Automobile Technicians

Automobile technicians (‘au-to-mo-bile tech’ni-cians) repair and service the mechanical, electrical, hydraulic, and electronic parts of automobiles, vans, pickup trucks, buses, and other gasoline and alternate-powered vehicles.

Much of American society is based on mobility. Mass transit cannot be relied upon to get everybody to everything at any given time. Americans love their cars and the freedom they offer to go wherever, whenever. When vehicles break down the owners often feel immobilized. Trained automobile technicians are needed to get the owners and vehicles moving again.

Automobile repair used to be simply mechanical work, but has now become a high-technology service. Technicians must have an ever increasing understanding of how integrated electronic systems and other complex computers work and interact with other vehicle components. They must also be able to work with electronic diagnostic equipment and computer-based technical reference materials.

Work Performed

Automobile technicians, also known as automobile mechanics or automotive technicians, work on cars, light trucks, tractors, and other gas or alternative-powered vehicles. They may work on engines, electrical systems, fuel systems, emission controls, brakes, and transmissions. Technicians repair air-conditioning systems, align wheels, fix steering and suspension problems, and work on problems with power windows and seats, warning lights, and safety devices.

When owners leave their vehicles for service, they describe their automotive problems so that diagnostic work can be done. In a dealership or repair shop, mechanics learn about the customer’s concerns from the service advisor who wrote the repair order. Technicians may test drive the vehicle or may use diagnostic equipment to find the cause of the trouble.

Noteworthy Quote:

“Being a service technician is an extremely rewarding career. Having the ability to help someone and fix something that is so important to them in their everyday life is very satisfying. Each day brings in new challenges and opportunities to learn...Only the best technicians understand that in today’s high tech automotive field there is always something new to learn...Education is the key to becoming a successful technician – not just another part installer.”

– Richard Saxton, ASE certified Master Technician and Educator, Philadelphia, Pennsylvania
After the technician finds the cause and the extent of the trouble, the service advisor talks to the car owner about what is wrong with the vehicle. Many states require that shops prepare a written estimate for repair and maintenance work. Generally, these estimates are prepared by the service advisor.

Some states require a work authorization from the car owner before technicians can begin the work. Technicians may use repair manuals, charts, and computers to decide the best way to repair the vehicle. Technicians may adjust or reline brakes, tighten body bolts, and overhaul or replace fuel injectors, starters, and alternators. They may rewire ignition systems and lighting systems. They may remove and repair or replace transmissions, clutches, and other units.

Technicians also do preventive maintenance work on cars, trucks, and other vehicles. Preventive maintenance helps keep vehicles running properly and helps technicians find mechanical problems when they can be corrected easily and inexpensively. Belts, hoses, plugs, brake and fuel systems, and other potentially troublesome items are among those closely watched.

In many small shops technicians do all sorts of repairs themselves. Some large shops or specialty garages, however, may hire specially trained workers to do specific jobs. Transmission technicians, for instance, work on couplings, hydraulic pumps, and other parts of automatic and manual transmissions. Since many transmissions have electronic solenoids, switches, and sensors, repairs require experienced, skilled technicians who understand hydraulics, electronics, and power flow.

Tune-up technicians may use electronic test equipment to diagnose and repair fuel, ignition, and emissions control systems. They replace spark plugs, sensors, actuators, computers, and other units to ensure efficient engine performance. Air-conditioning repairers install and repair air-conditioners and service their components, such as compressors, condensers, and controls. These workers require special training in Federal and State regulations governing the handling and disposal of refrigerants.

Front-end mechanics align and balance wheels and repair steering and suspension systems. They use special alignment equipment and wheel balancing machines. Brake technicians adjust brakes and replace brake linings, shoes, and pads. They repair hydraulic cylinders, turn discs and drums, and make other repairs on brake systems. Some mechanics do both brake and front-end work.

Technicians use many kinds of different tools and equipment. They use pneumatic (air-powered) wrenches to remove bolts. They use a lathe or a grinding machine to service brake drums and rotors. When they remove or repair exhaust systems, they may use equipment like oxyacetylene torches.

They may use floor jacks to lift vehicles for repairs, and may use engine hoists to remove or install engines. Most shops have electronic equipment such as infrared engine analyzers, lab scopes, scanners, and other diagnostic devices. Technicians also use hand tools such as pliers, wrenches, and screwdrivers.

Repair professionals need to continuously update their skills in order to keep up with the new technologies being introduced by automobile manufacturers. It is not uncommon for a newer vehicle to have 15 or more computers to control the vehicle’s functions. Another significant advancement is “hybrid” automobiles. Rather than using just gasoline to run its engine, hybrid vehicles use both gasoline and electricity.

Working Conditions

Many automobile technicians work in shops that employ one to five technicians. Large repair shops may have more than twenty-five technicians. In large shops service managers assign work to technicians, who may in turn oversee helpers or apprentices.

Most repair shops are well-lighted and well-ventilated. Federal and state safety laws help to reduce the risk of injury to technicians. Some hazards of this work are carbon monoxide poisoning, cuts and burns, allergies to cleaning fluids and other chemicals, and muscle strain from using the wrong technique to lift heavy objects.

Technicians do most of their work indoors, but they may go out on service calls to make emergency repairs on cars or trucks that have broken down on the road. The work may be dirty, since cars can be greasy and oily or covered with mud, water, or snow. Some technicians work in cramped positions underneath or inside cars.

Hours and Earnings

Most technicians work forty or more hours a week. They may work evenings and weekends to fulfill any customer service needs. Those working more than forty hours a week may earn overtime wages—either time and a half or double time.

Earnings depend on skill, experience, employer, and location. Technicians may get an hourly wage, a weekly wage, a percentage of the labor on the customer’s bill, or a combination of the three. Many repair shops pay technicians a percentage of labor charges for repairs they make. This system gives skilled technicians the opportunity to earn much more than the average hourly rate. In addition, employers generally guarantee mechanics working on commission a minimum weekly salary.

According to the Bureau of Labor Statistics, automotive service technicians and mechanics earned an average wage of $16.71 an hour in 2004. The average yearly salary was $34,760. Overall earnings ranged from around $8.79 an hour to well over $26.37 an hour. Yearly salaries ranged from about $18,280 to $54,850 a year. Midrange earnings fell between $11.37 and $20.83 an hour, or $23,650 and $43,320 a year. Some owner/operators of automotive service businesses had even higher earnings, ranging from $60,000 to $80,000 a year.

Technicians new to the field have salaries that depend on their knowledge, training, skill, speed, and the location of the shop. Apprentices receive a percentage of a journeyworker’s hourly rate. During the first six months
of work, apprentices earn about 55 percent of the journeyworker’s rate. In the final year of the apprentice-ship they may earn between 80 and 90 percent of the journeyworker’s rate.

Most technicians furnish their own hand tools. The cost of the tools is spread out throughout the length of the apprenticeship. Initially, apprentices can expect to spend $500 or more on tools. By the time they become journeyworker mechanics, they may have spent $10,000 or more on tools. Employers furnish larger power equip-ment and supply diagnostic and testing equipment.

Many employers have benefit packages that offer health insurance, paid vacations and holidays, life and disability insurance, and pension plans. Some employers offer profit sharing plans and will pay a percentage of the hand tools purchased by the technician.

Education and Training

Automobile technicians should have at least a high school diploma before entering the workforce. High school students should take mathematics, chemistry, electronics, physics, computer science, and English. Auto shop, machine shop, and electrical shop, as well as some business courses will also be helpful.

Since automotive technology has become so complex, authorities in the industry recommend that prospective technicians complete a formal training program in automotive service after high school. Students can learn the basics of automobile repair in high school, but the programs vary in quality and few offer training in the skills required to get a job as a trainee after graduation.

Postsecondary vocational/technical school programs combined with hands-on practice generally offer the best intensive preparation for this career. Students should look for programs of study accredited by the Accrediting Commis-sion of Career Schools and Colleges of Technology. Some evening or adult education courses may last six months. An accredited course at a community or technical college may require one or two years of study. Some specialties, such as transmission repair and service, require one or two years of further training and experience.

Some automobile manufacturers and dealers sponsor associate degree programs at community colleges across the United States. Students divide their time in six to twelve week segments where they attend school full time or work in the service departments of sponsoring dealers. These programs may take as long as four years to complete, but students gain valuable work experience, earn money while attending school, and have the potential for full-time employment after graduation.

The National Institute for Automotive Service Excellence (ASE) also certifies schools in automotive service training. The certification program is supervised by the National Automotive Technicians Education Foundation (NATEF). Although certification is voluntary, certification signifies that the program meets uniform standards for equipment, staff credentials, and curriculum.

An apprenticeship is another good way to learn this work, although the number of employers willing to take on long-term apprenticeships has dropped sharply in the past few years. Most apprenticeships take three or four years to complete.

Technicians must constantly update their skills because automotive technology changes rapidly. Many automotive manufacturers and trade associations offer short clinics and seminars. Many new car dealers send their technicians, both trainees and skilled workers, to factory-run schools to learn about new systems or to study mechanical developments on late model cars.

Certification, Unions, and Professional Societies

Certification is voluntary for automotive technicians in most states. The National Institute for Automotive Service Excellence (ASE) offers certification programs in areas such as electrical systems, engine repair, brake systems, suspension and steering, alternate fuels, and heating and air-conditioning, among others.

Candidates must have at least two years of work experience and pass one or more tests. Completion of a formal program of study may count as one year of experience. Those who pass all ASE certification exams, or the majority of specialty areas in a given series, earn the title Master Technician. To maintain their certification, technicians must be recertified every five years.

Some auto technicians belong to unions such as the International Association of Machinists and Aerospace Workers or the International Brotherhood of Teamsters, AFL-CIO. Some technicians belong to the United Automobile, Aerospace, and Agricultural Implement Workers of America.

Personal Qualifications

Technicians should have a good mechanical aptitude and should be logical thinkers. Patience is essential for much of the work. They should be able to communicate clearly and should have good people skills. Those who would like to run their own business or manage a dealership service department must be able to plan and schedule repair work and supervise workers.

Occupations can be adapted for workers with disabili-ties. 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

In 2004, around 803,000 workers were employed as automotive service technicians and mechanics. Technicians worked in automobile repair shops, garages, service stations, and the service departments of new and used car and truck dealers. Many technicians worked in the automo-tive service centers of national merchandisers such as Goodyear or Firestone.
Companies that own fleets of cars and trucks employed technicians. Federal, state, and local government agencies like the postal service, the police, and sanitation departments hired technicians to service vehicles. Automobile manufacturers also employed mechanics to test, adjust, and repair cars at the end of assembly lines. About 16 percent of automobile technicians were self-employed.

Employment Outlook
The Bureau of Labor Statistics predicts employment for automobile technicians will grow by 15.7 percent through the year 2014—an increase of around 126,000 jobs. An additional 213,000 positions are also expected to open due to replacement needs. The number of cars and trucks on the road will continue to increase, and skilled automotive technicians will be needed to repair and maintain them. Dependable, skilled certified technicians who have completed a formal training program should have no problem finding a job. Most jobs will be in independent auto repair shops or automobile dealerships.

Entry Methods
High school graduates, or others with little experience, can apply for entry jobs at repair shops, service stations, bus companies, or auto dealerships. They can also get job information at state employment offices or from newspaper want ads. Employers and local unions often have information about apprenticeships.

Beginners usually start as trainees, helpers, lubrication workers, or gasoline service station attendants. As they learn new skills they begin to take on routine service tasks and routine repairs. They may learn to do service work like brake repairs in a relatively short time. More difficult repairs, on transmissions, for instance, may take several years of training and experience.

The best way to enter this field, however, is to complete a formal training program after high school. Graduates of technical schools and community colleges can get help finding a job through school placement offices.

Advancement
Capable technicians may become skilled in a specialty such as automatic transmissions, electrical systems, air-conditioning and heating systems, engine performance, or hybrid technologies. Some skilled technicians may become shop supervisors, service writers, parts managers, or service managers. Others may open their own repair shop or parts store.

Technicians may enter the sales force and become salespeople, factory representatives, and regional sales supervisors for auto manufacturers, automotive parts wholesalers, or other automotive industry firms. Some technicians continue their education so that they become qualified to teach others. Others become automotive damage appraisers for insurance firms.

For Further Research

Automotive Youth Education Systems, 100 West Big Beaver, Suite 300, Troy, MI 48084. Web site: www.ayes.org


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