

# Geometric Dimensioning & Tolerancing | eLearning Course with Virtual Simulator

**Location Tolerances - V19017-CA08XEN-E1**

Objective 5: Describe How to Interpret a Position Tolerance and Give an Application

**Position Tolerance**

The part drawing shown shows how a hole would be toleranced using GD&T's position tolerance method.

The location of the hole center is identified using basic dimensions.

The position tolerance is shown in a feature control frame as a geometric tolerance.

This feature control frame is placed under the dimension for the hole because it is a feature of size.

Ø 8 ± 0.2

Position Tolerance

10

10

-C-

-B-

-A-

Ø 0.7 M A B C

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## eLearning Course: MB727

Amatrol's geometric dimensioning & tolerancing eLearning course (MB727) provides a comprehensive education on general dimensioning & tolerancing (GD&T), which is a system used to describe tolerances for more complex geometric features. Sample topics include: placing a datum feature symbol on a drawing, describing the reasons why GD&T is used, and using position tolerances for the location of multiple features. After giving learners an overview of GD&T, the curriculum focuses on three main areas: location tolerances; orientation tolerances; and form tolerances.

## Teach Hands-On Skills

### What is Conventional Tolerancing? What are Bilateral and Unilateral Tolerances?

A tolerance is the total amount by which a specified dimension is allowed to vary. One way to specify a tolerance is to show the plus and minus tolerance value next to nominal dimension. This is called conventional tolerancing. There are two ways conventional tolerances are specified on a drawing: bilateral and unilateral tolerances.

A bilateral tolerance means that the actual dimension can be either larger or smaller than the dimension shown on the drawing. If the amount of variation in either direction is the same, the bilateral tolerance is indicated. In some cases, the tolerance of a dimension must be made smaller in one direction than another because of the design needs of the part or the assembly into which the part is being assembled. To deal with this, two tolerance numbers are used.

In certain cases, the dimension of the part can only be allowed to vary in one direction. The amount that the dimension can vary in this one direction is called a unilateral tolerance.

## Interactive eLearning

### Engaging, Highly-Interactive Multimedia

Amatrol's curriculum features a highly-interactive, multimedia format that includes stunning 3D graphics and

videos, voiceovers of all text, and interactive quizzes and exercises designed to appeal to learners with different learning styles. Virtual simulators also replicate measurement equipment in realistic detail to allow learners to practice skills in a virtual environment before transitioning to real equipment. The combination of theoretical knowledge and hands-on skills solidifies understanding and creates a strong basis for pursuing more advanced skills.

## **Virtual Simulator**

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### **Virtual Trainer for Online Geometric Dimensioning & Tolerancing Skill-Building**

The geometric dimensioning & tolerancing eLearning course also features a virtual multimedia trainer! Amatrol's virtual trainers replicate hands-on equipment in such great detail that learners will feel like they are using the actual equipment. Learners will perform essentially the same tasks using virtual trainers that they would perform using equipment hardware. Transition from theory to hands-on is a seamless process.

## **Additional Info**

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### **Requires:**

- Computer: [See Computer Requirements](#)

### **Options:**

- Measurement Tools 3 Learning System (96-MES3)
- Amatrol SkillTrace Software (94-ST1)

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#### **Address**

**Amatrol  
2400 Centennial Blvd  
Jeffersonville, IN 47130**

#### **Contacts**

**email: [contact@amatrol.com](mailto:contact@amatrol.com)  
phone: (800) 264 8285**