead select the following entry (mixer bus) in the left-hand browse list:

- [Still within the mixer preset 1 node]: *Master mix 5 'Perspctv mix: outp persp 1 (front 1/main)'*.

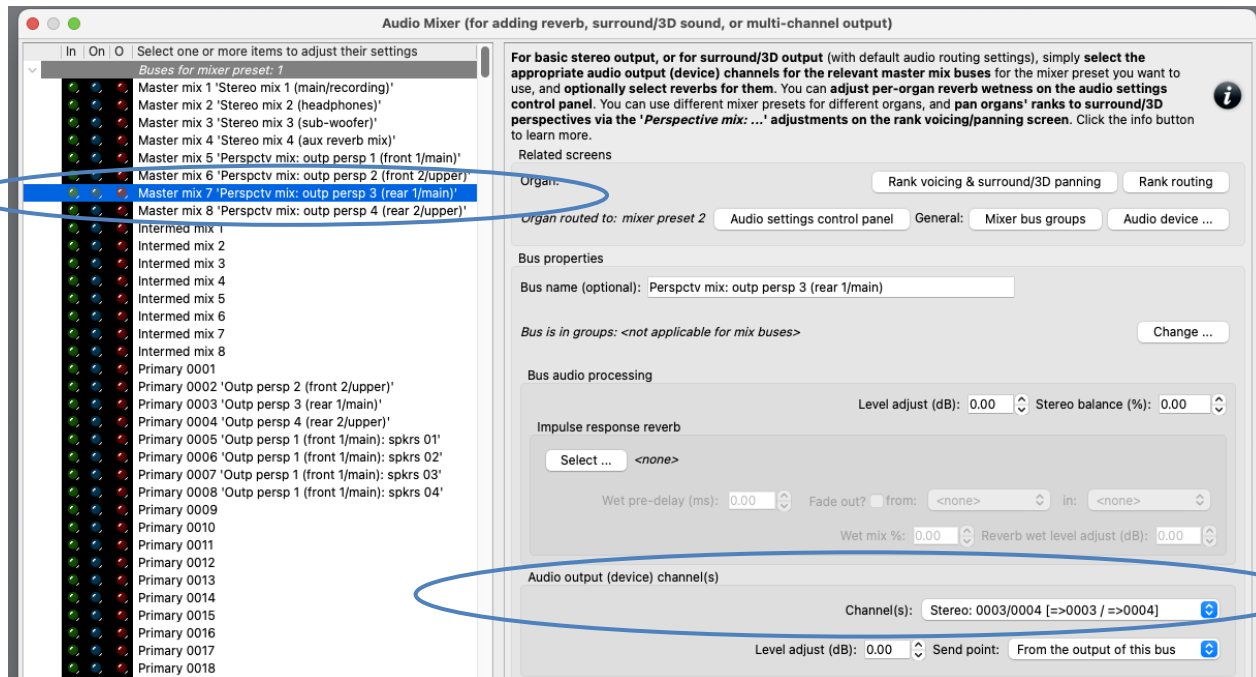
In the right-hand pane, set its 'Audio output (device) channel(s): Channel(s)' setting to the stereo pair of audio device channels that you want to use for your main front stereo pair of speakers:



Now instead select the following mixer bus in the left-hand browse list:

- [Still within the mixer preset 1 node]: *Master mix 7 'Perspctv mix: outp persp 3 (rear 1/main)'*.

In the right-hand pane, set its 'Audio output (device) channel(s): Channel(s)' setting to the stereo pair of audio device channels that you want to use for your main rear stereo pair of speakers:



If you want to use full 3D sound output (four speaker pairs), then:

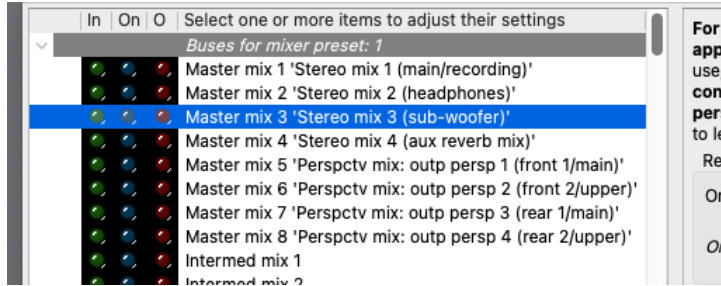
Also select the corresponding device channels for your front-upper and rear-upper speaker pairs for the following two buses respectively:

- [Still within the mixer preset 1 node]: *Master mix 6 'Perspctv mix: outp persp 2 (front 2/upper)'*.
- [Still within the mixer preset 1 node]: *Master mix 8 'Perspctv mix: outp persp 4 (rear 2/upper)'*.

If you want to use a mono sub-woofer, or stereo pair of sub-woofers, connected to separate audio device channel(s), then:

Select the following entry in the left-hand browse list:

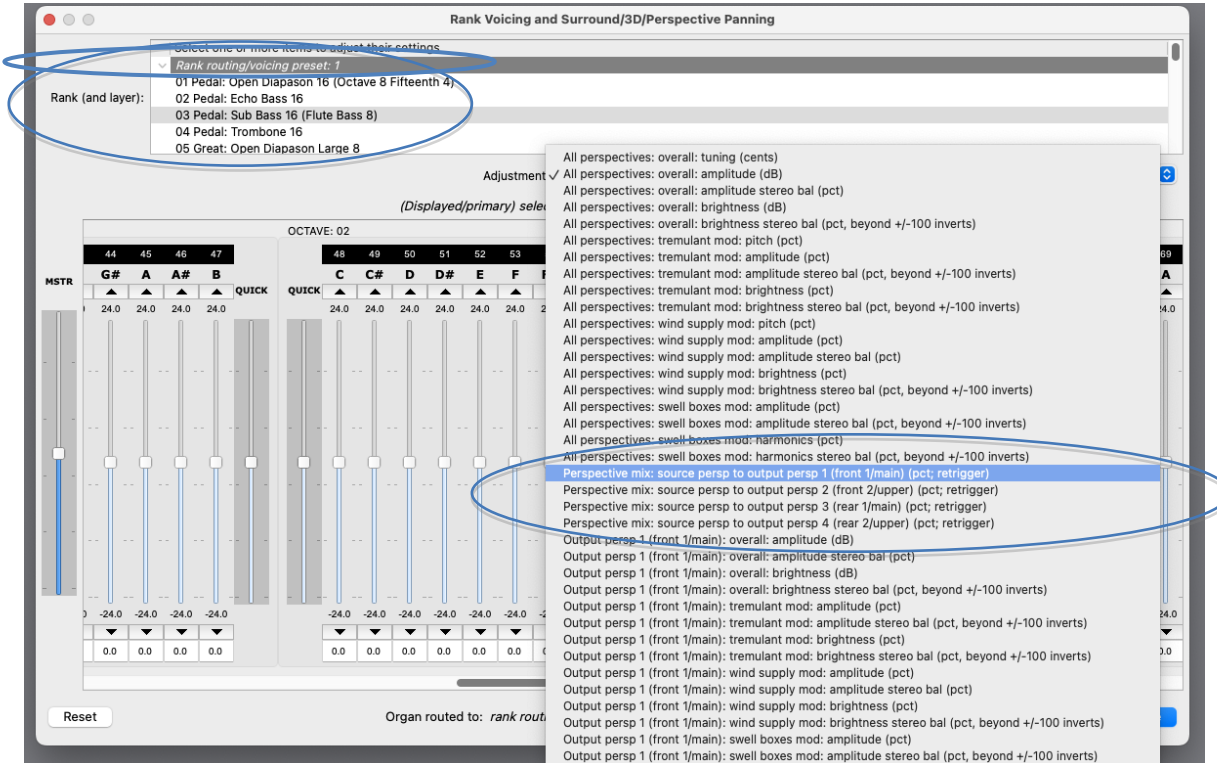
- [Still within the mixer preset 1 node]: *Master mix 3 'Stereo mix 3 (sub-woofer)'*.



... and in the right-hand pane, set its '*Audio output (device) channel(s): Channel(s)'* setting to the audio device channel(s) – either mono or stereo pair, depending on your sub-woofer(s) – that you want to use for your sub-woofer(s). (Mono channels can be found near the end of the drop-down channel list, after the stereo pairs.)

OK the mixer screen.

Now on the *Organ settings | Rank voicing and surround/3D/perspective panning* screen, for each of the relevant 'Perspective mix: ...' adjustments (in the drop-down list at the top-right of the screen) in turn, use the *MSTR* ('master') slider to 'pan' each of the organ's virtual ranks (within the '*Rank routing/voicing preset: 1*' node in the rank list) as desired to/between your corresponding pairs of surround/3D speakers:



For example, to route one or more virtual ranks entirely to a 'rear' surround pair of speakers, all that you would need to do is to select the rank(s) on the voicing/panning screen (you can select multiple ranks at once, to change their settings/routing simultaneously), then:

1. Select the '*Perspective mix: source persp to output persp 1 (front 1/main)*' adjustment, then use the '*MSTR*' slider to set all of the adjustment's pipe sliders to 0% (rather than the adjustment's default of 100%, since all ranks are routed entirely to the 'front' by default), and:
2. Select the '*Perspective mix: source persp to output persp 3 (rear 1/main)*' adjustment, then use the '*MSTR*' slider to set all of the adjustment's pipe sliders to 100% (rather than the adjustment's default of 0%).

The values don't have to be fully 100% or 0%; in-between values can be used to position ranks/pipes virtually 'between' the relevant speakers.

As you play the organ (with some stops drawn, of course), you should now hear that the ranks sound through the desired pairs of speakers.

Load any other organs you may have and, in the same way, 'pan' their ranks as desired.

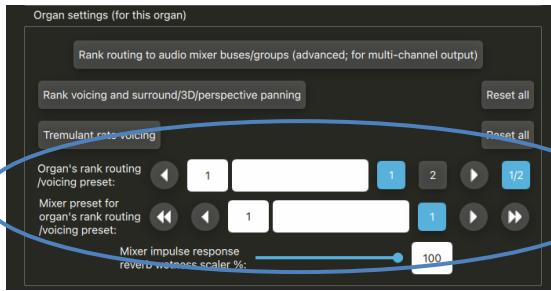
Example 3: simple multi-channel audio with 8 speakers configured as stereo pairs all in a single group, optionally plus a sub-woofer

(The following steps assume that your audio configuration and rank routing settings are at their defaults initially, but if they aren't, then you could optionally reset them back to their defaults using *General settings | General configuration wizard*, and then *Organ settings | Organ configuration wizard* with each applicable organ loaded in turn, respectively.)

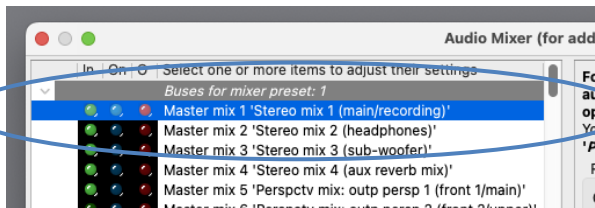
This example is particularly easy to set up, because Hauptwerk's default settings are already configured appropriately for 4 stereo pairs in a group, apart from actually selecting the desired audio interface channels.

First decide which of the 128 mixer presets you want to configure, and which rank routing/voicing preset. We'll assume 1 for both (the default) for simplicity.

Load an organ (e.g. St. Anne's). Using the 'Settings | Audio ... routing' tab on the Touch Menu (*View | Touch menu*), make sure that the currently-loaded organ is using (for this example) mixer preset 1:



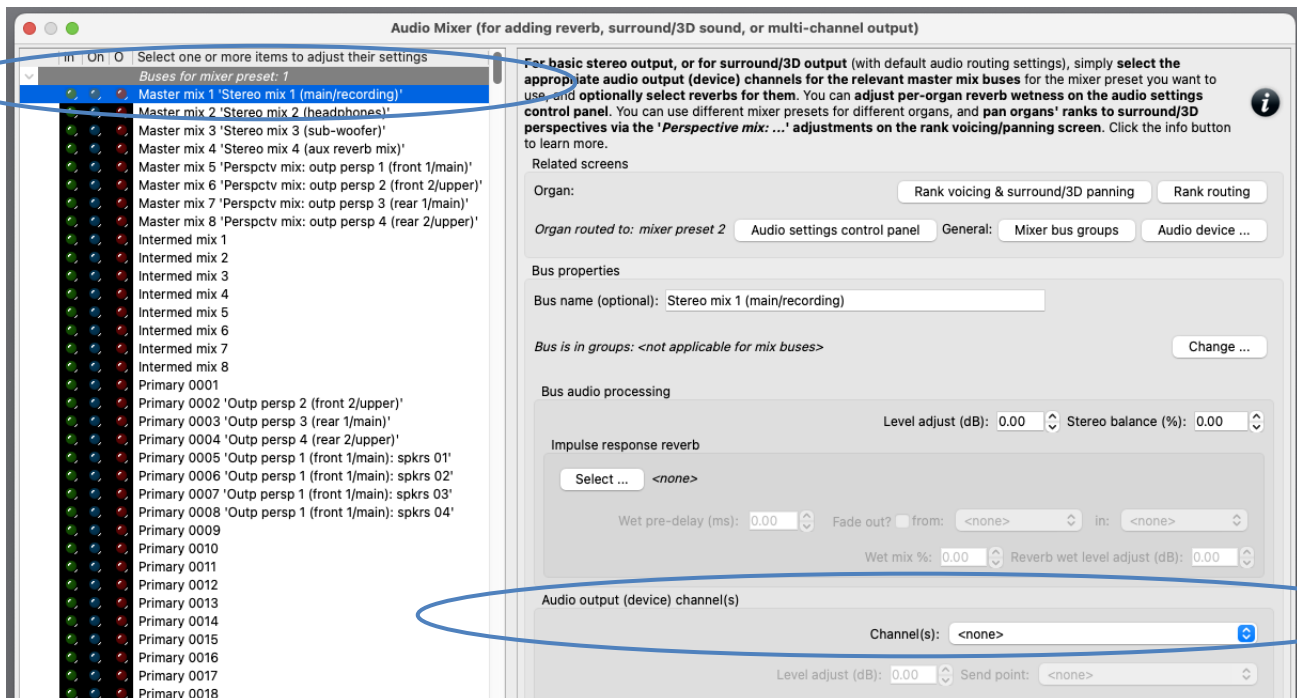
Now open the *General settings | Audio mixer* screen. Make sure that the 'Mixer buses for mixer preset 1' node is expanded in the left-hand browse list:



Select the following entry (mixer bus) in the left-hand browse list:

- [Within the mixer preset 1 node]: *Master mix 1 'Stereo mix 1 (main/recording)'*.

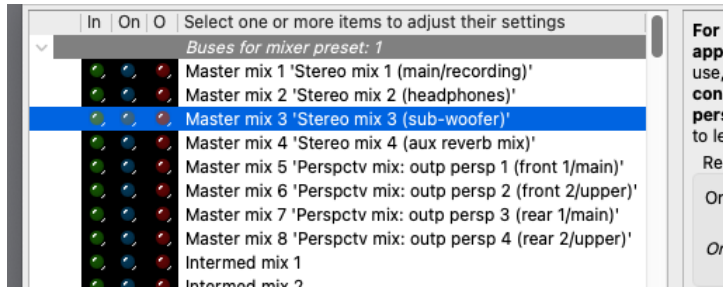
In the right-hand pane, set its 'Audio output (device) channel(s): Channel(s)' setting to '<none>'.



If you want to use a mono sub-woofer, or stereo pair of sub-woofers, connected to separate audio device channel(s), then:

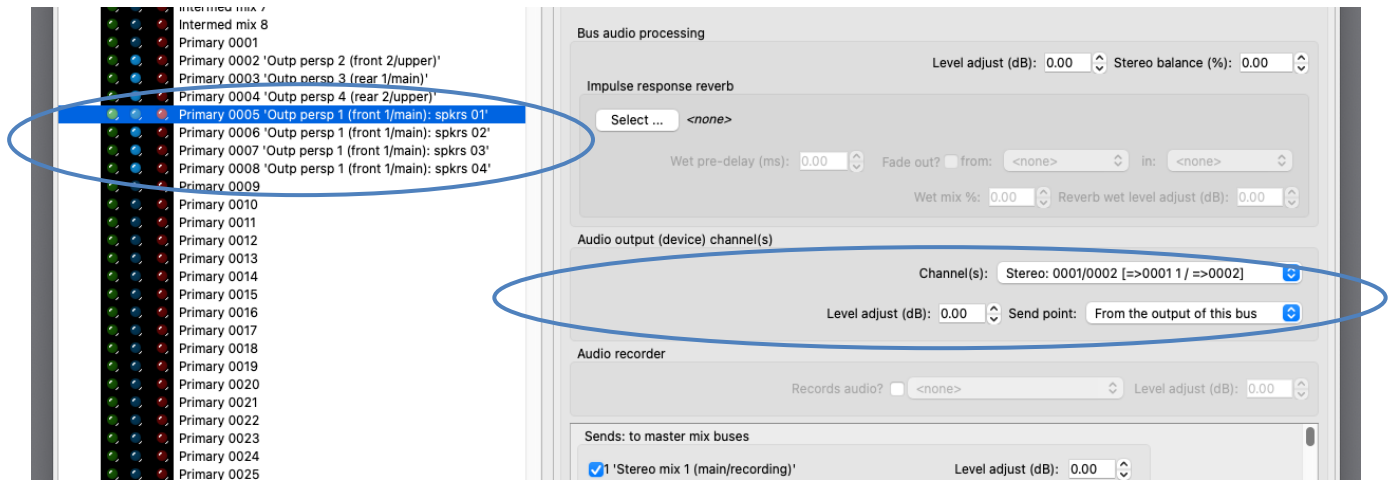
Select the following entry in the left-hand browse list:

- [Still within the mixer preset 1 node]: *Master mix 3 'Stereo mix 3 (sub-woofer)'*.

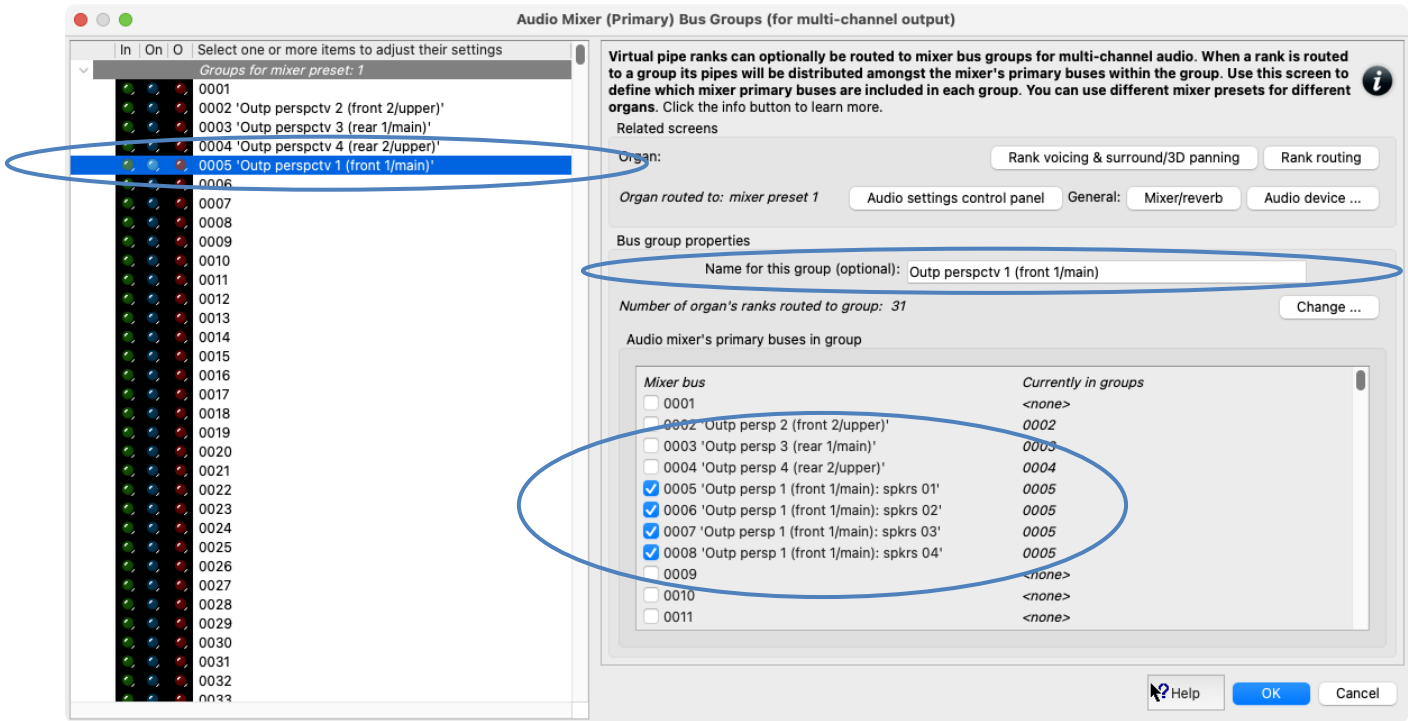


... and in the right-hand pane, set its '*Audio output (device) channel(s): Channel(s)*' setting to the audio device channel(s) – either mono or stereo pair, depending on your sub-woofer(s) – that you want to use for your sub-woofer(s). (Mono channels can be found near the end of the drop-down channel list, after the stereo pairs.)

Now in the left-hand browse list select each of primary buses 0005-0008 in turn and use the '*Audio output (device) channel(s): Channel(s)*' setting to select the appropriate stereo channel pairs for them, assigning a distinct pair of your main speakers (device channels) to each of those four primary buses.



Go to the *General settings / Audio mixer bus groups* screen and simply note how the mixer preset's group 0005 contains just those four primary mixer buses (0005-0008) with the default settings. Hence when we route ranks to that group the pipes within the rank will be distributed automatically amongst those four primary mixer buses (speaker pairs).



Note how primary mixer buses 0005-0008 and bus group 0005 have meaningful names on their respective screens, to help indicate what they're used for, but feel free to change those names if you wish. If you have more than four main speaker pairs then you could simply select their device channels for additional primary mixer buses (0009, 0010, etc.) on the mixer screen, name those buses meaningfully, and use the groups screen to add those buses into bus group 0005.

Go to the *Organ settings | Rank routing ...* screen and select a rank in the left-hand browse list. Simply note how the rank has its '*Rank output perspective 1 (front 1/main): Destination mixer bus/group*' setting set to group 0005 (with default settings). Hence the rank will be routed to that group, and thus the rank's pipes will be assigned amongst the primary mixer buses that are members of that particular group (i.e. amongst primary buses 0005, 0006, 0007 and 0008).

The top screenshot shows the 'Rank Routing to Audio Mixer (Primary) Buses/Groups' screen. The left-hand list shows ranks 01 through 26. Rank 05, 'Great: Open Diapason Large 8', is selected. The right-hand panel shows the 'Rank output perspective 1 (front 1/main)' settings. The 'Destination mixer bus/group' is set to 'Group 0005 'Outp perspctv 1 (front 1/main)' <buses: 4>'. The 'Bus allocation algorithm' is set to 'Static: cyclic within octave, octaves cycled, ranks cycled'. The bottom screenshot shows the 'Audio Mixer (Primary) Bus Groups' screen. The left-hand list shows groups 0001 through 0033. Group 0005, 'Outp perspctv 1 (front 1/main)', is selected. The right-hand panel shows the 'Bus group properties' for group 0005. The 'Name for this group (optional)' is 'Outp perspctv 1 (front 1/main)'. The 'Number of organ's ranks routed to group' is 31. The 'Audio mixer's primary buses in group' table is shown below:

Mixer bus	Currently in groups
<input type="checkbox"/> 0001	<none>
<input type="checkbox"/> 0002 'Outp persp 2 (front 2/upper)'	0002
<input type="checkbox"/> 0003 'Outp persp 3 (rear 1/main)'	0003
<input type="checkbox"/> 0004 'Outp persp 4 (rear 2/upper)'	0004
<input checked="" type="checkbox"/> 0005 'Outp persp 1 (front 1/main): spkrs 01'	0005
<input checked="" type="checkbox"/> 0006 'Outp persp 1 (front 1/main): spkrs 02'	0005
<input checked="" type="checkbox"/> 0007 'Outp persp 1 (front 1/main): spkrs 03'	0005
<input checked="" type="checkbox"/> 0008 'Outp persp 1 (front 1/main): spkrs 04'	0005
<input type="checkbox"/> 0009	<none>
<input type="checkbox"/> 0010	<none>
<input type="checkbox"/> 0011	<none>

Draw a single virtual stop and play a chromatic scale. You should hear successive pipes allocated (cyclically) to different pairs of speakers. On the mixer screen, note how the virtual audio activity LEDs illuminate for the corresponding primary mixer buses – a useful aid for troubleshooting routing, if needed.

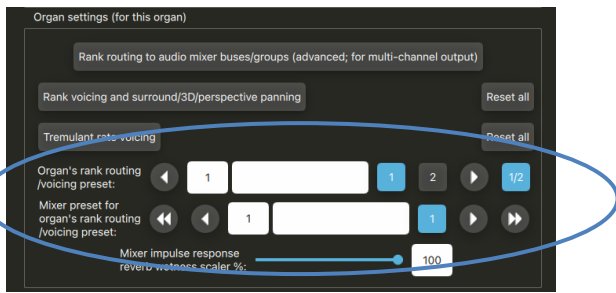
Example 4: multi-channel audio with 8 speakers configured as stereo pairs, with whole organ divisions routed directly to individual stereo pairs, optionally plus a sub-woofer

(The following steps assume that your audio configuration and rank routing settings are at their defaults initially, but if they aren't, then you could optionally reset them back to their defaults using *General settings | General configuration wizard*, and then *Organ settings | Organ configuration wizard* with each applicable organ loaded in turn, respectively.)

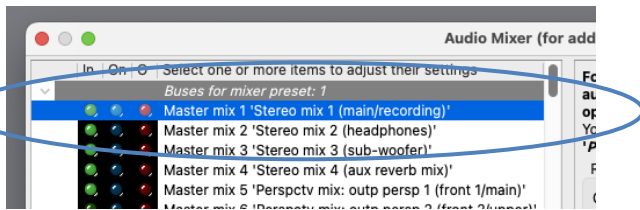
Let's refer to your four speaker pairs as 'Division A speaker pair', 'Division B speaker pair', ..., 'Division D speaker pair' (using letters instead of numbers, so as to avoid any confusion with the mixer bus numbers).

First decide which of the 128 mixer presets you want to configure, and which rank routing/voicing preset. We'll assume 1 for both (the default) for simplicity.

Load an organ (e.g. St. Anne's). Using the 'Settings | Audio ... routing' tab on the Touch Menu (*View | Touch menu*), make sure that the currently-loaded organ is using (for this example) mixer preset 1:



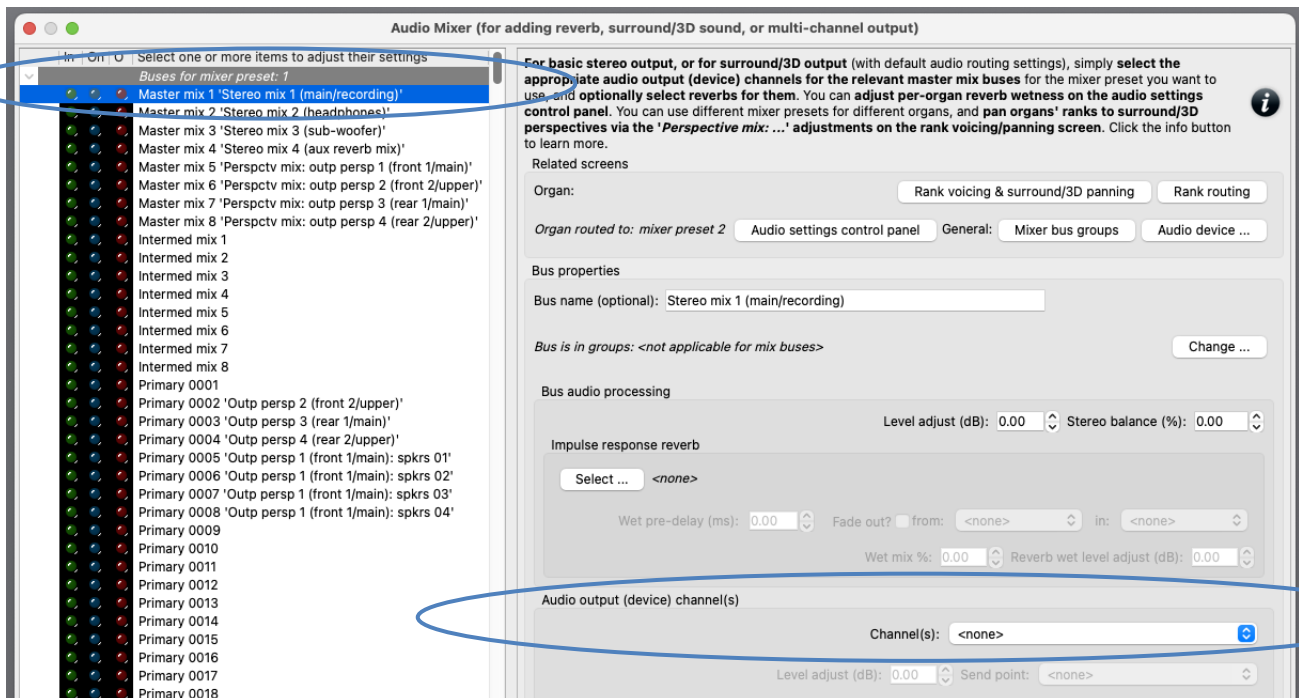
Now open the *General settings | Audio mixer* screen. Make sure that the 'Mixer buses for mixer preset 1' node is expanded in the left-hand browse list:



Select the following entry (mixer bus) in the left-hand browse list:

- [Within the mixer preset 1 node]: *Master mix 1 'Stereo mix 1 (main/recording)'*.

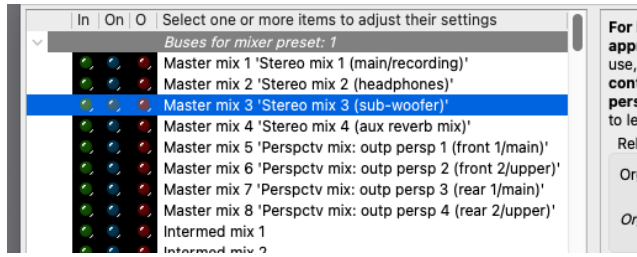
In the right-hand pane, set its 'Audio output (device) channel(s): Channel(s)' setting to '<none>'.



If you want to use a mono sub-woofer, or stereo pair of sub-woofers, connected to separate audio device channel(s), then:

Select the following entry in the left-hand browse list:

- [Still within the mixer preset 1 node]: *Master mix 3 'Stereo mix 3 (sub-woofer)'*.

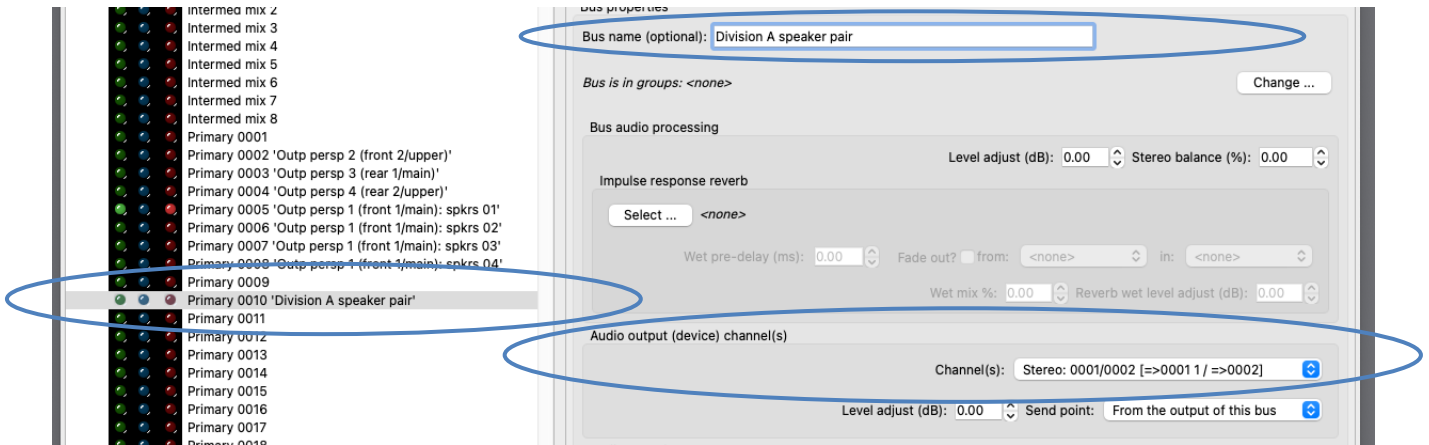


... and in the right-hand pane, set its 'Audio output (device) channel(s): Channel(s)' setting to the audio device channel(s) – either mono or stereo pair, depending on your sub-woofer(s) – that you want to use for your sub-woofer(s). (Mono channels can be found near the end of the drop-down channel list, after the stereo pairs.)

We'll use primary buses 0010-0013 for your four main speaker pairs. Hence first select the following entry (mixer bus) in the left-hand browse list:

- [Still within the mixer preset 1 node]: *Primary 0010*.

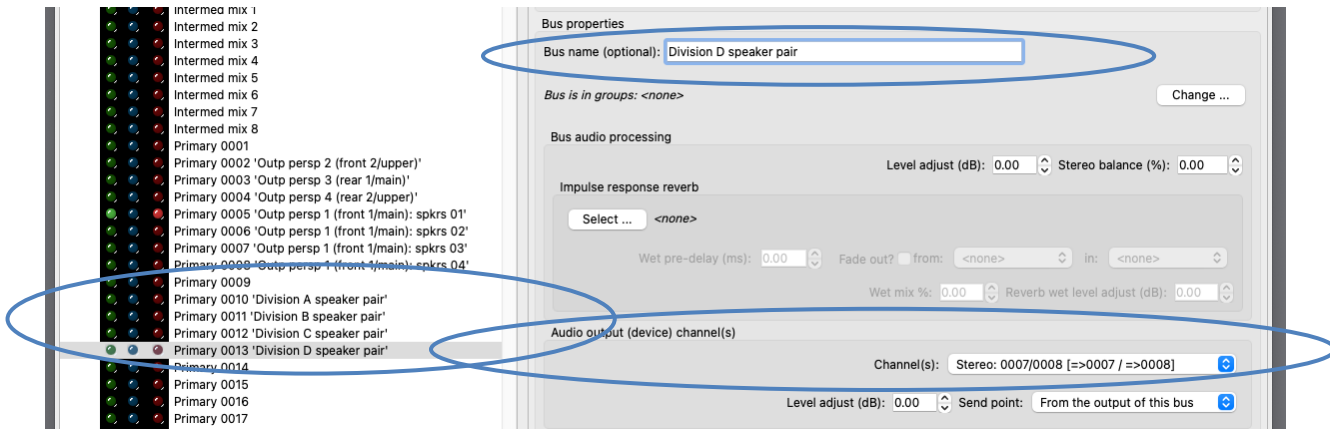
Use the 'Audio output (device) channel(s): Channel(s)' setting to select the appropriate stereo channel pair for your first pair of speakers. Also change its 'Bus name' setting to something appropriate, such as 'Division A speaker pair'. (Names are optional and have no functional effect, but they do make it easier to see what's happening when configuring and troubleshooting routing.)



Now select the following entry (mixer bus) in the left-hand browse list:

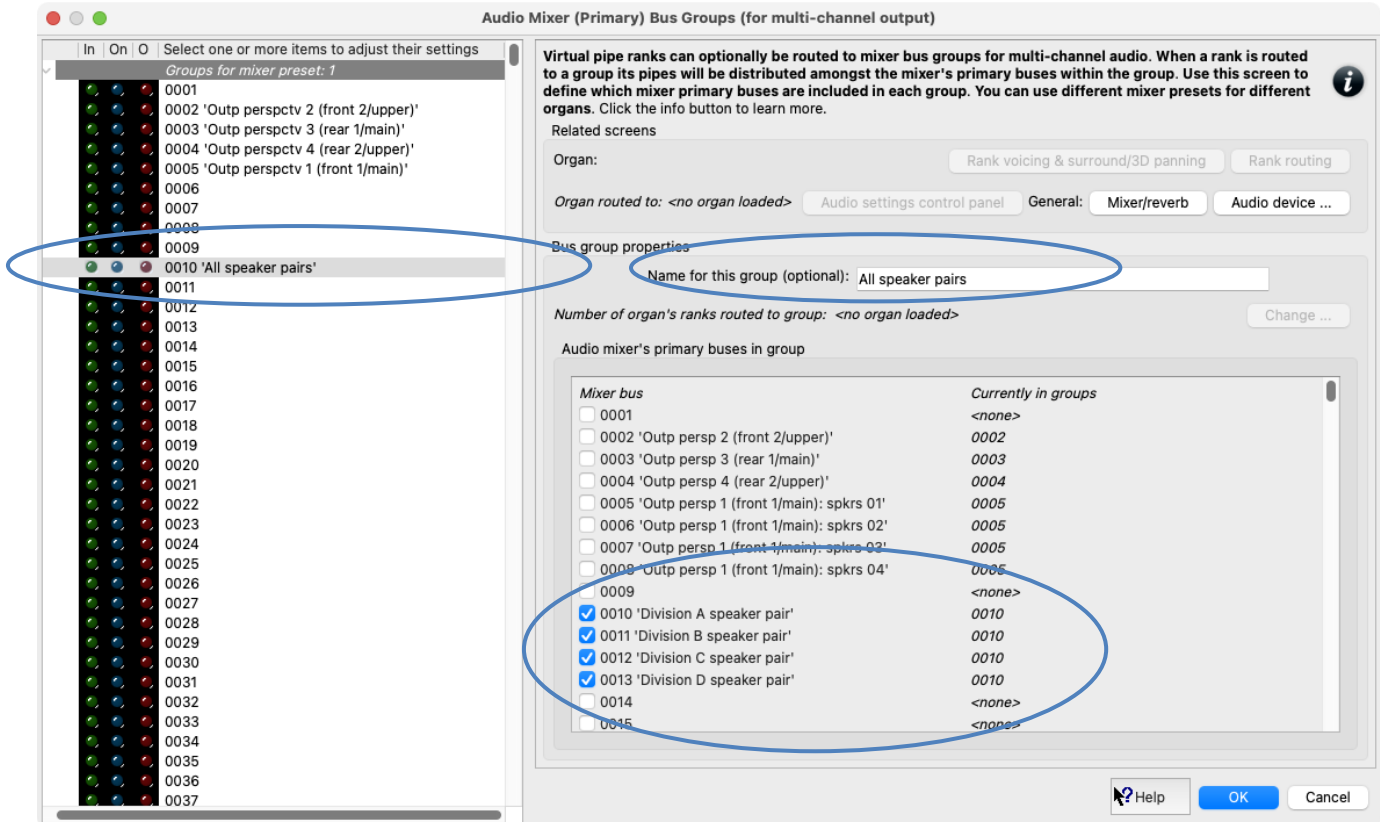
- [Still within the mixer preset 1 node]: *Primary 0011*.

For it, select the device channels for your second pair of speakers. Also change its 'Bus name' setting to (for example) 'Division B speaker pair'. Do likewise for primary buses 0012 and 0013, selecting the device channels for your third and fourth pairs of speakers respectively and naming them 'Division C speaker pair' and 'Division D speaker pair' respectively.

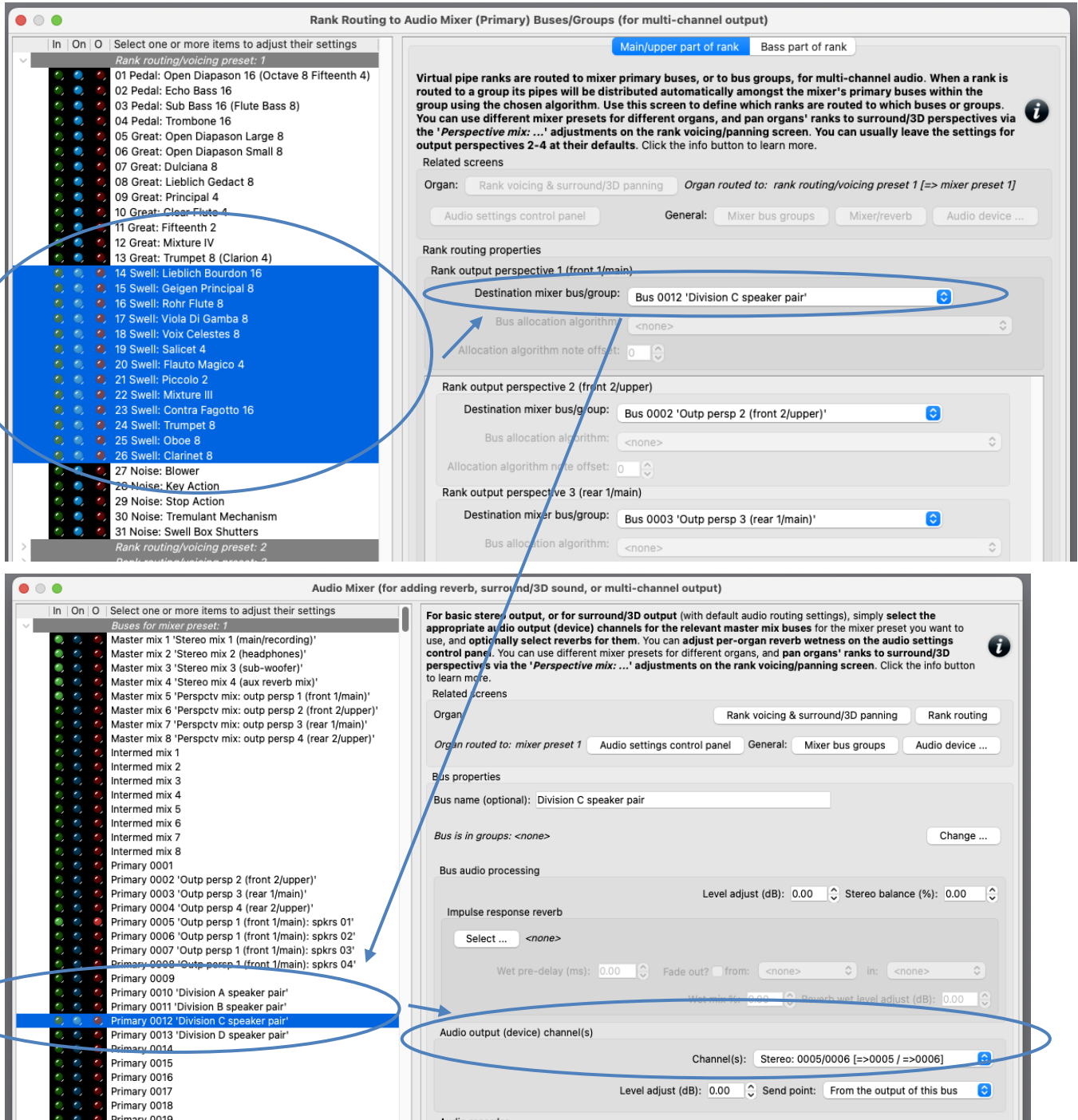


We won't normally be using mixer bus groups for routing in this example, since groups exist solely to distribute individual pipes within a rank around amongst several speakers/pairs within the group, whereas in this example we'll be routing ranks (divisions) as a whole to individual speaker pairs. Hence although we could theoretically use groups, there would only be one mixer bus (stereo speaker pair) in each group anyway, and so there would be no advantage in using the group – routing directly to the mixer bus (as we will be doing) would be simpler to set up and would give exactly the same result. However, we'll set one up anyway, in case you later decide to use it for any ranks (and since there was a bug in Hauptwerk v8.0.0/8.01 in which mixer buses might not sound if they weren't members of at least one group).

Go to the *General settings* | *Audio mixer bus groups* screen. Make sure the 'Mixer buses for mixer preset 1' node is expanded in the left-hand browse list, and select the 0010 entry (group) in the left-hand browse list. In the right-hand pane, change its name to (for example) 'All speaker pairs', and tick primary buses 0010-0013 to put them in the group, then OK the screen.



Now go to the *Organ settings | Rank routing ...* screen. For each rank listed in the left-hand list, use the 'Rank output perspective 1 (front 1/main): Destination mixer bus/group' setting to route the rank to the desired one of your four primary mixer buses (0010 'Division A speaker pair', 0011 'Division B speaker pair', 0012 'Division C speaker pair', or 0013 'Division D speaker pair') according to the rank's division. For example, you might choose to route all the organ's Pedal ranks to 'Division A speaker pair', its Great ranks to 'Division B speaker pair', and so on. (Note that you can highlight multiple ranks at once in the left-hand list, in order to change their settings simultaneously.)



Draw a single virtual stop and play it. You should hear pipes sounding through the pair of speakers (primary bus) to which you routed the stop's rank. On the mixer screen, note how the virtual audio activity LEDs illuminate for the corresponding primary mixer buses – a useful aid

Load any other organs you may have and use the *Organ settings | Rank routing ...* screen to assign their ranks to the desired bus groups.