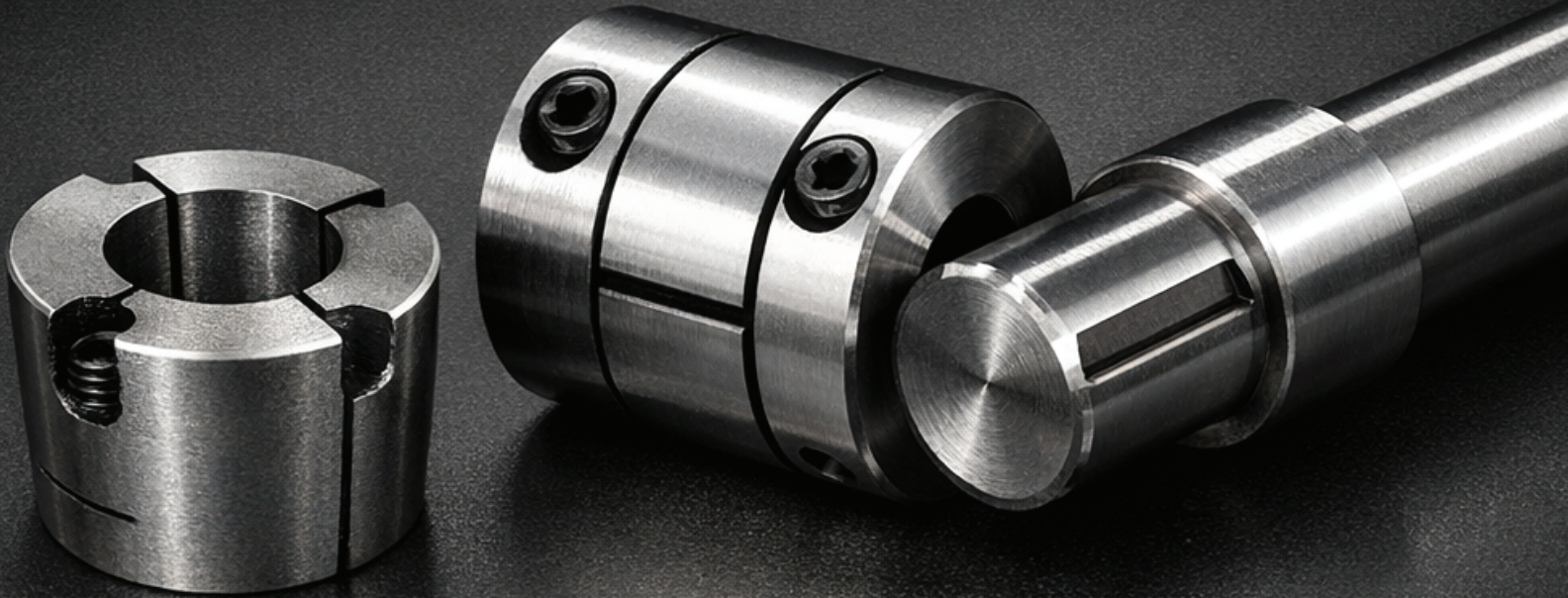


CNC Turning



Produces precise cylindrical, conical, or threaded parts.



Lead Time

5—22 Days

Max Diameter

13.75 in

Max Swing Length

36 in

General Tolerances

Metals: ISO 2768 or ± 0.005 in unless specified.

Plastics: ± 0.010 in

Prototek provides digital manufacturing services for prototyping and production, including CNC machining, precision sheet metal fabrication, additive manufacturing, and assembly.

We serve aerospace and defense, medical, industrial, electronics, robotics, and consumer markets through U.S. manufacturing facilities and a qualified network of domestic and international partners.

Prototek is certified to ISO 9001:2015 and AS9100D, is ITAR registered, and holds CMMC Level 2 certification.

Learn more at [prototek.com](https://www.prototek.com)

PROTOTEK

For more information:
info@prototek.com | 888-891-4576



An Overview

On a CNC lathe or turning center, the workpiece rotates against computer-controlled cutting tools to remove material and create the required geometry. The process is particularly well suited for cylindrical and rotationally symmetric components and can produce features such as multiple diameters, threads, bores, grooves, and other turned features. Live tooling can also incorporate certain milling operations within the same setup.

CNC turning is a practical choice for prototypes and production parts where cylindrical geometry, dimensional accuracy, repeatability, and precise relationships between concentric features are important. Typical applications include shafts, pins, bushings, spacers, fittings, threaded components, and other round or rotational parts used across industries such as aerospace, automotive, medical, and industrial manufacturing.

Advantages

- **Precision & Accuracy:**
Programmable to tight tolerances
- **Automation:** Faster production times
- **Versatility:** Wide range of materials for variety of industries and applications

Considerations

- **Size Limitations:** Size limited to the machine's dimensions
- **Complex Geometries:** The more complex means the more time and cost for setups and number of tools, but can be done

Materials

Metals

- Aluminum
- Brass
- Bronze
- Copper
- Inconel™
- Invar®
- Kovar™
- Nitronic 60®
- Stainless Steel
- Steel
- Titanium
- Tool Steel

Plastics

- ABS
- Acrylic
- Acetal
- HDPE
- Nylon
- PEEK
- Polycarbonate
- Polypropylene
- Radel®
- Teflon®/PTFE
- Ultem®

Other Materials

- G-10
- Macor®

Machining Finishes

Metals

- | | |
|----------------------------|--------------------|
| As Machined | Graining |
| Anodized II & III | Laser Engraving |
| Bead Blasting | Nickel Plating |
| Black Oxide | Passivation |
| Chem Film | Polishing |
| Chrome Plating | Powder Coating |
| Dry Film | Priming & Painting |
| E-Coat | Silk Screening |
| Electroless Nickel Plating | Silver Plating |
| Electro Polishing | Smooth Machined |
| Epoxy Priming & Painting | Tumbling |
| Galvanizing | Zinc Plating |
| Gold Plating | |

Plastics

- As Machined
- Bead Blasting
- Laser Engraving
- Nickel Plating
- Priming & Painting
- Silk Screening

10 Design Tips

1. Avoid Sharp Inside Corners
2. Incorporate Chamfers on Outside Corners
3. Design for On-Axis and Radial Holes
4. Avoid Off-Axis Features Unless Necessary
5. Specify Consistent Tolerances
6. Use Bar Stock for Efficiency
7. Account for Tool Accessibility
8. Avoid Text on Turned Parts
9. Optimize Part Size and Geometry
10. Plan for Surface Finishes

If you have questions, please reach out we'd be happy to offer DFM feedback!