

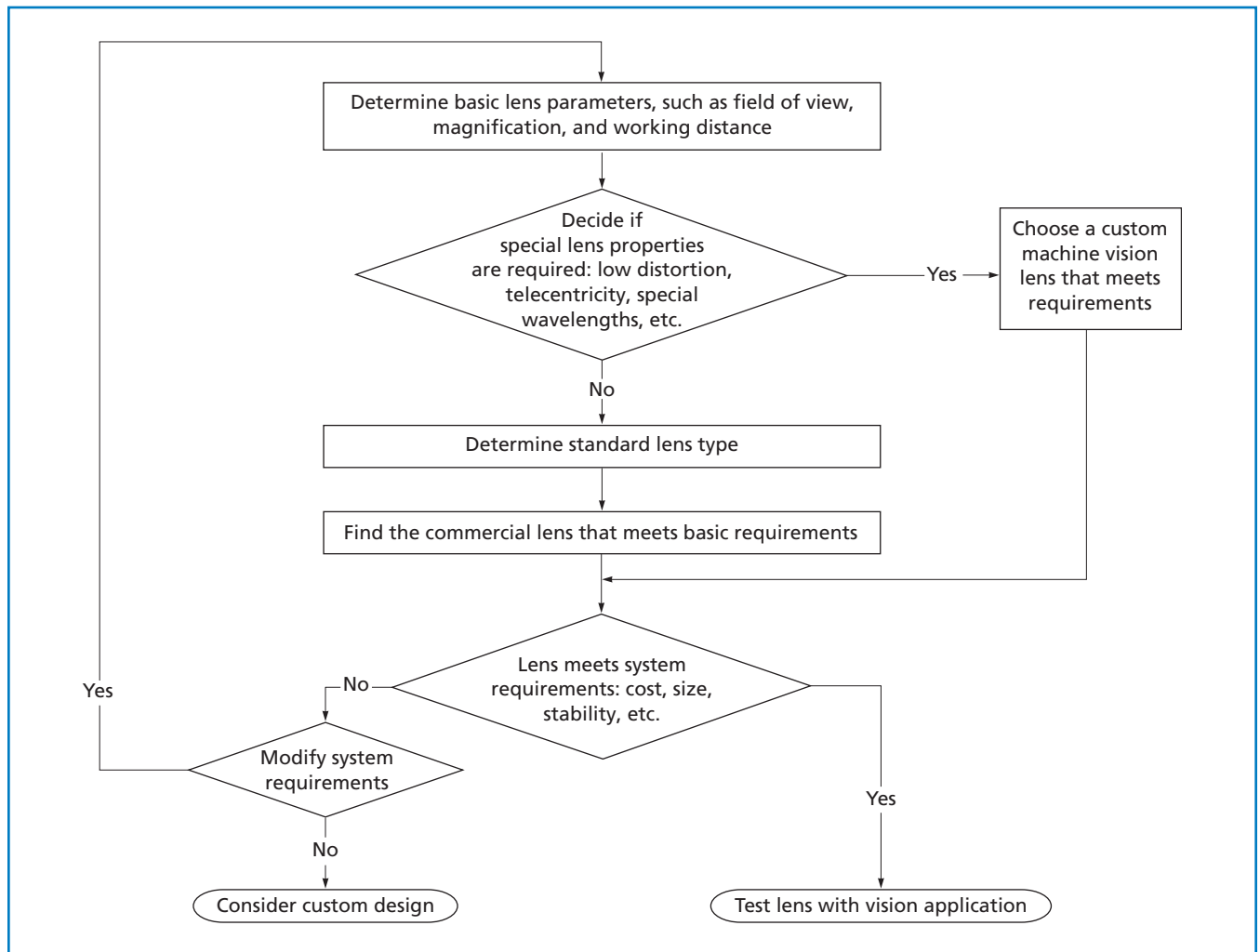
# Choosing a Custom Lens

In many cases, the front-end optics for machine vision can be built using off-the-shelf components. Camera, lens, and lighting manufacturers offer a variety of standard products, many of which are specifically designed for machine vision applications. The following pages contain useful information that will help you choose the appropriate components for your front-end optics.

- The field of view required to attain the necessary resolution cannot be achieved using a standard lens.
- The space available is too small to fit a standard lens.
- In addition to precise centering, a change of magnification is required.
- The required depth of field cannot be achieved with a stationary lens.
- The area of interest is not readily accessible with a standard lens.

The decision to design custom front-end optics, especially using a custom lens, should be considered very carefully, because the time and cost can be significant. However, since the lens is critical to system success and custom lenses can provide performance, size, and stability that are not available from standard commercial lenses, the extra expense is often easily justified.

A clear understanding of the system's optical requirements is key to choosing a lens. The figure below can be used to determine whether a custom lens is needed.



**Determining the need for a custom lens**