

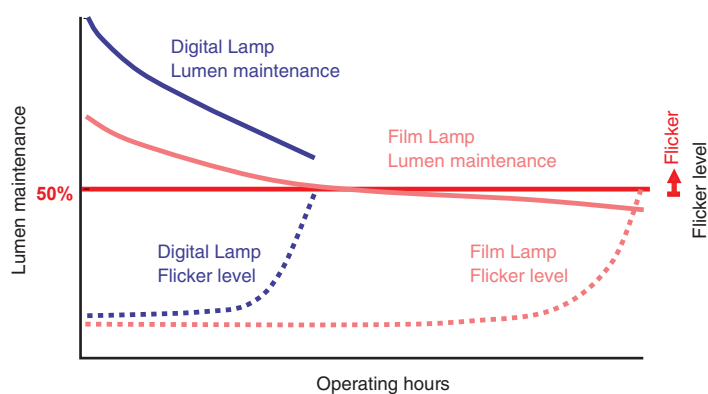
02 Differences in Lamp Life Characteristics for Digital and Film Cinema Projectors

Projector lamps for digital cinema are designed for higher luminance than those for film cinema. Specifically, the current density at the electrode tips, thermal energy generated per unit of arc length, and electrode temperature when lit are all higher.

As the electrodes are depleted due to high temperature, the following phenomena affect lamp life:

- Arc current density decreases as tip diameter increases, and the resulting decrease in luminance degrades lumen maintenance and increases arc instability which creates flicker.
- The bulb is blackened by metal vapor deposition from the depleting electrodes, which lowers the lumen maintenance factor due to reduced bulb transmittance, and may cause bursting due to the higher bulb temperature resulting from thermal absorption in the blackened area.
- Flicker results from movement of the arc light spot due to deformation of the electrode tips.

Digital cinema lamps tend to have a shorter life than film cinema lamps because the hotter electrodes required to provide the higher luminance characteristic are depleted faster.



It is possible to install film cinema lamps in some digital cinema projectors. Although a lamp specifically designed for digital cinema normally provides bright, high-quality images, different lamps may be used to obtain the desired brightness.