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Free Download Udemy CNC Lathe program using G Code. With the help of this course, you can do CNC machine training for Lathes using fanuc G Code.This course created by Marc Cronin. He scored 4.1 out of 5 with a rating of about 10098. There are approximately 31601 users enrolled in this course, so don't expect to download yours now. This course also offers 1.5 hours of on-demand video, 37 Additional Resources, Full lifetime access, mobile and TV & Certificate Completion access. What Will You Learn? The program required a CNC Lathe and multi-axis machining center to work in a machine shop with a critical skill to make any possible part of multi-axis CNC machine Programming on CNC Lathe and machining centers to a professional level. This course will teach you all the procedures required to machine a piece of CNC lathe. This is a lesson for you if you get new to the world of turning CNC or you need to brush your skills. I cover everything from a simple punctured hole in the middle of the work piece to machining screw threads, working with the lower threads, using the Y-axis and much more to tool driven, milling and drilling. Learn how to program everything from 2 Axis lathes to multi-mile, multi-tar 8 Axis machining centers with propelled tools! This course includes: Program LayoutCenter line drilling and touchProcessed loopsThe latest cyclesThe latest processing Does not use driven tooling to make a mill on the Z Axis, and to use the Lower shaft to touch the Z Axis and Z Axis, or to use it as a reference on your machine to record it on your phone Much, much more! The techniques and practices used in this course will prepare you for a lifelong career as a CNC machinist. If you're completely new to the world of G Code programming I suggest you enroll in my basic course before this one. 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If you're a manual machinist, think of the CNC Machine as a manual machine with power feeds and DRDs (Digital Readings) on each machine axis. There's more to it than that, but if you think about the machine that way, once you know how to do it, you have an idea of what to do. And, really, not too much to learn. CNC Coordinate System for G-Code and Machines The first thing that needs to be understood is the CNC Coordinate System. Each machine has its own unique axis orientation, and you need to know how to steer your machine's axis. Some common types are: Mill Axis for Typical Vertical Machining Center. Note: Arrows show table movement in positive g-code direction. The hand is a needle movement and can be reversed! Typical 2-Axis Lathe For Lathe... The cylinders in each drawing represent the shaft of the machine. Be sure to take a look at exactly how the axis is placed on your machine. For example, horizontal mills revolve around the drawing i've shown significantly. Lathes can be much more complex than the simple 2-axis version I'm showing you. When there are 5-Axis and more axis, much more complex configurations are possible. For example, here is a 5-axis installation: 5-Axis Mill with Trunion Table ... Note that we add two rotations to the base mill diagram to provide the A-Axis and B-Axis. In general, A, B, and C are the axis that revolves around the axis formed by X, Y, and Z, respectively. Now that we know what coordinate systems are, how do we express coordinates in G-Code, how do we express coordinates in G-Code? Quite simply: just take the axis letter and add value. Spaces between letters and their value are optional. For example, it is written as a position of 0 inches along X, 2 inches along Y and 3 inches along Z: X1Y2Z3 You can format them quickly like this to get used to reading them all, but you can format them with spaces to make them more readable: X1 Y2 Z3 or X 1 Y 2 Z 3 Again, getting used to keeping letters with numbers, so you won't add just more space between the axes : X1 Y2 Z3 This is actually the easiest to read once you get used to it. What about the units? The example I gave not only used inches, but can actually be set to use the controller metric or Imperial. It's up to you to know which system comes by default and change the volumes as needed. Try not to change units in the middle of a program, do so at the beginning, and then stay in the same volumes. Otherwise it's very confusing. To change volumes, G-Codes affect only the way the machine interprets numbers. They're not changing your schedule. We'll talk more about changing units in a future article, but now, just be aware. For rotation axes (which you will only use on a 4- or 5-axis machine), we don't use dimensions for units, we usually use angles in degrees. For example, returning the 4th axis to a 90-degree position can be done as A90. Incremental Against Absolute Coordinates Sometimes, it is very convenient to refer to Absolute coordinates rather than Incremental or Relative. I suppose the tip of the car on my mill is the X0 Y0 Z0, and I'm trying to get used to switching to the X1 Y2 Z3 (I don't use the G-Code, because I dropped the comma, which I just used in school, for example (0, 0, 0), G-Code X0 Y0 Z0). I can make the move absolute or incremental and it doesn't matter. X1 Y2 Z3 does not cheat since both cases started x0 Y0 Z0. However, suppose the cutter is positioned at some point and you need to cut 1 frame with the corner aligned to that point. Perhaps some of the feature of the piece was that we used the edge finder to find exactly the cutter. This is done easily with relative moves: X1 Y1 X-1 Y-1 In essence, movement 1 is right, 1 up Y, 1 left, and then 1 down Y. Now there is 1 square with the starting point of the lower left corner. There are many situations where relative movements come in handy, so the ability to switch back and forth is too much. We'll show you how to do it. That's the key when we talk about how we can move with G-Code, but for now, keep in mind that there are both Incremental and Absolute Coordinates. Sometimes, you see the coordinates that are specific with the letters of the axis. For example, when you define arc centers, IJK can be a res <2> XYZ. On some controllers, UVW can be used with XYZ to refer to relative coordinates without having to change back and forth between relative and absolute modes. In other words, XYZ is always used as absolute and UVW is always relative. For now, it's enough to be aware that incremental coordinates are there. After a while, there's only a section on an incremental issue against absolute coordinates. Offsets is offset by the latest Coordinate System concept I will cover. Distances are another fantasy way to think about relative movements. Let's say you want to machine 2 identical parts. Each is kept in a handkerchief on your desk at the same time. How do you make a program that can do both episodes without having to change the program for the location of each episode? The answer is to use a Business Offset. Consider this later in more detail, but now, Business Offset let us position x0 Y0 Z0 origin in more than one place. We can put one in the first hinge and the other in the second. Now you can only work to make part of the same program on either vise by changing the offset of the work. CNC has a wide range of distances, and the skilled CNC operator/machinist finds that distances are a very useful way to nudge the behavior of the G-Code Program without having to change this program. Most CNC controllers have a distance screen where you do this. When I get a chance to learn about offset, take the time to do it because I mention this. They are digital power tools for CNC machinists and are very handy. We'll take them in more detail later. Airplanes are suitable to refer to aircraft for various purposes. The plane is a flat 2D space defined by two axis. For example, the default plane in most mills is XY. If you draw a arc without specifying a change in the plane, it is drawn to the xy plane. There is a plane for the xyz combination of linear axis: G17, G18, and G19 G-Codes select which plane is active. We talk more about springs than about the G17-G19. Conclusion Now there are basics: - How to visualize coordinate systems according to your machine using the left hand rule. – How to express G-Code coordinates. – I know which units are used to measure coordiantes. – You know that relative and absolute coordinates are possible. – You know that offsets allow you to change the coordinate system for a variety of useful purposes. You know planes. We will briefly introduce the mdi concept, which is still a simple way to use G-Code as if it were a manual machinist. It's a good introduction to the foundations that move the axis of the CNC. But first, we have to get you going. The editor will have a CNC Simulator to use for the application so that during these tutorial tutorials. Hey, one more thing, in case you're wondering. Most CNC g-code dialects also have Polar Coordinates. a more advanced issue that we can reach later. Exercises 1. Remove your machine's guide and find the diagram that shows how the coordinate system works. Make sure it leaves the manual handy, whether it's paper or online. We'll be back a few times as we go through various exercises. 2. Bring G-Wizard G-Code Editor. By default, you are in Mill Mode. There are views for Perspective, Top, Front, and Right. Download the sample engraving file from our download page. You want a file named HomeSwitchRearPanelEngrave. Start GWE and open a file to download the downloaded file. Take a look at each view. – A view from the upper XY plane - A view from the front XZ plane - Right AI is a view from the aircraft plane