To design and build a ported bass cabinet featuring the CF18VJD loudspeaker
A ported or reflex cabinet is a simple box enclosure with one or more holes (ports) added on the front baffle. For most PA uses, this offers the best option for building a clean sounding loudspeaker cabinet that makes the most of the bass driver used. The addition of the port can extend bass driver performance and will also marginally improve the speaker's low frequency power handling and efficiency. The energy from the front of the driver is radiated to the outside world. But the sound from the back of the speaker also has an effect, as it vibrates the air in the port(s). This has a resonant frequency, like an organ pipe, adding to the sound output of the system. If the port(s) are designed correctly, the additional energy will extend bass performance without adding distortion or sacrificing a smooth response.

As with all ported boxes, it would be sensible to use with a high pass filter. This will ensure that no high level input is presented to the box below its lower limit. This is because, for very low frequency signals, the driver becomes unloaded, (i.e. the box effectively disappears.) Under these circumstances, driver excursion increases rapidly and the potential for driver damage is significant.

For this CF18VJD cabinet, a suitable value for this filter is 33 Hz. A sharp corner to the cut-off would be desirable, so a 24 dB/octave Butterworth filter or similar is recommended.

The cabinet should be built as a solid and non-resonant box with well sealed and secured joints. This particular design uses 18mm plywood the advantages of this are strength, durability and availability.

The panel joints shown are simple butt joints that are screwed and glued. For those with advanced woodworking skills, more sophisticated joints can be used. Whatever joint type you use, it is important they are secure and airtight. In addition, to reduce panel resonances, bracing battens have been added.
CF18VJD Bass Cabinet: System Response Curves

- Unfiltered SPL Response (predicted)
- Impedance Response (measured)
Cabinet Plan
External and Port Dimensions
Cabinet Plan
Internal Bracing Dimensions
Cut-Out Guide
2.4m x 1.2m Sheet (8’ x 4’); 18mm Birch Plywood