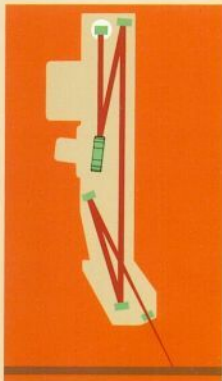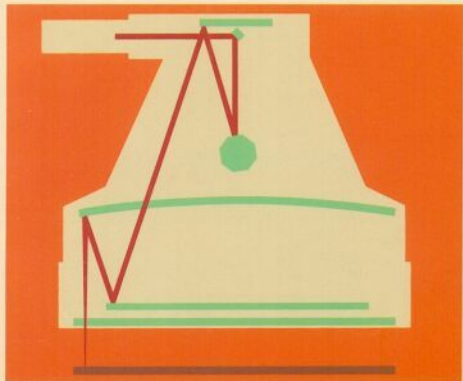# The SICK Scanners

## Uniform scanning
## with the telecentric system





The SICK Scan System utilizes lasers. The laser beam strikes the material being inspected, and either penetrates it or is reflected. To achieve consistent inspection accuracy over the entire scan width, the laser beam must travel parallel to itself, i.e. always at the same angle to the material.

To satisfy this requirement the SICK Scan System operates with a telecentric beam (SICK patent). A precision-ground parabolic mirror produces a parallel beam with a constant light spot size over the entire scan width. Each defect is therefore evaluated equally in the receiver. With its high scanning frequency, the laser beam scans every millimeter of the material, line by line. The laser light spot travels across the material at a speed of up to 6.7 km per second.

Different light sources can be used in SICK-Scanners such as He-Ne-Lasers, IR Semiconductor Lasers and Argon-Ion-Lasers. Single as well as simultanious operating in one scanner.
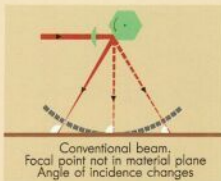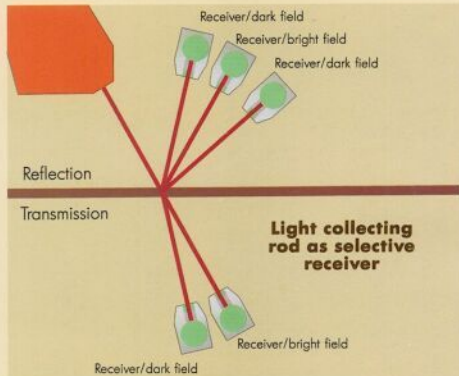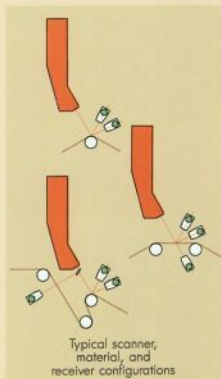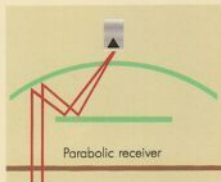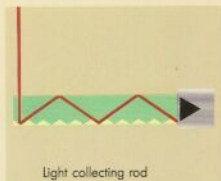


Conventional beam.
Focal point not in material plane
Angle of incidence changes
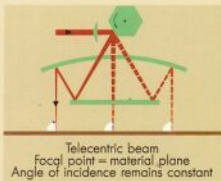


Telecentric beam
Focal point = material plane
Angle of incidence remains constant

# The SICK Receivers

## Selective signal reception for better defect discrimination



Light collecting rod



Parabolic receiver



Receiver/dark field

Receiver/bright field

Receiver/dark field

Reflection

Transmission

**Light collecting rod as selective receiver**

Receiver/bright field

Receiver/dark field



Typical scanner, material, and receiver configurations

The receiver configuration is freely adjustable within wide limits, thus enabling the receiver system to be ideally adapted to defect characteristics.

The receiver system operates with two different types of receivers.

The light collecting rods of the SICK Scan System are a patented design: the laser beam entering perpendicular to the light collecting rod is deflected by a microprism reflector such that it utilizes total reflection and reaches the photo detector with negligible loss of power.

Consequently, the SICK Scan System requires only comparatively low laser power for operation. The parabolic receiver concentrates the reflected light of an entire scan line onto one point, enabling even down web streaks in emulsion layers to be detected.