

ABSTRACT

Commissioning an Electron Gun

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All electron guns must be commissioned before they can be used in a beam line. The commissioning of an electron gun refers to the process of placing the gun under vacuum and outgassing the cathode and high-voltage apparatus. Electron guns require a vacuum of at least 10^{-6} torr in order to function safely. Any worse and the electrons may interact with the residual gas and may backfire into the gun, causing damage to the electronics. The gun should first be baked, then cleaned, and then finally run; first without current, then without voltage, then with both, with the inhibiting grid at maximum. This procedure will ensure that the electron gun is properly commissioned and ready for use. This procedure was developed and used at Fermi National Accelerator Laboratory.