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# Diesel Service Technicians and Mechanics

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## Significant Points

- A career in diesel engine repair can offer relatively high wages and the challenge of skilled repair work.
- Opportunities are expected to be very good for people who complete formal training programs.
- National certification is the recognized standard of achievement for diesel service technicians and mechanics.

## Nature of the Work

Diesel-powered engines are more efficient and durable than their gasoline-burning counterparts. These powerful engines are standard in our Nation's trucks, locomotives, and buses and are becoming more prevalent in light vehicles, including passenger vehicles, pickups, and other work trucks.

Diesel service technicians and mechanics, including *bus and truck mechanics and diesel engine specialists*, repair and maintain the diesel engines that power transportation equipment. Some diesel technicians and mechanics also work on other heavy vehicles and mobile equipment, including bulldozers, cranes, road graders, farm tractors, and combines. Other technicians repair diesel-powered passenger automobiles, light trucks, or boats. (For information on technicians and mechanics working primarily on gasoline-powered automobiles, heavy vehicles and mobile equipment, or boat engines, see the *Handbook* sections on automotive service technicians, heavy vehicle and mobile equipment service technicians, and small engine mechanics.)

Increasingly, diesel technicians must be versatile to adapt to customers' needs and new technologies. It is common for technicians to handle all kinds of repairs, working on a vehicle's electrical system one day and doing major engine repairs the next. Diesel maintenance is becoming increasingly complex, as more electronic components are used to control the operation of an engine. For example, microprocessors now regulate and manage fuel timing, increasing the engine's efficiency. Also, new emissions standards require mechanics to retrofit engines with emissions control systems, such as emission filters and catalysts, to comply with pollution regulations. In modern shops, diesel service technicians use hand-held or laptop computers to diagnose problems and adjust engine functions.

Technicians who work for organizations that maintain their own vehicles spend most of their time doing preventive maintenance. During a routine maintenance check, technicians follow a checklist that includes inspecting brake systems, steering mechanisms, wheel bearings, and other important parts. Following inspection, technicians repair or adjust parts that do not work properly or remove and replace parts that cannot be fixed.

Diesel service technicians use a variety of tools in their work, including power tools, such as pneumatic wrenches that remove bolts quickly; machine tools, such as lathes and grinding ma-

chines to rebuild brakes; welding and flame-cutting equipment to remove and repair exhaust systems; and jacks and hoists to lift and move large parts. Common handtools—screwdrivers, pliers, and wrenches—are used to work on small parts and get at hard-to-reach places. Diesel service technicians and mechanics also use a variety of computerized testing equipment to pinpoint and analyze malfunctions in electrical systems and engines. Employers typically furnish expensive power tools, computerized engine analyzers, and other diagnostic equipment, but workers usually accumulate their own hand tools over time.

**Work environment.** Technicians normally work in well-lit and ventilated areas. However, some shops are drafty and noisy. Many employers provide lockers and shower facilities. Diesel technicians usually work indoors, although they occasionally repair vehicles on the road. Diesel technicians may lift heavy parts and tools, handle greasy and dirty parts, and stand or lie in awkward positions while making repairs. Minor cuts, burns, and bruises are common, although serious accidents can usually be avoided when safety procedures are followed. Technicians may work as a team or be assisted by an apprentice or helper when doing heavy work, such as removing engines and transmissions.

Most service technicians work a standard 40-hour week, although some work longer hours, particularly if they are self-employed. A growing number of shops have expanded their hours to speed repairs and offer more convenience to customers. Technicians employed by truck and bus firms providing service around the clock may work evenings, nights, and weekends.

## Training, Other Qualifications, and Advancement

Employers prefer to hire graduates of formal training programs because those workers are able to advance quickly to the journey level of diesel service. Other workers who learn diesel engine repair through on-the-job training need 3 to 4 years of experience before becoming journey-level technicians.

**Education and training.** High school courses in automotive repair, electronics, English, mathematics, and physics provide a strong educational background for a career as a diesel service technician or mechanic. Many mechanics also have additional training after high school.

A large number of community colleges and trade and vocational schools offer programs in diesel engine repair. These



*Diesel service technicians repair and maintain diesel engines in tractor trailers, locomotives, and construction equipment.*

**Projections data from the National Employment Matrix**

Occupational Title	SOC Code	Employment, 2006	Projected employment, 2016	Change, 2006-16	
				Number	Percent
Bus and truck mechanics and diesel engine specialists .....	49-3031	275,000	306,000	32,000	11

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*.

programs usually last from 6 months to 2 years and may lead to a certificate of completion or an associate degree. Some offer about 30 hours per week of hands-on training with equipment; others offer more lab or classroom instruction. Formal training provides a foundation in the latest diesel technology and instruction in the service and repair of the equipment that technicians will encounter on the job. Training programs also teach technicians to interpret technical manuals and to communicate well with coworkers and customers. Increasingly, employers work closely with representatives of educational programs, providing instructors with the latest equipment, techniques, and tools and offering jobs to graduates.

Although formal training programs lead to the best prospects, some technicians and mechanics learn through on-the-job training. Unskilled beginners generally are assigned tasks such as cleaning parts, fueling and lubricating vehicles, and driving vehicles into and out of the shop. Beginners are usually promoted to trainee positions as they gain experience and as vacancies become available.

After a few months' experience, most trainees can perform routine service tasks and make minor repairs. These workers advance to increasingly difficult jobs as they prove their ability and competence. After technicians master the repair and service of diesel engines, they learn to work on related components, such as brakes, transmissions, and electrical systems. Generally, technicians with at least 3 to 4 years of on-the-job experience will qualify as journey-level diesel technicians.

Employers often send experienced technicians and mechanics to special training classes conducted by manufacturers and vendors, in which workers learn about the latest technology and repair techniques.

**Other qualifications.** Employers usually look for applicants who have mechanical aptitude and strong problem-solving skills and who are at least 18 years old and in good physical condition. Technicians need a State commercial driver's license to test-drive trucks or buses on public roads. Many companies also require applicants to pass a drug test. Practical experience in automobile repair at an automotive service station, in the Armed Forces, or as a hobby is valuable as well.

**Certification and advancement.** Experienced diesel service technicians and mechanics with leadership ability may advance to shop supervisor or service manager, and some open their own repair shops. Technicians and mechanics with sales ability sometimes become sales representatives.

Although national certification is not required for employment, many diesel engine technicians and mechanics find that it increases their ability to advance. Certification by the National Institute for Automotive Service Excellence (ASE) is the recognized industry credential for diesel and other automotive service technicians and mechanics. Diesel service technicians may be certified as master medium/heavy truck technicians, master

school bus technicians, or master truck equipment technicians. They may also be certified in specific areas of truck repair, such as drivetrains, brakes, suspension and steering, electrical and electronic systems, or preventive maintenance and inspection. For certification in each area, a technician must pass one or more of the ASE-administered exams and present proof of 2 years of relevant work experience. To remain certified, technicians must be retested every 5 years.

**Employment**

Diesel service technicians and mechanics held about 275,000 jobs in 2006. These workers were employed in almost every industry, particularly those that use trucks, buses, and equipment to haul, deliver, and transport materials, goods, and people. The largest employer, the truck transportation industry, employed 1 out of 6 diesel service technicians and mechanics. Less than 1 out of 10 were employed by local governments, mainly to repair school buses, waste removal trucks, and road equipment. A similar number were employed by automotive repair and maintenance facilities. The rest were employed throughout the economy, including construction, manufacturing, retail and wholesale trade, and automotive leasing. About 16,000, a relatively small number, were self-employed. Nearly every area of the country employs diesel service technicians and mechanics, although most work is found in towns and cities where trucking companies, bus lines, and other fleet owners have large operations.

**Job Outlook**

The number of jobs for diesel service technicians and mechanics is projected to grow about as fast as average. Opportunities should be very good for people who complete formal training in diesel mechanics.

**Employment change.** Employment of diesel service technicians and mechanics is expected to grow 11 percent from 2006 to 2016, about as fast as the average for all occupations. Additional trucks—and truck repairers—will be needed to keep pace with the increasing volume of freight shipped nationwide. Moreover, the greater durability and economy of the diesel engine relative to the gasoline engine is expected to increase the number of buses, trucks, and other vehicles powered by diesel engines.

And because diesel engines are now cleaner burning and more efficient—to comply with emissions and environmental standards—they are expected to be used in more passenger vehicles, which will create jobs for diesel service technicians and mechanics over the long run. In fact, auto industry executives are projecting more sales of diesel passenger vehicles as gasoline prices increase. In the short-run, many older diesel engines in trucks must be retrofitted to comply with the new emissions regulations, creating more jobs for diesel engine mechanics.

**Job prospects.** People who enter diesel engine repair will find favorable opportunities, especially as the need to replace workers who retire increases over the next decade. Opportunities should be very good for people who complete formal training in diesel mechanics at community colleges or vocational and technical schools. Applicants without formal training will face stiffer competition for jobs.

Most people entering this occupation can expect relatively steady work because changes in economic conditions have less of an effect on the diesel repair business than on other sectors of the economy. During a downturn in the economy, however, employers may be reluctant to hire new workers.

**Earnings**

Median hourly earnings of bus and truck mechanics and diesel engine specialists, including incentive pay, were \$18.11 in May 2006, more than the \$17.65 median hourly earnings for all installation, maintenance, and repair occupations. The middle 50 percent earned between \$14.48 and \$22.07 an hour. The lowest 10 percent earned less than \$11.71, and the highest 10 percent earned more than \$26.50 an hour. Median hourly earnings in the industries employing the largest numbers of bus and truck mechanics and diesel engine specialists in May 2006 were as follows:

Local government .....	\$21.22
Motor vehicle and motor vehicle parts and supplies merchant wholesalers .....	18.27
Automotive repair and maintenance .....	17.53
General freight trucking .....	17.14
Specialized freight trucking .....	16.15

Because many experienced technicians employed by truck fleet dealers and independent repair shops receive a commission related to the labor cost charged to the customer, weekly earnings depend on the amount of work completed. Beginners usually earn from 50 to 75 percent of the rate of skilled workers and receive increases as they become more skilled.

About 23 percent of diesel service technicians and mechanics are members of labor unions, including the International Association of Machinists and Aerospace Workers; the Amalgamated Transit Union; the International Union, United Automobile, Aerospace and Agricultural Implement Workers of America; the

Transport Workers Union of America; the Sheet Metal Workers' International Association; and the International Brotherhood of Teamsters. Labor unions may provide additional benefits for their members.

**Related Occupations**

Diesel service technicians and mechanics repair trucks, buses, and other diesel-powered equipment. Related technician and mechanic occupations include aircraft and avionics equipment mechanics and service technicians, automotive service technicians and mechanics, heavy vehicle and mobile equipment service technicians and mechanics, and small engine mechanics.

**Sources of Additional Information**

More details about work opportunities for diesel service technicians and mechanics may be obtained from local employers such as trucking companies, truck dealers, or buslines; locals of the unions previously mentioned; and local offices of your State employment service. Local State employment service offices also may have information about training programs. State boards of postsecondary career schools have information on licensed schools with training programs for diesel service technicians and mechanics.

For general information about a career as a diesel service technician or mechanic, write:

➤ Association of Diesel Specialists, 10 Laboratory Dr., PO Box 13966, Research Triangle Park, NC 27709.

Internet: <http://www.diesel.org>

Information on how to become a certified diesel technician of medium to heavy-duty vehicles or a certified bus technician is available from:

➤ National Institute for Automotive Service Excellence (ASE), 101 Blue Seal Dr. SE., Suite 101, Leesburg, VA 20175.

➤ Internet: <http://www.asecert.org>

For a directory of accredited private trade and technical schools with training programs for diesel service technicians and mechanics, contact:

➤ Accrediting Commission of Career Schools and Colleges of Technology, 2101 Wilson Blvd., Suite 302, Arlington, VA 22201. Internet: <http://www.accsct.org>

➤ National Automotive Technicians Education Foundation, 101 Blue Seal Dr. SE., Suite 101, Leesburg, VA 20175.

Internet: <http://www.natef.org>