

## Multiple Machine Tool Setters, Operators, and Tenders

**Table of Contents** *(scroll or use links below to navigate document)*

[What They Do](#)

[Tasks](#)

[Skills, Knowledge, and Abilities](#)

[Work Environment](#)

[California's Job Outlook and Wages](#)

[Trends](#)

[Training](#)

[Where Do I Find the Job?](#)

[Where Can the Job Lead?](#)

[Other Sources](#)

### What They Do

Almost all products from refrigerators to clock radios are made of metal and/or plastic parts. Multiple Machine Tool Setters, Operators, and Tenders (Metal and Plastic) form part of the manufacturing team that turns out the metal and plastic parts we depend on from morning to night. They often set up, operate, or tend more than one type of cutting or forming machine tool or robot.

Workers often begin as machine tenders, feeding materials into the machine, starting and stopping the machine, and removing finished products. With experience they become Multiple Machine Tool Operators taking on the responsibility of adjusting speeds, changing cutting tools, and inspecting completed product for quality. They operate or tend more than one type of cutting or forming machine tool which has been previously set up, such as band saws, press brakes, slitting machines, drills, lathes, and boring machines.

Machine setters follow blueprints, layouts, and instructions to prepare the machines for production. Setters are the highest skill level for Multiple Machine Tool Setters, Operators, and Tenders. They set up, or set up and operate, more than one type of cutting or forming machine tool, such as gear hobbers, lathes, press brakes, shearing, and boring machines.

### Tasks

- ▶ Set up and operate lathes, cutters, borers, millers, grinders, presses, drills, and auxiliary machines to make metallic and plastic workpieces.
- ▶ Compute data, such as gear dimensions and machine settings, applying knowledge of shop mathematics.
- ▶ Lift, position, and secure workpieces in holding devices, using hoists and hand tools.
- ▶ Measure and mark reference points and cutting lines on workpiece, using traced templates, compasses, and rules.
- ▶ Select, install, and adjust alignment of drills, cutters, dies, guides, and holding devices, using template, measuring instruments, and hand tools.
- ▶ Install machine components, such as chucks, boring bars, or cutting tools, according to specifications, using hand tools.
- ▶ Move controls or mounts gears, cams, or templates in machine to set feed rate and cutting speed, depth, and angle.
- ▶ Activate and tend or operate machines to cut, shape, thread, bore, drill, tap, bend, or mill metal or nonmetallic material.

## Multiple Machine Tool Setters, Operators, and Tenders

- ▶ Position, adjust, and secure workpiece against stops, on arbor, or in chuck, fixture, or automatic feeding mechanism manually or using hoist.
- ▶ Align layout marks with die or blade.
- ▶ Inspect workpiece for defects and measure workpiece, using rule, template, or other measuring instruments to determine accuracy of machine operation.
- ▶ Remove burrs, sharp edges, rust, or scale from workpiece, using file, hand grinder, wire brush, or power tools.
- ▶ Make minor electrical and mechanical repairs and adjustments to machines, and notify supervisor when major service is required.
- ▶ Set machine stops or guides to specified length as indicated by scale, rule, or template.
- ▶ Adjust machine components and change worn accessories, such as cutting tools and brushes, using hand tools.
- ▶ Perform minor machine maintenance, such as oiling or cleaning machines, dies, or workpieces, or adding coolant to machine reservoir.
- ▶ Extract or lift jammed pieces from machine, using fingers, wire hooks, or lift bar.
- ▶ Instruct operators or other workers in machine setup and operation.
- ▶ Record operational data such as pressure readings, length of stroke, feeds, and speeds.

Detailed descriptions of this occupation may be found in the Occupational Information Network (O\*NET) at [online.onetcenter.org](http://online.onetcenter.org).

### Important Skills, Knowledge, and Abilities

- ▶ Production and Processing — Knowledge of raw materials, production processes, quality control, costs, and other techniques for maximizing the effective manufacture and distribution of goods.
- ▶ Mechanical — Knowledge of machines and tools, including their designs, uses, repair, and maintenance.
- ▶ Operation and Control — Controlling operations of equipment or systems.
- ▶ Operation Monitoring — Watching gauges, dials, or other indicators to make sure a machine is working properly.
- ▶ Quality Control Analysis — Conducting tests and inspections of products, services, or processes to evaluate quality or performance.
- ▶ Mathematics — Using mathematics to solve problems.
- ▶ Installation — Installing equipment, machines, wiring, or programs to meet specifications.
- ▶ Control Precision — The ability to quickly and repeatedly adjust the controls of a machine or a vehicle to exact positions.
- ▶ Written Comprehension — The ability to read and understand information and ideas presented in writing.
- ▶ Information Ordering — The ability to arrange things or actions in a certain order or pattern according to a specific rule or set of rules (e.g., patterns of numbers, letters, words, pictures, mathematical operations).

## Multiple Machine Tool Setters, Operators, and Tenders

### Work Environment

Multiple Machine Tool Setters, Operators, and Tenders work indoors in machine shops and factories with controlled environment for worker comfort and product quality. They must be alert to the hazards of machinery constantly in motion and observe safety rules. They often wear safety glasses and earplugs and other protective equipment. Many operators stand most of the day. Operators must keep pace with the production line.

Some manufacturing plants operate around the clock, and may require evenings, nights, or weekend shift work as well as overtime when needed. As workers obtain seniority, they have more choice about shift assignments. The availability of union membership depends on size of firm and industry.

### California's Job Outlook and Wages

The California Outlook and Wage below represents the occupation across all industries.

Standard Occupational Classification	Estimated Number of Workers 2004	Estimated Number of Workers 2014	Average Annual Openings	2006 Wage Range (per hour)
<b>Multiple Machine Tool Setters, Operators, and Tenders (Metal and Plastic)</b>				
51-4081	6,100	6,400	200	\$10.28 to \$16.36

*Wages do not reflect self-employment.*

*Average annual openings include new jobs plus net replacements.*

*Source: [www.labormarketinfo.edd.ca.gov](http://www.labormarketinfo.edd.ca.gov), Employment Projections by Occupation and OES Employment & Wages by Occupation, Labor Market Information Division, Employment Development Department.*

### Trends

Manufacturers of both metal and plastics products face global competition. Multiple Machine Tool Setters, Operators, and Tenders will grow slower than average through 2014 for all California occupations due to increased automation as well as offshore production. Most openings will occur from replacing retiring baby boom generation workers.

### Training/Requirements/Apprenticeships

Multiple Machine Tool Setters, Operators, and Tenders are often trained on the job, working their way up from tender to operator to setter. Community college and vocational schools offer programs in machine shop technology and machine tool technology. Formal apprenticeship programs may be available at times. The trend toward a team approach to production requires workers who learn quickly and have sound reading, math, and communication skills.

#### Recommended High School Course Work

High school students interested in this kind of work should take mathematics, algebra, geometry, computer classes, and metal shop when available.

### Where Do I Find the Job?

Candidates for training or apprenticeship programs should apply directly to employers who employ Multiple Machine Tool Setters, Operators, and Tenders. Community colleges offer assistance in finding jobs to graduates of degree or certificate programs.

## Multiple Machine Tool Setters, Operators, and Tenders

Direct application to employers remains one of the most effective job search methods.

Use the *Search for Employers by Industry* feature on the *Career Center* page at [www.labormarketinfo.edd.ca.gov](http://www.labormarketinfo.edd.ca.gov) to locate employers in your area. Search using keywords from the following manufacturing industry names to get a list of private firms and their addresses:

- ▶ All Other Miscellaneous Manufacturing
- ▶ Audio and Visual Equipment
- ▶ Bare Printed Circuit Board
- ▶ Bolts, Nuts, Screws, Rivets, and Washers
- ▶ Dental Laboratories
- ▶ Machine Shops
- ▶ Other Electronic Component
- ▶ Precision Turned Product
- ▶ Semiconductor and Related Devices
- ▶ Sign
- ▶ Surgical and Medical Instrument
- ▶ Surgical Appliance and Supplies

Search these **yellow page** headings for listings of private firms:

- ▶ Die Makers
- ▶ Metal Cutting Tools
- ▶ Metal Fabricators
- ▶ Metal Rolling and Forming
- ▶ Metal Stamping
- ▶ Plastic Fabricators
- ▶ Sheet Metal Work
- ▶ Tool Designers

### Where Can the Job Lead?

Multiple Machine Tool Setters, Operators, and Tenders can pursue skill certification through the National Institute for Metalworking Skills or the Society of Plastics Industry. Certification is based upon a combination of coursework, experience, and passing exams. Operators can advance to supervisory positions or the occupations of Machinist and Tool and Die Maker with further training.

### Other Sources of Information

National Tooling & Machining Association  
[www.ntma.org](http://www.ntma.org)

National Institute for Metalworking Skills  
[www.nims-skills.org](http://www.nims-skills.org)

Precision Metalforming Association Educational Foundation  
[www.pmaef.org](http://www.pmaef.org)

Precision Machined Products Association  
[www.pmpa.org](http://www.pmpa.org)

The Society of the Plastics Industry  
[www.socplas.org](http://www.socplas.org)