How to Properly Use CNC Bending Machine Electronics For Optimal Results

Detail Introduction :

Most operations nowadays have some form of bending machine. These machines, mostly CNC-based, allow for a high degree of flexibility in the work that can be done. The reason for this flexibility is the electronics running these machines. CNC electronics are highly programmable and allow for an extensive library of programs that contain operations that aid in bending metal and plastics. Here are a few tips on how to properly use your bending machine electronics for optimal results

Controlling CNC Bending Machine Electronics

Controlling CNC Bending Machine Electronics is vital to the success of your project. Because CNC machining processes are so precise, they need controls that are just as precise and reliable, or the entire process can be ruined. Controlling CNC Bending Machine Electronics is commonly done with a computer program. This allows for extreme precision in controlling the machining process

There are four main components to any CNC Bending Machine: a motor, a drive system, software and a controller. The motor is used for moving the machine along axes. A drive system is used to control the movement of the motor. The software is used for creating models and designs, as well as for programming parts into the machine. The main component of Controlling CNC Bending Machine Electronics is the controller, which dictates how each part of the machine operates.

The controller is responsible for interpreting data from all three other components of your CNC Bending Machine, then using that data to create the final product based on your specifications. The controller uses commands generated by the software to move each part of the machine along its respective axis, and then it triggers electrical signals that control motors and other components. Without a controller, your CNC Bending Machine would not be able to complete projects on its

How to Properly Use a Four-Axis CNC Bending Machine Electronics Controller 1. Plane Specification

CNC bending machine is a commonly used metal sheet processing equipment, widely used in furniture, automobile, shipbuilding, petrochemical, bridge and other industries. According to the different structure of CNC bending machine, it can be divided into two categories: mechanical transmission and servo transmission.

Mechanical transmission is a mechanical structure that transmits power through gears, chains and belts. The biggest advantage of this type of machine is its low cost. However, due to the long mechanical transmission chain, it has poor rigidity and large size. It has high requirements on the mechanical structure of the CNC bending machine and cannot be applied to mass production.

Servo control is an electric-hydraulic composite control method that uses a servo motor system to drive hydraulic elements to achieve precise control. The biggest advantage of this type of structure is that the electrical and hydraulic components are separated from each other, so they can work independently of each other without interfering with each other. Servo systems are more accurate than mechanical transmission systems and have good dynamic performance.

How to Properly Use a Five-Axis CNC Bending Machine Electronics Controller 1. Defining Planes

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1. Defining Planes

The first step is to define the planes that the machine will be working within. Along with the Y and Z axes, there are three additional planes that will be defined in order to lay out the work space:

The X axis is generally parallel to the rollers of the machine, where it defines the length of material which is being considered for bending.
Y axis is perpendicular to X and determines how much of that length is used for bending.
The Z axis is generally perpendicular to the Y axis and parallel to the direction of movement. It determines how much material is needed for each bend.
The A axis runs perpendicular to X and Y (it also rotates) and determines how much material is used for each bend.
The C axis is parallel to X and Y on a given plane (it also rotates) and determines how much material is used for each bend.

How to Properly Use Two-Axis CNC Bending Machine Electronics Controllers 1. Mouse

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The mouse is used to set the coordinates of the bending machine, including the position, depth and angle of the bending. When you need to set up a coordinate system, you only need to mark a point in the coordinate system to indicate that this point is 0. The rest can be set according to this point. The mouse control system is usually used in conjunction with a keyboard. The two are mutually restrained and used together. This paper describes how to use the mouse.
1. Single-click: Press and release the left button once, that is, left-click once, can be used for marking coordinates and selecting functions;
2. Double-click: Pressing and releasing the left button twice in succession is called double-click;
3. Press: Pressing down on the left button without releasing it is called pressing;
4. Drag (drag): dragging refers to moving the item by pressing down on the left button without releasing it;
5. Drag selection (Drag Selection): Select an item by dragging;
6. Release: Release means that when you press down on an item, you release your finger from the left button of the

How to Properly Use Three-Axis CNC Bending Machine Electronics Controllers 1. Keypad

Three-axis CNC bending machine operates the processing procedures through the keypad for inputting instructions, and then the workpiece is processed by the servo system under the control of the controller.
Understanding and mastering the use of three-axis CNC bender controllers is a basic guarantee for high-quality bending processing. Here is how to properly use three-axis CNC bender controller.
3 axis bending machine using method:
1. The keypad switches on the controller are divided into ON/OFF switch and emergency stop switch. When starting up, first turn on ON/OFF switch, then wait all lights on and press emergency stop, then turn off the ON/OFF switch.
2. The X axis, Y axis and Z axis are controlled by foot pedal respectively during operation. Press it lightly to move forward with a small amount, otherwise it will be moving at a fast speed, if pressing it heavily then it will be moving at a slow speed which is convenient for accurately positioning workpiece.
3. During processing, when tool reaches its endpoint, please loosen foot pedal as soon as possible so that it can automatically return after reaching

What is Work Coordinate Systems?

Work coordinate systems (WCS) are used to move and control everything in the graphics window. It is a user-defined coordinate system that can be moved, rotated and scaled according to user requirements. By default, a WCS is located at the origin of the world coordinate system (WCS). Coordinates are specified relative to the WCS origin.
There are four different types of work coordinate systems:

Current - This is the work coordinate system that has been set as current. It is shown in blue within the application status bar.
Previous - This is the last work coordinate system that was set as current before you switched away from it. It is shown in red within the application status bar.
Active - This is the active work coordinate system; this type of work coordinate system cannot be modified by users. Its name appears after the word ACTIVE: in curly brackets in the application status bar. The active work coordinate system always retains its original position and orientation even after a WCS that was previously set current has been edited or deleted.
Named - These are also called "user-defined" work coordinate systems because they can be modified by users through commands or menu items. Their names appear under one of these two headings in the Application Status Bar: Named WCSs

Calculating the Fabrication of a Bend Using Work Coordinate System Master Coordinates

If you've ever bent a plate for a customer, you know that the customer typically supplies the bend line location. If you're very lucky, you may even get a CAD file from the customer. But sometimes you don't get the CAD file or any other information about where that bend line is on the part. Since this bend line is used to define where the flanges are, it's important to get it right.
In this post, I'll show how we can calculate this offset using Work Coordinate System (WCS) Master Coordinates. This WCS can be set up in many ways, but in this case we will set it up manually. We will pick two points and then calculate the coordinates of those points. We will then tell SOLIDWORKS to use those coordinates as our WCS origin and xy-plane location.
Once we do that, we can easily measure from the WCS origin to our bend line to get our flange edge coordinates and bend radius measurements. These values will allow us to determine how much material we have to cut off before bending so that we can accurately fabricate the part.

The key to getting the results you want when using CNC bending machine electronics is proper and efficient use of the controls and understanding of work coordinate systems.

The key to getting the results you want when using CNC bending machine electronics is a proper and efficient use of the controls and understanding of work coordinate systems.
Once you have determined what type of CNC bender you will be using and have gained an understanding of how the machine works, it is time to learn how to operate it. The interface for a CNC machine can vary greatly from simple to complex, depending on the type of machine you are using.
If you are using a CNC bending machine that has a CNC controller with a touch screen, oftentimes it will have a library of pre-written program files for producing specific bends in sheet metal.
Depending on the complexity and size of your project, this may save you time by not having to write every single piece of code yourself.
In order to use a program file from the library, first select it from the list on the screen. Once selected, input your variables such as material thickness, bend radius, and other information such as dimensions or angle required and hit “run”. The rest is done automatically by the machine!