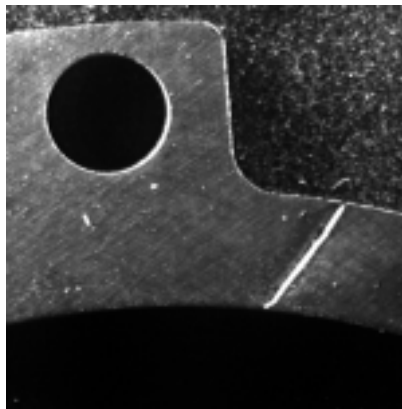


APPLICATION NOTE: 204

Application: Scratch Detection on Clutch Plates

Problems:

- 1) Proper Structure for all Scratch Orientations
- 2) Creating High Contrast for Small Scratches
- 3) Flat Reflective Surfaces Causes Unwanted Glare



Small Pits and Randomly Oriented Scratch on Clutch Plate

Solution:

Surface flaw detection is especially difficult when the surface is shiny and the scratches are randomly oriented. Most lighting schemes create glare from the surface, or smaller unwanted glints that are interpreted as defects by the vision system. Much of the glare and many of the glints can be reduced by using Polarizer/Analyzer attachments. While this technique will work in some applications, the resulting loss in intensity significantly reduces lamp lifetime. In addition, the defect may be visible in the resulting image, but the contrast ratio may be insufficient for reliable defect detection under all real world conditions. This is especially true if the orientation of the small scratches are random.

To solve this problem, the structure of the light must be low angle, highly uniform, and symmetric about the camera axis. Our DRI solution is designed specifically for these types of applications. The DRI solution ensures the proper structure for reliable surface defect detection, independent of the defect orientation. The DRI's high uniformity ensures that the signal intensity from each scratch is a viable measure of its actual size. The above image is representative of how this solution works for the basic detection of scratches, pits, digs, pinheads, and other surface defects.

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