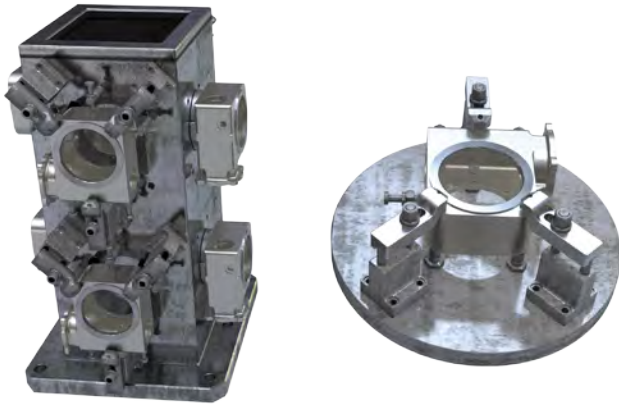


FIXTURING FUNDAMENTALS FOR MACHINING

eLearning courses designed to increase productivity and profits



Learning made Simple, Visual, and Interactive

Fixturing, or workholding, is an important and yet often overlooked process in the manufacture of parts and products. A wide variety of cast and forged metallic parts require proper fixturing setups in order to be machined according to specifications. The cost per part can be drastically reduced if proper fixturing is considered and implemented. This course provides a practical, experience-based approach to fixtures and fixturing procedures. After taking this course, learners will have an improved understanding of fixturing processes and be empowered to make better, more efficient decisions for their industry.

Credit Hours **2**

Learning Objectives

- Recall the 3-2-1 Principle.
- Recognize basic fixturing components such as pads, clamps, and baseplates.
- Identify the common machining centers and how each relates to fixturing.
- Understand the cutting forces involved in common machining operations.
- Differentiate between the various datums applied in fixturing.
- Recognize basic concepts such as averaging and locator application.

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I. Introduction to Fixtures

- What is Fixturing?
- The Need for Communication
- The 3-2-1 Principle
- 3-2-1 Tips
- Basic Components
 - o Fixtures
 - o Supports and Stops
 - o Pads
 - o Clamps and Clamping Tips

II. Machining Considerations

- Machining Centers
 - o Horizontal Machining Center (HMC)
 - o Vertical Machining Center (VMC)
 - o Vertical Machining Center (VMC) Indexer
 - o Vertical Turning Center (VTC)
 - o Horizontal Turning Center (HTC)
- Cutting Forces and Direction
 - o Face Milling and End Milling
 - o Boring
 - o Drilling
 - o Reaming
 - o Tapping

III. Applied Concepts in Fixturing

- Datums
 - o Casting Datum
 - o Machining Datum
 - o Functional Datum
- Averaging
- Averaging Aids
- Locators
- V-Locators

