Small Engine Mechanics

(O*NET 49-3051.00, 49-3052.00, 49-3053.00)

Significant Points

- Job prospects should be excellent for people who complete formal training programs.
- Most mechanics learn their skills on the job or while working in related occupations.
- Use of motorcycles, motorboats, and outdoor power equipment is seasonal in many areas, so mechanics may service other types of equipment or work reduced hours in the winter.

Nature of the Work

Small engine mechanics repair and service power equipment ranging from jet skis to chainsaws. Mechanics usually specialize in the service and repair of one type of equipment, although they may work on closely-related products.

When a piece of equipment breaks down, mechanics use various techniques to diagnose the source and extent of the problem. The mark of a skilled mechanic is the ability to diagnose mechanical, fuel, and electrical problems and to make repairs quickly. Quick and accurate diagnosis requires problem-solving ability and a thorough knowledge of the equipment's operation.

Some jobs require minor adjustments or the replacement of a single item, whereas a complete engine overhaul requires hours to disassemble the engine and replace worn valves, pistons, bearings, and other internal parts. Some highly skilled mechanics use specialized components and the latest computerized equipment to customize and tune motorcycles and motorboats for racing.

Handtools are the most important work possessions of mechanics. Small engine mechanics use wrenches, pliers, and screwdrivers on a regular basis. Mechanics usually provide their own tools, although employers will furnish expensive power tools, computerized engine analyzers, and other diagnostic equipment. Computerized engine analyzers, compression gauges, ammeters and voltmeters, and other testing devices help mechanics locate faulty parts and tune engines. This equipment provides a systematic performance report of various components to compare against normal ratings. After pinpointing the problem, the mechanic makes the needed adjustments, repairs, or replacements.

Small engines also require periodic service to minimize the chance of breakdowns and to keep them operating at peak performance. During routine maintenance, mechanics follow a checklist that includes the inspection and cleaning of brakes, electrical systems, fuel injection systems, plugs, carburetors, and other parts. Following inspection, mechanics usually repair or adjust parts that do not work properly or replace unfixable parts.

Motorcycle mechanics specialize in the repair and overhaul of motorcycles, motor scooters, mopeds, dirt bikes, and all-terrain vehicles. Besides repairing engines, they may work on transmissions, brakes, and ignition systems and make minor body repairs. Mechanics often service just a few makes and models of motorcycles because most work for dealers that service only the products they sell.

Motorboat mechanics, or *marine equipment mechanics*, repair and adjust the electrical and mechanical equipment of inboard and outboard boat engines. Most small boats have portable outboard engines that are removed and brought into the repair shop. Larger craft, such as cabin cruisers and commercial fishing boats, are powered by diesel or gasoline inboard or inboard-outboard engines, which are removed only for major overhauls. Most of these repairs, therefore, are performed at docks or marinas. Motorboat mechanics also may work on propellers, steering mechanisms, marine plumbing, and other boat equipment.

Outdoor power equipment and other small engine mechanics service and repair outdoor power equipment such as lawnmowers, garden tractors, edge trimmers, and chain saws. They also may occasionally work on portable generators and go-carts. In addition, small engine mechanics in certain parts of the country may work on snowblowers and snowmobiles, but demand for this type of repair is both seasonal and regional.

Work environment. Small engine mechanics usually work in repair shops that are well lighted and ventilated but are sometimes noisy when engines are tested. Motorboat mechanics may work outdoors in poor weather conditions when making repairs aboard boats. They may also work in cramped or awkward positions to reach a boat's engine. Outdoor power equipment mechanics face similar conditions when they need to make on-site repairs.

During the winter months in the northern United States, mechanics may work fewer than 40 hours a week because the amount of repair and service work declines when lawnmowers, motorboats, and motorcycles are not in use. Many mechanics work full-time only during the busy spring and summer seasons. However, they often schedule time-consuming engine overhauls or work on snowmobiles and snowblowers during winter downtime. Mechanics may work considerably more than 40 hours a week when demand is strong.

Training, Other Qualifications, and Advancement

Due to the increasing complexity of motorcycles and motorboats, employers prefer to hire mechanics who have graduated from formal training programs. However, because the number of these specialized postsecondary programs is limited, most

Small engine mechanics may work on motorcycles, motorboats, lawnmowers, or other outdoor power equipment.

Projections data from the National Employment Matrix

Occupational Title	SOC Code	Employment, 2006	Projected employment, 2016	Change, 2006-16	
				Number	Percent
Small engine mechanics	49-3050	78,000	87,000	9,100	12
Motorboat mechanics	49-3051	24,000	29,000	4,600	19
Motorcycle mechanics	49-3052	21,000	24,000	2,600	12
Outdoor power equipment and other small engine mechanics	49-3053	33,000	35,000	1,800	6

NOTE: Data in this table are rounded. See the discussion of the employment projections table in the *Handbook* introductory chapter on *Occupational Information Included in the Handbook*.

mechanics still learn their skills on the job or while working in related occupations.

Education and training. Employers prefer to hire high school graduates for trainee mechanic positions, but many will accept applicants with less education if they possess adequate reading, writing, and math skills. Helpful high school courses include small engine repair, automobile mechanics, science, and business math. Many equipment dealers employ high school students part time and during the summer to help assemble new equipment and perform minor repairs.

Once employed, trainees learn routine service tasks under the guidance of experienced mechanics by replacing ignition points and spark plugs or by taking apart, assembling, and testing new equipment. As they gain experience and proficiency, trainees progress to more difficult tasks, such as advanced computerized diagnosis and engine overhauls. Anywhere from 3 to 5 years of on-the-job training may be necessary before a novice worker becomes competent in all aspects of the repair of motorcycle and motorboat engines. Repair of outdoor equipment, because of fewer moving parts, requires less on-the-job training.

A growing number of motorcycle and marine equipment mechanics graduate from formal motorcycle and motorboat postsecondary programs. Employers prefer to hire these workers for their advanced knowledge of small engine repair. These workers also tend to advance quickly to more demanding small engine repair jobs.

Employers often send mechanics and trainees to courses conducted by motorcycle, motorboat, and outdoor power equipment manufacturers or distributors. These courses, which can last up to 2 weeks, upgrade workers' skills and provide information on repairing new models. Manufacturer classes are usually a prerequisite for any mechanic who performs warranty work for manufacturers or insurance companies.

Other qualifications. For trainee jobs, employers hire people with mechanical aptitude who are knowledgeable about the fundamentals of small 2- and 4-stroke engines. Many trainees get their start by working on automobiles, motorcycles, motorboats, or outdoor power equipment as a hobby. Knowledge of basic electronics is essential because many parts of small vehicles and engines are electric.

Advancement. The skills needed for small engine repair can transfer to other occupations, such as automobile, diesel, or heavy vehicle and mobile equipment mechanics. Experienced mechanics with leadership ability may advance to shop supervisor or service manager jobs. Mechanics with sales ability sometimes become sales representatives or open their own repair shops.

Employment

Small engine mechanics held about 78,000 jobs in 2006. Motorcycle mechanics held around 21,000 jobs. Motorboat mechanics held approximately 24,000 and outdoor power equipment and other small engine mechanics about 33,000. Almost half, 47 percent, of small engine mechanics worked for either other motor vehicle dealers—an industry that includes retail dealers of motorcycles, boats, and miscellaneous vehicles—or for retail hardware, lawn, and garden stores. Most of the remainder were employed by independent repair shops, marinas and boatyards, equipment rental companies, wholesale distributors, and landscaping services. About 23 percent were self-employed, compared to about 7 percent of workers in all installation, maintenance, and repair occupations.

Job Outlook

Average employment growth is projected for of small engine mechanics. Job prospects should be excellent for people who complete formal training programs.

Employment change. Employment of small engine mechanics is expected to grow 12 percent between 2006 and 2016, about as fast as the average for all occupations. An increase in the population of retired people is expected to increase the number of people who have leisure time and income to spend on recreational equipment such as motorcycles and motorboats. Moreover, the increase in the population of coastal and lake regions should add to the popularity of motorboats, and continued motorcycle use among 18- to 24-year-olds will contribute to rising motorcycle sales. The need for mechanics to maintain and repair motorcycles and motorboats is expected to increase with sales.

Outdoor equipment mechanics will not experience the same level of growth. Although the construction of new single-family houses will result in an increase in the sale of lawn and garden machinery and the need for mechanics to repair it, growth will be strongly tempered by a trend toward smaller lawns and the contracting out of maintenance to landscaping firms that often repair their own equipment. Small engine mechanics' growth also will be tempered by the tendency of many consumers to replace relatively inexpensive items rather than have them repaired.

Job prospects. Job prospects should be excellent for people who complete formal training programs. Employers prefer mechanics who have knowledge of both 2- and 4-stroke engines and other emissions-reducing technology as the government increases regulation of the emissions produced by small engines. Many of the job openings for small engine mechanics will result from the need to replace the many experienced

small engine mechanics who are expected to transfer to other occupations, retire, or stop working for other reasons.

Work tends to be more available in summer months.

Earnings

Median wage-and-salary earnings of motorcycle mechanics were $14.45 an hour in May 2006, as compared to $17.65 for all installation, maintenance, and repair occupations. The middle 50 percent earned between $11.31 and $18.41. The lowest 10 percent earned less than $8.96, and the highest 10 percent earned more than $23.31. Median hourly earnings in other motor vehicle dealers, the industry employing the largest number of motorcycle mechanics, were $14.42.

Median wage-and-salary earnings of motorboat mechanics were $15.96 an hour in May 2006. The middle 50 percent earned between $12.66 and $20.01. The lowest 10 percent earned less than $9.94, and the highest 10 percent earned more than $24.40. Median hourly earnings in other motor vehicle dealers, the industry employing the largest number of motorboat mechanics, were $15.68.

Median wage-and-salary earnings of outdoor power equipment and other small engine mechanics were $12.94 an hour in May 2006. The middle 50 percent earned between $10.36 and $16.05. The lowest 10 percent earned less than $8.31, and the highest 10 percent earned more than $19.31. Median hourly earnings in lawn and garden equipment and supplies stores, the industry employing the largest number of outdoor power equipment and other small engine mechanics, were $12.74.

Small engine mechanics in small shops usually receive few benefits, but those employed in larger shops often receive paid vacations, sick leave, and health insurance. Some employers also pay for work-related training, provide uniforms, and help mechanics purchase new tools.

Related Occupations

Mechanics and repairers who work on durable equipment other than small engines include automotive service technicians and mechanics, diesel service technicians and mechanics, heavy vehicle and mobile equipment service technicians and mechanics, and home appliance repairers.

Sources of Additional Information

To learn about work opportunities, contact local motorcycle, motorboat, and lawn and garden equipment dealers, boatyards, and marinas. Local offices of the State employment service also may have information about employment and training opportunities.