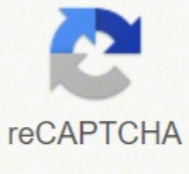




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instance, one option for minimizing part handling time is to add a part loading magazine or a robot arm. The maximum spindle speed (RPM) of a CNC Turning machines can also vary depending on the need or application.

The factors that determine the spindle speed range selected can include the type of part materials, the part sizes and the annual part production quantities to be machined. Another factor that influences the spindle speed range is the type of tool cutter material that will be used, such as HSS, coated carbide, diamond and ceramic.

High-production turning machines can be designed with dual chucks that enable a part to be machined on both ends. Also, live tooling can be incorporated that allows milling and drilling at various angles. Other options may include a second or third turret, a bar feeder, a parts catcher, a steady rest follower and a tool setter.

APPARATUS :

CNC Turning Machine TNA300, Aluminium rod Ø19mm

SAFETY PRECAUTION :

There are several key factors to avoid or prevent any accident in the lab.

1. Work habits
2. Security self
3. Security when using the equipment
4. Housekeeping work
5. Focus attention and calm at work
6. Placing the cleanliness and neatness of dress

PROCEDURE :

- A) CNC Turning Operating.
 - Switch on main
 - On NC
 - On pump
- B) Setting Reference Point
 - Set feed rate to 10%
 - Made selection switch at reference point
 - Off pump
 - Off NC (about 10 second)
 - Do again step A.
- C) Edit File
 - Select edit
 - Choose file
 - Select file - input
 - Select monitor
 - Press H2 to search file.
 - Select file
 - Press H2 to active program to input)
- D) Work Setting.
 - Claim work piece
 - Measure length work piece to (LW + 106)
 - Select edit button
 - Choose programming by press on screen
 - Go to G09 - change Z dimension. Total work piece = 106 + input.....
- E) Simulation.
 - Select mode - ON AUTO
 - Press MC lock (compulsory)
 - Press graphic
 - Press H3 to trace
 - Press H5 to program
 - Press start button
 - Press (Dry Run") base on program request)
 - Increase feed override to
 - Set rapid traverse to 25%.
- Select monitor.
- Press H2 to program

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Basics of Grinding



Training Objectives

After watching the video and reviewing this printed material, the viewer will gain knowledge and understanding of the primary industrial grinding processes.

- cylindrical, internal, centerless and surface grinding are demonstrated
- types of abrasives and bonding methods are shown
- grinding wheel maintenance is explained
- specifics of surface finishing are detailed

The Grinding Process

Grinding is a material removal and surface generation process used to shape and finish components made of metals and other materials. The precision and surface finish obtained through grinding can be up to ten times better than with either turning or milling.

Grinding employs an abrasive product, usually a rotating wheel brought into controlled contact with a work surface. The grinding wheel is composed of abrasive grains held together in a binder. These abrasive grains act as cutting tools, removing tiny chips of material from the work. As these abrasive grains wear and become dull, the added resistance leads to fracture of the grains or weakening of their bond. The dull pieces break away, revealing sharp new grains that continue cutting. The requirements for efficient grinding include:

- abrasive components which are harder than the work
- shock- and heat-resistant abrasive wheels
- abrasives that are friable. That is, they are capable of controlled fracturing

Most abrasives used in industry are synthetic. Aluminum oxide is used in three quarters of all grinding operations, and is primarily used to grind ferrous metals. Next is silicon carbide, which is used for grinding softer, non-ferrous metals and high density materials, such as cemented carbide or ceramics. Superabrasives, namely cubic boron nitride or "CBN" and diamond, are used in about five percent of grinding. Hard ferrous materials are ground with "CBN", while non-ferrous materials and non-metals are best ground with diamond.

The grain size of abrasive materials is important to the process. Large, coarse grains remove material faster, while smaller grains produce a finer finish.

The binders that hold these abrasive grains together include:

- vitrified bonds, a glass-like bond formed of fused clay or feldspar
- organic bonds, from synthetic resins, rubber, or shellac
- metal or single-layer bond systems for superabrasives

Wheels are graded according their strength and wear resistance. A "hard" wheel is one that resists the separation of its individual grains. One that is too hard will wear slowly and present dulled grains to the work and overheat, affecting the final finish. If too soft a wheel is used, it will deteriorate quickly, requiring frequent replacement.

DESIGN AND FABRICATION OF MULTI-PURPOSE

MACHINE

ABSTRACT

The aim of our project is to design and fabricate a multipurpose device.

With this device a number of operations can be performed. They are as

follows:

1. Drilling
2. Grinding
3. Boring

By means of this machine various operations can be performed using same

power. So this multipurpose device is used for various operations with a

less amount of investment.

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