

## CROSSOVER PROGRAMMING FOR 10C SPEAKER

Before beginning programming, I will explain how to operate the menu system, which is very simple and intuitive once you understand the basics. It will then be easy to do the programming.

To get to a menu, select whatever input or output channel you want to adjust. Just press the button under that channel and the menu for that channel will appear in the display.

Most menus consist of several pages. The page number is in the upper right hand corner of the display and also includes the number of pages in that menu. For example, the menu for an output channel has 8 pages. If the menu happens to be on page 2, you will see "2/8" (page 2 of eight) displayed on the screen. By pressing the "PAGE" keys, you can move forward or backward through the pages of the menu.

Most of the menu pages have several options listed. Behringer refers to these as "parameters". By pressing the "PARAM" keys, you can move forward or backward to highlight the parameter that you want to adjust.

When you have the correct parameter highlighted, you can adjust it by turning the front panel knob either clockwise or counter-clockwise. When you have the correct value selected, you exit the menu by pressing the channel button again.

In addition to menus for the various channels, there are also menus for some special functions such as "mute" and "setup." The menus for these are adjusted in the same manner as the channel menus. Now let's proceed to program the crossover for the Modell0c speaker system:

- 1) Turn on the crossover, wait for it to finish its startup routine, and then press the "SETUP" key. You should be on Page 1 of the menu and the parameter "Out Configuration" should be highlighted. If not, use the page and parameter buttons to get there

The display will probably be showing the configuration for a 3-way system, which will be LMH~LMH (Low, Midrange, Hi for two channels). You need to change it to a 2-way system, which will be LHLHLH (Low, High for 3 channels). Turn the knob clockwise two clicks until the LHLHLH configuration is shown, and then press the "OK" key. Press the "SETUP" key again to return to the main menu. You should see the 2-way configuration shown on the screen.

- 2) Select the menu for the woofers by pressing the button under output channel 1. Go to page 2 of the menu. Here is where you will set the correct crossover frequency, filter type, and slope.

Note that this page also allows you to install a rumble filter, whose parameters are on the left side of the screen. The rumble filter probably is already set for 20 Hz using 24 dB/octave Butterworth filters (shown as 24BUT on the screen) so you need not adjust it.

Note that the display will show you a frequency response graph where you will see the low frequency roll-off of the rumble filter. It also shows the crossover slopes, filters, and frequency.

Look at the right side of the screen where you will see the parameters for the crossover frequency, filter type, and slope. Change the filter type and slope by highlighting "Type" and turning the knob clockwise until you see "L-R48." This will install a Linkwitz/Riley filter at 48 dB/octave.

Adjust the crossover frequency to 172 Hz by highlighting "Freq" and turning the knob Counter-clockwise until 172 shows on the display.

- 3) Now we will do the same adjustments for the electrostatic panels. Select the menu for the panel by pressing the button under output channel 2. The display will be on the same page as it was for the woofer, but will adjust the panel parameters instead.

As with the woofer page, there will be parameters for adjusting the crossover and the roll off. But in this case, the roll off will be for the high frequencies instead of the bass frequencies. You probably will see that the roll off is turned "off" and the high frequency line will be flat, not rolled off. You may leave it that way, no adjustment is necessary.

Look at the left side of the screen to see the parameters for the crossover slope and frequency. Adjust them as you did for the woofer (172 Hz and L-R48), and you will see the display show a symmetrical crossover pattern at 172 Hz.

- 4) Go to Page 3 where you can adjust the equalization. Begin by turning the equalization "On." There is a parameter in the upper left corner of the screen for doing so.

Highlight the "Type" parameter where you can set the filter type. Select "LP" (for Low Pass). Set the frequency by highlighting "Freq" and set it to 243 Hz. Highlight the filter slope parameter (which looks like an angled arrow) and set it to 6 dB. Highlight the "Gain" and set it to +14 dB.

- 5) Switch back to the woofer menu by pressing the output channel 1 button. Set the woofer equalization as above using the following values:

Turn the equalization "On"

Set the frequency to 38 Hz

Set the "Gain" to +8 dB

Set the type to "LP" et the slope to 12 dB

- 6) Go to page 8. Switch to the panel menu by pressing the output channel 2 button. You will now time-align the speaker by delaying the sound coming from the panel by 0.32 milliseconds to it arrives at the same time as the sound from the woofer. Turn the delay "On." Then highlight "Short" and adjust the delay time to 0.32 mS.

- 7) Return to the main menu by pressing the output channel 2 button again. Turn off the automatic mute feature by pressing the "MUTE" button. The mute menu will pop on the screen. Press the "CANCEL" button to turn muting off. Press the "MUTE" button again to return to the main menu.