

Press Brake Technology: Precision Press Brake Theory and Operations

Description:

Is a one to three day course that can encompass work problems and supervised hands-on operations. That will take both beginning and experienced press brake operators from the basic mathematical background of precision sheet metal working to the most advanced concepts and operations of a press brake. This will be accomplished beginning with basic math, algebra and trigonometry, not taught as math courses rather as a calculator operations course, allowing the student to solve for bend functions, find the triangles on blue prints and find the missing values. Once the mathematics has been covered the course turns to defining and calculating the bend functions, i.e.: Bend Deductions (BD), OutSide-SetBacks (OSSB) and Bend Allowance (BA), etc. and their relationship to bend deduction charts and flat pattern layout. How the part is unfolded and how the flat pattern is developed are covered next, teaching the student how the math and bend function come together to create a good part.

The second part of the course begins with a discussion of the various types of press brakes, the good and bad points of each design as well as the safety concerns of each. Press brake controllers and programming are covered at this time. Each student will then discover the principals behind the three different methods of forming i.e.: Air forming, Bottom Bending and Coining. This is followed by the basics of proper V-die selection and the effect of correct calculation vs. “rule of thumb” methods. They will learn about the 20% rule of air forming and how V-die selection can and will affect the inside bend radius and thereby changing the bend functions, i.e.: BA, BD, OSSB, etc. The attendees will also learn why die angles change, the reasons behind it and how it is applied in day to day operations.

Press brake punches are discussed next; the operators, designers and engineers will learn how to select the right punch for the right application and type of bend; be it sharp, radius, or a profound radius bend; air-forming, bottom bending or coining. They will also learn the effects of using sharp bends, both the negative and the positive aspects of this type of bend. General press brake safety is covered as well.

Audience:

The two-day seminar is aimed at engineering, account managers and the already skilled press brake personal. The three day course is much more in-depth and aimed at new and lesser skilled operators.

Learning Objectives:

- To bring a common language and understanding of press brakes and their operations to engineering, design and operations.
- Provide each attendee with the ability to calculate and apply all of the bend functions to real world situations.
- An understanding of the different methods of forming (air, bottom and coin) and their relationships to the different types of bend (sharp, radius, and profound radius).
- To learn the times and situations where sharp bends are required and where the sharp bend becomes a detriment to the forming process.
- Provide each attendee the necessary understanding of the 20% rule or air-forming and its effect on bend deduction and inside radius.
- Proper V-die and punch selection as well as the proper installation of each.
- Learning to calculate the tonnage limits of the punch, V-die and the press brake. Avoiding permanent damage to the equipment and injury to the operators.
- Press brake safety.
- The effects of springback on the final part and its relationship to the part design, forming order and press brake tooling selection.
- Proper use of common hand tools.

Recommended attendee packets include:

- A copy of Lasers, Punches, Press brakes and Shears ©1999 or Precision Press Brake 2nd edition. Both the printed versions but also the interactive versions of the texts.
- One copy of ASMA 5.0 software. This software places all of the information from the course into a user-friendly format.
- Printed version of the PowerPoint presentation
- CD containing 10-years of the Precision Sheet Metal Chronicle.
- CD containing related published articles by Mr. Benson

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