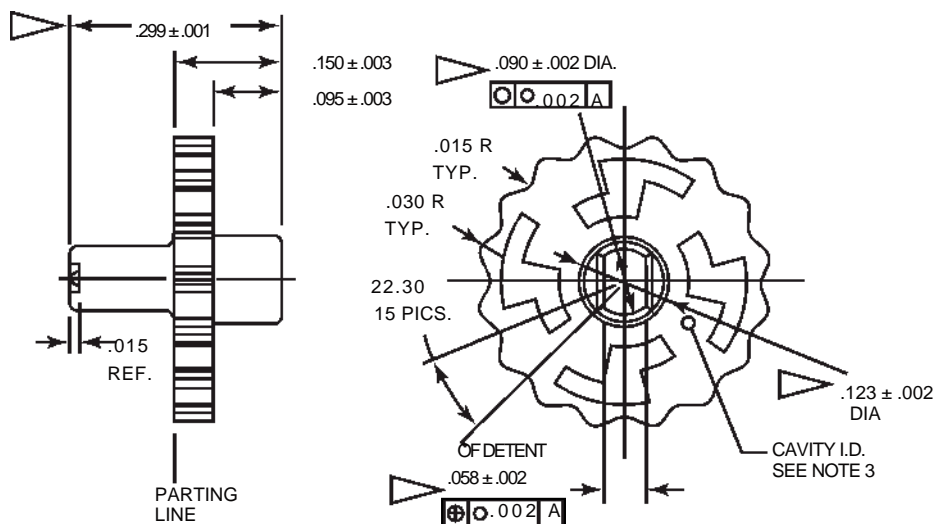


# Quality Overview 100

Quality manufactured parts must meet design specifications. Blueprints of the parts show what the dimensions of the parts need to be. However, tolerances are usually allowed in the manufacturing process. Tolerances are an acceptable variation from the specified dimensions of a part.

The partial blueprint below shows that some tolerances are  $\pm .001$  inch while others are  $\pm .002$  and  $\pm .003$  inch. These tolerances are in thousandths of an inch.



Print supplied by Grayhill, Inc.

The one dimension is shown as  $.095 \pm .003$ . This means that the part is designed to have a dimension of .095 inch, but the part can be manufactured .003 inch less or .003 inch more and still be an acceptable quality part.

Maximum acceptable dimension =  $.095 + .003 = .098$  inch

Minimum acceptable dimension =  $.095 - .003 = .092$  inch

If the part is not manufactured with a dimension from .098 to .092 inch, the part will become scrap.

### EXERCISES:

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1. The radius of a manufactured part is indicated on a blueprint as  $.411 \pm .002$  inches. Determine the acceptable maximum and minimum radius if dimensions are in inches.
2. The specified dimension of a part is .150 inch. The blueprint indicates that all decimal tolerances are  $\pm .005$  inch. Determine the acceptable dimensions for this to be a quality part.



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