



POWERPIPE PORT TUBE LENGTH TECHNICAL NOTE

FOLLOW THESE BEST PRACTICES WHEN MODIFYING POWERPIPE PORT TUBE LENGTH

NOTE: The PowerPipe subwoofer is a fully integrated, tuned system. Port tube length directly affects frequency response and overall performance.

1. A PowerPipe subwoofer is a completely integrated design comprising the transducer, enclosure, and port tube. It is a sophisticated bandpass system with both a low frequency cutoff. Any change to the tube length will affect the tuning of the system.
2. The graph below illustrates the effect of tube length on frequency response. The red curve represents a correctly tuned PowerPipe, with approximately 89dB sensitivity at 1W, a lower -3dB point around 25Hz, and an upper -3dB point around 90Hz.
 - A tube twice the correct length (black curve) shifts both the lower and upper cutoff points down, reducing efficiency and tilting the response curve.
 - A tube half the correct length (blue curve) raises both cutoff points and increases efficiency, tilting the response curve in the opposite direction.
3. Note the port noise levels are not reflected in the simulation, making it difficult to predict the audible impact of each tuning variation.
4. With careful use of EQ and additional amplifier power, a tube modified by up to 50% may still be acceptable in an installation. However, James recommends limiting tube length changes to approximately 6 inches from the supplied length, which in all cases remains under a 50% change.
5. If your installation requires a significantly longer tube run, James engineering may be able to modify the port diameter to achieve the performance you need. Please contact the James engineering group for assistance.