

FMA

Precision Press Brake Certificate



Topic Areas and Learning Objectives

Primary Types and Methods

- Know and understand basic precision sheet metal vocabulary terms
- Describe precision hand measurement tool care and its use
- Understand press brake types and forming methods from mechanical to electric press brakes
- Understand bending methods including air, bottom, and coin bending

Calculations and Blueprints

- Understand fundamental mathematic concepts used in a fabrication shop from basic calculator functions through right angle trigonometry
- Know and understand bend functions, how to develop bend allowance, bend deductions, setbacks, and mold lines
- Understand blueprint interpretation for sheet metal including Y14.5

Punches

- Understand press brake punches including the types, styles, uses, and limits of each
- Know press brake load limits as compared to tooling limits
- Know the differences and effects of various methods (air, bottom, or coin) on tooling selection

Dies

- Understand press brake dies including the types, styles, uses, and limits of each
- Understand how to make proper die selection to achieve desired results from engineering to the shop floor

Forming

- Understand forming types including sharp, radius, and profound radius bends
- Understand cold forming, warm forming, and hot forming and the effects of heating and cooling materials
- Understand basic plate forming issues including cracking, bend reliefs, grain direction, and various forming tools
- Selection and application of effective forming strategies

Additional Tools and Methods

- Describe other press brake tools and methods
- Understand deep box forming using balanced and unbalanced tooling
- Understand bump radius bending technique
- Know the basics of urethane forming and understand durometers (how to work with both low and high durometers) and pad volumes

(continued) Topic Areas and Learning Objectives

Bottom Bending

- Describe bottom bending and how it works
- Understand the proper use and application of bottom bending, if and where the method is used
- Know the safety issues of bottom bending and discuss the dangers of the process on the parts and to the machine

Press Brake Safety

- Describe basic inspection and quality control functions on the shop floor
- Understand general sheet metal safety practices and safety issues specifically concerning the press brake
- Describe OSHA regulations and unacceptable safety practices