Small Engine Mechanics

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

Significant Points

- Employment is expected to grow as fast as the average for all occupations, and persons with formal training as a mechanic should enjoy good job prospects.
- The 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 engines powering motorcycles, motorboats, and outdoor power equipment share many characteristics with their larger counterparts, including breakdowns. Small engine mechanics repair and service power equipment ranging from racing motorcycles to chain saws.

Like large engines, small engines require periodic service to minimize the chance of breakdowns and to keep them operating at peak performance. During routine equipment 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. Routine maintenance is normally a major part of the mechanic's work.

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 in a minimal amount of time. Quick and accurate diagnosis requires problem-solving ability and a thorough knowledge of the equipment's operation.

In larger repair shops, mechanics may use special computerized diagnostic testing equipment as a preliminary tool in analyzing equipment. This computerized 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. Some jobs require minor adjustments or the replacement of a single item, such as a carburetor or fuel pump. In contrast, a complete engine overhaul requires a number of hours to disassemble the engine and replace worn valves, pistons, bearings, and other internal parts. Some highly skilled mechanics use highly specialized components and the latest computerized equipment to customize and tune motorcycles and motorboats for racing.

Small engine mechanics use common handtools, such as wrenches, pliers, and screwdrivers. They also utilize power tools, such as drills and grinders, when customized repairs warrant their use. Computerized engine analyzers, compression gauges, ammeters and voltmeters, and other testing devices help mechanics locate faulty parts and tune engines. Hoists may be used to lift heavy equipment such as motorcycles, snowmobiles, or motorboats. Mechanics often refer to service manuals for detailed directions and specifications while performing repairs.

Motorcycle mechanics repair and overhaul 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 usually specialize in the service and repair of one type of equipment, although they may work on closely related products. Mechanics may service just a few makes and models of motorcycles, because dealers usually 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 are performed at the 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 gocarts. In addition, small engine mechanics in northern parts of the country may work on snowblowers and snowmobiles, but demand for this type of repair is seasonal.

Working Conditions

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 at docks or marinas, as well as in all weather conditions, when making repairs aboard boats. They may work in cramped or awkward positions to reach a boat's engine.

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 only during the busy spring and summer seasons. However, many 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.

Employment

Small engine mechanics held about 67,000 jobs in 2002. Motorcycle mechanics held around 15,000 jobs. Motorboat mechanics

Small engine mechanics inspect and clean engine parts during routine equipment maintenance.

held approximately 22,000 and outdoor power equipment and other small engine mechanics about 30,000. Almost half worked for 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 15 percent were self-employed, compared to about 6 percent of workers in all installation, maintenance, and repair occupations.

Training, Other Qualifications, and Advancement

Due to the increasing complexity of motorcycles and motorboats, most employers prefer to hire mechanics who graduate from formal training programs for small engine mechanics. Because the number of these specialized postsecondary programs is limited, most mechanics learn their skills on the job or while working in related occupations. For trainee jobs, employers hire persons with mechanical aptitude who are knowledgeable about the fundamentals of small two- and four-stroke engines. Many trainees develop an interest in mechanics and acquire some basic skills through working on automobiles, motorcycles, motorboats, or outdoor power equipment as a hobby. Others may be introduced to mechanics through vocational automotive training in high school or one of many postsecondary institutions.

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. Up to 3 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.

Employers often send mechanics and trainees to special courses conducted by motorcycle, motorboat, and outdoor power equipment manufacturers or distributors. These courses, which last as long as 2 weeks, upgrade the worker's skills and provide information on repairing new models. They are usually a prerequisite for any mechanic who performs warranty work for manufacturers or insurance companies.

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

Knowledge of basic electronics is essential for small engine mechanics, because electronic components control an engine's performance, the vehicle's instrument displays, and a variety of other functions of motorcycles, motorboats, and outdoor power equipment.

The most important work possessions of mechanics are their handtools. Mechanics usually provide their own tools, and many experienced mechanics have invested thousands of dollars in them. Employers typically furnish expensive power tools, computerized engine analyzers, and other diagnostic equipment, but mechanics accumulate handtools with experience.

The skills used as a small engine mechanic generally 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.

Job Outlook

Employment of small engine mechanics is expected to grow about as fast as the average for all occupations through the year 2012. Most of the job openings are expected to be replacement jobs, because many experienced small engine mechanics are expected to transfer to other occupations, retire, or stop working for other reasons. Job prospects should be especially favorable for persons who complete mechanic training programs.

Growth of personal disposable income over the 2002-12 period should provide consumers with more discretionary dollars to buy motorboats, lawn and garden power equipment, and motorcycles. This type of spending will require more mechanics to keep the growing amount of equipment in operation. In addition, routine service will always be a significant source of work for mechanics. While advancements in technology will lengthen the interval between checkups, the need for qualified mechanics to perform this service will increase.

Employment of motorcycle mechanics should increase as the popularity of motorcycles rebounds. Motorcycle usage should continue to be popular with persons between 18 and 24 years, an age group that historically has had the greatest proportion of motorcycle enthusiasts. Motorcycles also are becoming increasingly popular with persons over the age of 40. Traditionally, this group has more disposable income to spend on recreational equipment such as motorcycles and motorboats.

Over the next decade, more people will be entering the 40-and-older age group, the group responsible for the largest segment of marine craft purchases. These potential buyers will help expand the market for motorboats, while maintaining the demand for qualified mechanics.

The construction of new single-family houses will result in an increase in the lawn and garden equipment in operation, increasing the need for mechanics. However, equipment growth will be slowed by trends toward smaller lawns and the contracting out of maintenance to lawn service firms. Growth also will be tempered by the tendency of many consumers to dispose of and replace relatively inexpensive items rather than have them repaired.

Earnings

Median hourly earnings of motorcycle mechanics were $13.03 in 2002. The middle 50 percent earned between $10.14 and $16.65. The lowest 10 percent earned less than $8.17, and the highest 10 percent earned more than $21.04. Median hourly earnings in 2002 in other motor vehicle dealers, the industry employing the largest number of motorcycle mechanics, were $13.00.

Median hourly earnings of motorboat mechanics were $13.97 in 2002. The middle 50 percent earned between $10.91 and $17.32. The lowest 10 percent earned less than $8.89, and the highest 10 percent earned more than $21.20. Median hourly earnings in 2002 in other motor vehicle dealers, the industry employing the largest number of motorboat mechanics, were $13.43.

Median hourly earnings of outdoor power equipment and other small engine mechanics were $11.93 in 2002. The middle 50 percent earned between $9.45 and $14.99. The lowest 10 percent earned less than $7.39, and the highest 10 percent earned more than $18.24. Median hourly earnings in 2002 in lawn and garden equipment and supplies stores, the industry employing the largest number of outdoor power equipment and other small engine mechanics, were $10.97.

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

Related Occupations

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

Sources of Additional Information

For more details 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.

General information about motorcycle mechanic careers may be obtained from:

➤ American Motorcycle Institute, 3042 West International Speedway Blvd., Daytona Beach, FL 32124. Telephone (toll free): 800-881-2264.

➤ Motorcycle Mechanics Institute, 2844 West Deer Valley Rd., Phoenix, AZ 85027. Telephone (toll free): 800-528-7995.

General information about motorboat mechanic careers is available from:

➤ American Marine and Watercraft Institute, 3042 West International Speedway Blvd., Daytona Beach, FL 32124. Telephone (toll free): 800-881-2264.

➤ Marine Mechanics Institute, 9751 Delegates Dr., Orlando, FL 32827. Telephone (toll free): 800-342-9253.