

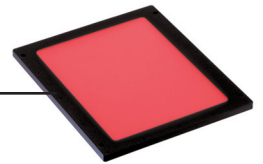
In this Tech Tip, we will discuss the differences between standard diffuse backlighting, and collimated backlights, when used in machine vision applications.

In order to examine the differences, we have chosen a transparent map pin, as an example target object. The example clearly shows significant differences between backlighting types, when all backlights might be expected to give similar results.

Illumination Used:

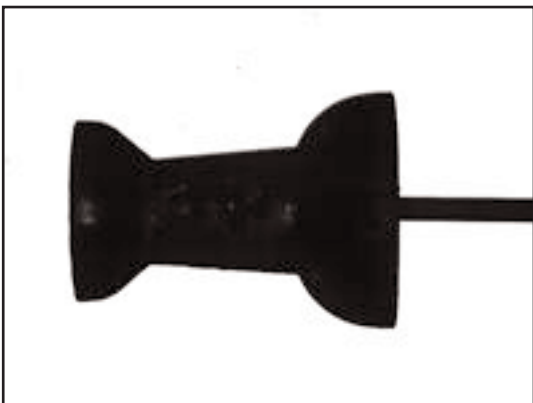
MFU Collimated Backlight illuminator

LFL Backlight Illuminator



Illuminated using the MFU-34x30-BL

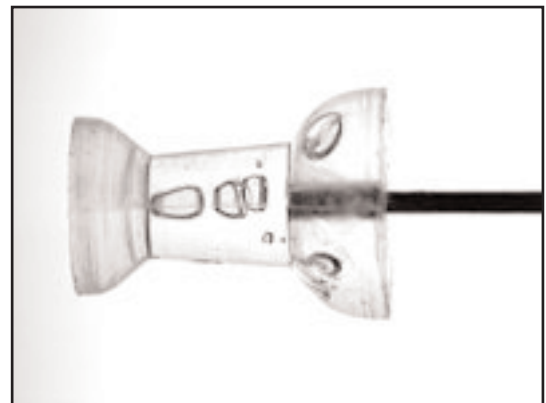
The MFU series are collimated illuminators that can be used as backlights. They are designed to inspect objects which require high accuracy such as setting pins or tips of drills, etc.



Even when an object is transparent, the resulting image appears as a black silhouette because of the collimated illumination. This occurs when the collimated light passes through the transparent resin and is refracted, so that the light does not pass into the camera. This technique can be used to accurately check the dimensions of transparent objects.

Illuminated using the LFL-100

The LFL series are flat backlights using diffused LED illumination. These backlights can detect various simple defects and errors. Liquid levels in clear glass bottles can also be inspected.



If diffused light is used as backlight, as is the case above, the light can pass through the transparent object making any internal air bubbles or embedded metal parts clearly visible. These imperfections can then be easily recognised. This technique can be used to check on the quality of the moulding process.

This lighting technique has been adapted by kind permission of our lighting partner, CCS Inc. who supply the lighting units used in these examples.