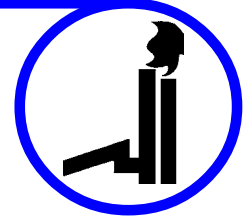


Motor Vehicle and Parts Manufacturing Workers



Occupational Brief Title Codes:

- D.O.T.: 806.
- G.O.E.: 06.04
- S.O.C.: 51-
- O*NET™: 51-
- N.A.I.C.S.: 3361, 3362, 3363
- H.O.C.: No Code

Occupational Subtitles:

- Assemblers and Fabricators
- Inspectors
- Metal and Plastic Workers
- Quality Control Monitors
- Roadability-Machine Operators
- Supervisors

Work Classification Based Related

D.O.T. Occupations:

- Die Cutters
- Machine Feeders
- Riveting-Machine Operators
- Shipfitters

Interests Based Related

G.O.E. Occupations:

- Aircraft Assemblers
- Engine Subassemblers
- Material Movers
- Motorcycle Assemblers

Skills Based Related

O*NET Occupations:

- Commercial and Industrial Designers
- Drafters
- Engineering Technicians
- Industrial Machinery Mechanics and Maintenance Workers

Motor vehicle and parts manufacturing workers (ˈmo-tor ˈve-hi-cle and ˈparts man-u-ˈfac-tur-ing ˈwork-ers) design, plan, fabricate, assemble, and test motor vehicles and motor vehicle parts.

Motor vehicles play a central role in our society. They come in all shapes, sizes, and styles including passenger cars, sport utility vehicles (SUVs), pickup trucks and vans, heavy-duty trucks and trailers, buses, and other special-purpose vehicles ranging from limousines to garbage trucks. Most U.S. residents rely on them to travel to work or school, shop, or visit family and friends. Businesses depend on motor vehicles to transport people and goods. In fact, the United States is the world's largest marketplace for motor vehicles. According to the U.S. Department of Transportation, almost 230 million motor vehicles—roughly 136 million automobiles, 95 million trucks, and 77,000 buses—were registered in the United States in 2003.

Motor vehicle and parts manufacturing also has a major influence on other industries in the economy. As major consumers of steel, rubber, plastics, glass, and other basic materials, motor vehicle and parts manufacturing creates jobs in the industries that produce these materials. The production of motor vehicles further spurs employment growth in automobile and related equipment dealerships, automotive repair and maintenance shops, gasoline stations, highway construction companies, and automotive parts, accessories, and tire stores, among others.

In addition, the motor vehicle and parts manufacturing industry in the United States has become increasingly integrated into the international economy. “Domestic” vehicles are often produced using the components, manufacturing plants, and distribution methods of other nations around the world. This collaboration has dramatically increased productivity and improved efficiency. Foreign motor vehicle and parts makers with production sites in the United States, called “domestic internationals,” also account for a growing share of U.S. production and employment.

Work Performed

The overall operations of any manufacturing plant are broad and diverse. A finished product is the result of the plans and efforts of hundreds of people. To manufacture motor vehicles and parts takes the combined effort of designers, engineers, drafters, managers, marketing and sales workers, among others (more information on these job titles is located in their separate briefs). The majority of jobs in a manufacturing plant, however, are held by production workers.

The motor vehicle and parts manufacturing industry is highly automated. Robots, computers, and programmable devices are an integral part of motor vehicle manufacturing. Many manufacturers have installed computer-controlled machinery. Operators of this equipment can program it to carry out a series of operations automatically. The use of computer controls and other automated techniques reduces setup and maintenance time, and permits greater accuracy and less waste.

Most production workers work with machines that mold, stamp, weld, and test the motor vehicle or parts. Modern manufacturing facilities also integrate interchangeable tools on the assembly line so that they can quickly be changed to meet the needs of various models and specifications. Even so, hand tasks are still an important part of the production process. In many plants, production workers perform a variety of tasks, often including a combination of automated and hand tasks.

Assemblers and fabricators and **metal and plastic workers** put together various parts to form subassemblies, and then put the subassemblies together to build a complete motor vehicle. Most assemblers in this industry are **team assemblers**, who may work on a variety of tasks as needed. In general, metal parts are welded; plastic and glass parts are molded and cut; seat cushions are sewn; and many parts are painted.

Automobile assembly varies from manufacturer to manufacturer and from plant to plant. In the body shop workers or robots weld together steel plates that make up the sides of the vehicle. These units go to a feeder line where they will meet up with the underbody of the car. The underbody moves along the assembly line through a computer scan that tests the welding for accuracy. A computer screen next to the assembly line shows the score of each underbody. If defects show up, they are corrected.

After the underbody, side frame, and other subassemblies pass inspection, workers join them together in a tab-slot fashion. They manually insert the tabs into the slots as the vehicle shell moves along the assembly line. Then it passes by robots, which clamp down the tabs. After the installation of the roof supports, the car is ready for final welding. Although robots perform most of the welding, **welding, soldering, and brazing workers** are still needed for some welding and for maintenance and repair duties. After the bottom, top, and sides are welded together, workers install doors, trunk lids, and hoods. This is the final operation in the body shop.

Workers in other production occupations run various machines that produce an array of motor vehicle bodies and parts. These workers set up and operate machines and make adjustments according to production instructions. Some workers specialize in one type of machine. Others operate more than one type. **Computer-controlled machine tool operators**, for instance, use computer-controlled machines or robots programmed to manufacture parts of different dimensions automatically. In computer-controlled systems, production workers monitor computers controlling the machine processes and may have little interaction with the actual machinery or materials.

Grinding and polishing workers use hand tools or hand-held power tools to sand and polish metal surfaces. **Painting workers and enamel coating machine operators** paint the surfaces of motor vehicles and parts. **Sewing machine operators** sew together pieces of material to form seat covers and other parts. Some workers install interiors and accessories. As cars near the end of the main assembly line, workers check and adjust the body, engine, and front-end alignment. At the end of the line, workers mount and inflate tires; adjust brakes; and add gas, oil, brake fluid, and coolant.

As units move along the main and feeder lines, inspection devices check them for completeness and accuracy. Throughout the entire manufacturing process, “statistical process control” (teamwork and quality control) is emphasized. From initial planning and design to final assembly,

numerous tests and inspections ensure that vehicles meet quality and safety standards.

Inspectors and **quality control monitors** check raw materials for quality and parts for defects. They check the uniformity of subassemblies, and test-drive fully assembled vehicles. **Roadability-machine operators** test mechanical and electrical systems of completed motor vehicles by driving them onto roller drums of a computerized roadability machine. Inspection and quality control workers ensure that the products are formed, coated, assembled, and perform according to plant and regulatory standards.

Machinists produce precision metal parts that are made in numbers too small to produce with automated machinery. **Tool and die makers** produce tools, dies, and special guiding and holding devices used in production machinery. Other production workers include **laborers, industrial machinery mechanics, millwrights,** and **automotive service technicians** (discussed in separate briefs).

Supervisors keep operations moving efficiently. They are usually selected from experienced, capable employees. They supervise and coordinate activities of production workers, help set up work and production schedules, and train workers in setting up and operating machines.

Working Conditions

Working conditions have improved in recent years. However, some production workers are still subject to uncomfortable conditions, such as heat, fumes, noise, and repetitive tasks. Many workers come into contact with oil and grease, may have to lift and fit heavy objects, or may operate powerful, high-speed machines that can be dangerous. Accidents and injuries are usually avoided when safety practices are observed and protective equipment and clothing are used. In fact, newer plants are more automated and have safer, more comfortable, ergonomically designed work areas. Team work also reduces the repetitiveness of assembly line work.

Hours and Earnings

In general, workers in the motor vehicle and parts manufacturing industry worked forty hours a week. However, overtime is common especially during periods of peak demand. Most employees work a typical eight-hour shift: either from 7 a.m. to 3:30 p.m. or from 4 p.m. to 12:30 a.m., with two breaks per shift and a half-hour for meals. A third shift is often reserved for maintenance and cleanup.

Earnings for these workers are relatively high, but still vary with job duties, education, experience, employer, and geographic location. According to the Bureau of Labor Statistics, at \$1,217 a week, earnings of production workers in establishments that manufacture complete motor vehicles were among the highest in the country in 2004. Workers in establishments that make motor vehicle parts averaged \$872 a week, and those in motor vehicle body and trailer manufacturing earned \$690 a week.

Hourly earnings generally increase during overtime or special shifts. Workers are typically paid time and a half for working more than eight hours a day or more than forty hours a week, or for working on Saturdays. They may receive double their normal rate for working on Sundays and holidays.

The largest manufacturers and suppliers often offer other benefits, including paid vacations and holidays; life, accident, and health insurance; education allowances; performance and profit-sharing bonuses; and pension plans. Depending on the worker's seniority, some laid-off workers in this industry also have access to supplemental unemployment benefits, which can provide them with nearly full pay and benefits for up to several years.

Education and Training

Because of technological advances and an emphasis on team work in the motor vehicle and parts manufacturing industry, the number of unskilled jobs continues to decline. Employers increasingly require workers to have at least a high school diploma, and emphasize continuing education and cross-training workers to do more than one job. Most manufacturers now administer lengthy examinations when hiring assemblers.

Employers look for employees with good communication and math skills, as well as an aptitude for computers, problem solving, and critical thinking. Skilled production workers, such as machinists and tool and die makers, are normally hired on the basis of previous training and experience and, in some cases, a competitive examination. Useful course studies include English, math, mechanical drawing, industrial arts, and computers.

Although the auto industry is considered the pioneer of on-the-job training, opportunities for training vary considerably by occupation, plant size, and sector. Training programs in larger auto and light truck assembly plants are usually more extensive than those in smaller parts, truck trailer, and motor home factories. Production workers receive most of their training on the job or through more formal apprenticeship programs.

Training normally takes from a few days to several months for less skilled jobs, and may combine classroom instruction with on-the-job training under the guidance of more experienced workers. However, attaining the highest level of skill in some production jobs takes several years—five years or more for skilled positions. Training often includes courses in health and safety, teamwork, quality control, computers, and diagnostic equipment. Training for skilled jobs also includes courses in mechanical drawing, tool designing and programming, blueprint reading, shop mathematics, hydraulics, and electronics.

Unions

In 2004, around 3 out of every 10 workers in motor vehicle and parts production were union members or were covered by union contracts. The primary union in the industry is the United Automobile, Aerospace, and

Agricultural Implement Workers of America, also known as United Auto Workers (UAW). Nearly all production workers in motor vehicle assembly plants, and most of those in motor vehicle parts plants, are covered by collective bargaining agreements negotiated by the UAW. Other unions cover certain plant locations or specified trades within the industry, such as the International Association of Machinists and Aerospace Workers of America; the United Steelworkers of America; or the International Brotherhood of Electrical Workers.

Personal Qualifications

All workers in the motor vehicle and parts manufacturing industry are members of a huge team. They should be able to get along well with others. Production workers often do routine work which may consist of the same task hundreds of times every day. They must have patience, stamina, accuracy, and basic manual dexterity in order to do quality work. Skilled workers must also have mechanical aptitude, good problem solving skills, and some knowledge of computer applications.

Occupations can be adapted for workers with disabilities. Persons should contact their school or employment counselors, their state office of vocational rehabilitation, or their state department of labor to explore fully their individual needs and requirements as well as the requirements of the occupation.

Where Employed

According to the Bureau of Labor Statistics, the motor vehicle and parts manufacturing industry accounted for 1.1 million jobs in 2004. Around 9,400 establishments in the United States manufactured motor vehicles and parts. These establishments ranged from small parts plants with only a few workers to huge assembly plants that employed thousands.

Roughly 7 out of 10 establishments in the industry manufactured motor vehicle parts, including electrical and electronic equipment; gasoline engines and parts; brake systems; seating and interior trim; steering and suspension components; transmission and power train parts; air-conditioners; and motor vehicle stampings such as fenders, tops, body parts, trim, and molding. These establishments employed about 62 percent of all the workers in the industry.

Around 23 percent of workers were employed in firms assembling complete motor vehicles. Another 15 percent worked in other establishments specializing in the manufacture of truck trailers; motor homes; travel trailers; campers; and car, truck, and bus bodies placed on separately purchased chassis.

Although motor vehicle and parts manufacturing jobs were scattered throughout the United States, certain states accounted for the greatest number of jobs. Michigan, for example, especially the Detroit area, accounted for 22 percent of all jobs. Michigan, Ohio, and Indiana combined accounted for 46 percent of all the jobs in this industry.

Other states with a significant number of jobs included California, Tennessee, Texas, Kentucky, and Missouri.

Employment Outlook

The Bureau of Labor Statistics projects overall employment of production workers in the motor vehicle and parts manufacturing industry to grow steadily through the year 2014. Employment in parts manufacturing is forecast to increase by 6 percent—roughly 43,200 jobs. Employment in body and trailer manufacturing is expected to increase by 8 percent—around 13,000 jobs; but, employment in motor vehicle manufacturing is projected to increase by only 2 percent—around 5,400 jobs. Thousands of additional jobs will also open due to replacement needs.

Although demand for motor vehicles and parts is expected to continue to grow, expanding factory automation, robotics, efficiency gains, and the need to cut costs will keep employment from growing as fast as output. The growing intensity of international and domestic competition has increased cost pressures on manufacturers. Increasing productivity should meet much of the output demand, resulting in slow job growth, particularly in production occupations.

Employment is also highly sensitive to cyclical swings in the economy. During periods of economic prosperity, consumers are more willing and able to purchase expensive goods such as motor vehicles. During recessions, however, consumers are more likely to delay such purchases. To respond to these changes, motor vehicle and parts manufacturers hire or lay off workers as needed. Opportunities will be best for workers with computer, machining, engineering, production management, and business operations skills and training.

Entry Methods

Information on employment and training opportunities in the motor vehicle and parts manufacturing industry is available from local offices of state employment services and local unions representing these workers. Want ads in newspapers may list job openings. Job seekers may also apply directly to the human resources office of motor vehicle and parts manufacturing firms.

Advancement

Advancement in the motor vehicle and parts manufacturing industry depends on ability and performance, as well as the occupation, plant size, and sector. Most manufacturers in this industry have in-house training programs and offer tuition assistance to workers who take job-related college courses. With advanced training and experience, production workers can advance to inspector or to more skilled production, craft, operator, or repair jobs, including engineering and technician specialties. Skilled workers who excel can advance to become supervisors or managers.

For Further Research

Alliance of Automobile Manufacturers, 1401 Eye Street, N.W., Suite 900, Washington, DC 20005. Web site: www.autoalliance.org

United Automobile, Aerospace, and Agricultural Implement Workers of America (UAW), 8000 East Jefferson Avenue, Detroit, MI 48214. Web site: www.uaw.org

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