



CAREER PROFILE

Skilled Maintenance Team Member—Tool & Die—Powertrain Machine shop

SALARY RANGE ²

- The median annual wage for machinists was \$45,840 in May 2020. The lowest 10 percent earned less than \$29,240, and the highest 10 percent earned more than \$69,050.
- The median annual wage for tool and die makers was \$54,760 in May 2020. The lowest 10 percent earned less than \$34,840, and the highest 10 percent earned more than \$79,090.
- In May 2020, the median annual wages for machinists in the transportation equipment manufacturing industry was \$49,370.
- The same data for tool and die makers in the motor vehicle parts manufacturing industry was \$61,230.

WHO ARE THEY?

Tool and die makers and machinists are mechanics, builders, craftsmen, and quality assurance team members combined. They are experts on the complex machines used to create products.

In today's industries, many of these skilled workers are computer numerical control (CNC) machinists. A CNC machinist sets up and runs a variety of CNC machines and equipment. These are highly skilled workers who combine their knowledge and experience with elements of mechanical design and technical drawing, mathematics, and computer programming to create products for our world today.

One position that a CNC machinist at Toyota might hold would be to work in the Powertrain shop. A powertrain is an assembly of every part that thrusts your car into motion. It includes the engine, transmission, driveshaft, axles, and differential.

In most industries, CNC machinists work through each area of a product, starting with the initial conception and ending with the completely finished item.

WHAT DO THEY DO? ¹

CNC machinists work in industries such as motor vehicle manufacturing, mechanical engineering, aerospace products, parts manufacturing, and metalworking machinery. They can work in small machine or welding shops, too.

Machinists at Toyota might make parts to fulfill orders for their in-house spare parts group. They might oversee the creation of special parts or replacement parts as needed. These skilled maintenance team members run many different machines and processes.

They might do the programming for computer numerical control (CNC) machines, work manual lathes, work CNC or manual milling equipment, and even do the occasional welding job.

HOW DO I BECOME ONE? ¹

Machinists and tool and die makers typically are trained on the job. CNC machinists may start out as operators. Over time they work their way up the professional ladder to become CNC machinists through experience and training.

Educational programs for CNC machinists should cover a wide range of subjects, such as math and engineering, as well as computer technology.

These are often available as training or apprenticeship programs at vocational schools, and community and technical colleges. Educational programs should include classes on such subjects as computer-aided design and manufacturing (CAD/CAM) operation and design technology.

A certification, such as the National Institute for Metalworking Skills (NIMS) CNC operator credential, demonstrates competence in the skills needed to successfully operate CNC machines.

JOB OUTLOOK ²

Overall employment of machinists and tool and die makers is projected to grow 7 percent from 2020 to 2030, about as fast as the average for all occupations. About 47,500 openings for machinists and tool and die makers are projected each year.

Machinists set up, watch over, and maintain improved technology systems, such as computer numerically controlled (CNC) machine tools, autoloaders, or high-speed machining equipment in manufacturing. Advances in automation, including CNC machine tools, can reduce the demand for tool and die makers.

EDUCATION/TRAINING

High school courses should include math, blueprint reading, and metalworking. CAD/CAM classes are also considered useful.

Some community colleges and technical schools have two-year degree programs or shorter non-degree certificate programs that train students to become machinists or tool and die makers. These programs usually teach design and how to read engineering drawings, the use of a variety of welding and cutting tools, and the programming and function of CNC machines.

¹ Goodwin University, <https://www.goodwin.edu/glossary/cnc-machinist>.

² Bureau of Labor Statistics, U.S. Department of Labor, Occupational Outlook Handbook, Machinists and Tool and Die Makers, <https://www.bls.gov/ooh/production/machinists-and-tool-and-die-makers.htm>.