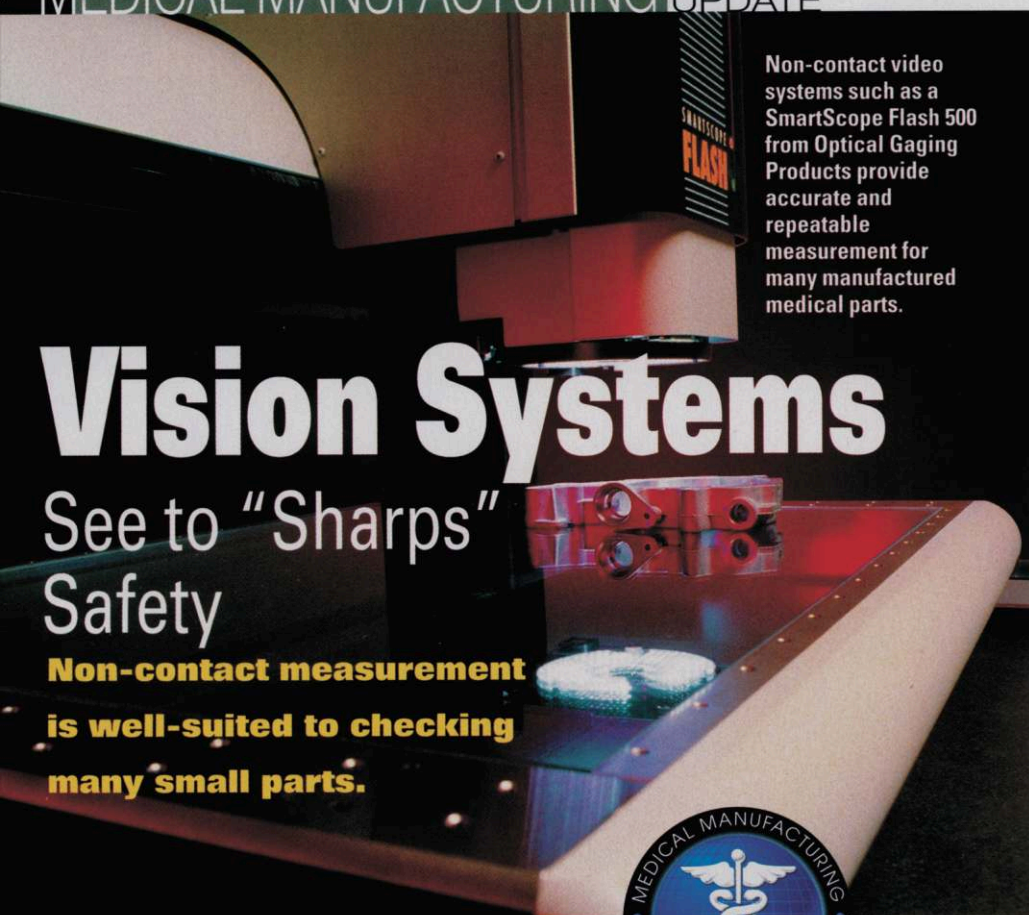


Non-contact video systems such as a SmartScope Flash 500 from Optical Gaging Products provide accurate and repeatable measurement for many manufactured medical parts.

# Vision Systems

## See to "Sharps" Safety

**Non-contact measurement is well-suited to checking many small parts.**



**William Verwys**  
Applications Engineering Manager  
Optical Gaging Products Inc.



Manufacturers of intravenous catheters and hypodermic syringes, sometime called "sharps," are designing mechanisms to protect healthcare workers from accidental puncture. If the mechanisms are to work flaw-

lessly, manufacturers must maintain and verify the devices' dimensional tolerances. Non-contact vision systems are just the ticket they need to measure these small parts quickly and accurately.

Not surprisingly, heightened concern for blood-borne disease transmission has led sharps manufacturers to develop several ways to protect workers. One method retracts the sharp point into a device's plastic body when it is removed from the patient, similar to a ballpoint pen. Another uses metal "fingers" to sur-

round the point and shield it from the user.

Typical sharps are about 0.5 mm diameter. With

design tolerances of  $\pm 0.0005$  in., or smaller, video measuring machines are often used to verify these critical dimensions. Video measurement has a number of advantages:

**Measurement is non-contact.** Since only images are measured, there is no part deformation from contacting the part, especially important for pliable and thin-walled plastic components.

**Different areas of small parts can be measured in one setup.** Programmable zoom lenses provide a wide range of magnifications. For example, overall outer dimensions are measured at low magnifi-

cations with backlight illumination for highlighting edges. Small metal components are measured at high magnifications with appropriate surface illumination for these typically cylindrical parts.

**Part shrinkage can be quantified.** Parts can be measured while still warm from the mold and again as they cool.

**Parts need no surface preparation.** This is true for transparent, translucent, and opaque parts of any color.

**Systems are accurate and repeatable.** For example, a typical OGP SmartScope Flash 500 system provides gage repeatability and reproducibility (GR&Rs) of <10% at typical tolerances.

Sharps sell for only few dollars each, so their measurements must ensure quality without adding costs to products. Video measurement is advantageous because after creating a measurement routine for a single part, it is easily repeated for a series of parts. It's also possible to measure fixtured batches of parts at one time without user interaction. And for plastic parts, magnified images also reveal imperfections in the injection mold.

Artificial knees and hips also have critical surfaces requiring non-contact measurement. And implantable devices require high magnification inspection and measurement. In fact, parts requiring fast, accurate measurements are candidates for video measurement technology. ■

## Ouch! 600,000 accidental needlesticks

Sharps require sharp points to puncture patients' skin. The downside is it's not unusual for nurses and doctors to accidentally stick themselves when handling the devices. In fact, one out of every seven U.S. healthcare workers is accidentally stuck by a contaminated sharp every year. It has been estimated there are over 600,000 accidental needlesticks annually leading to 1,000 infections and over 100 deaths.