



TORQ Analysis of Maintenance and Repair Workers, General to Welders, Cutters, and Welder Fitters

ANALYSIS INPUT					
Transfer	Title	O* NET	Filters		
From Title:	Maintenance and Repair Workers, General	49-9042.00	Abilities:	Importance Level: 50	Weight: 1
To Title:	Welders, Cutters, and Welder Fitters	51-4121.06	Skills:	Importance Level: 69	Weight: 1
Labor Market Area:	Maine Statewide		Knowledge:	Importance Level: 69	Weight: 1

TORQ RESULTS											
Grand TORQ:					90						
Ability TORQ		Skills TORQ		Knowledge TORQ							
Level		88	Level		88						
			Level		95						
Gaps To Narrow if Possible		Upgrade These Skills		Knowledge to Add							
Ability	Level	Gap	Impt	Skill	Level	Gap	Impt	Knowledge	Level	Gap	Impt
Arm-Hand Steadiness	51	7	75	No Skills Upgrade Required!				No Knowledge Upgrades Required!			
LEVEL and IMPT (IMPORTANCE) refer to the Target Welders, Cutters, and Welder Fitters. GAP refers to level difference between Maintenance and Repair Workers, General and Welders, Cutters, and Welder Fitters.											

ASK ANALYSIS			
Ability Level Comparison - Abilities with importance scores over 50			
Description	Maintenance and Repair Workers, General	Welders, Cutters, and Welder Fitters	Importance
Arm-Hand Steadiness	44	51	75
Near Vision	50	50	65
Manual Dexterity	48	46	62
Control Precision	48	44	62
Oral Expression	51	50	56
Problem Sensitivity	51	39	56
Finger Dexterity	44	42	56
Multilimb Coordination	53	44	56
Oral Comprehension	50	46	53
Visualization	53	51	50
Selective Attention	44	44	50
Skill Level Comparison - Abilities with importance scores over 69			
Description	Maintenance and Repair Workers, General	Welders, Cutters, and Welder Fitters	Importance



Knowledge Level Comparison - Knowledge with importance scores over 69

Description	Maintenance and Repair Workers, General	Welders, Cutters, and Welder Fitters	Importance
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Experience & Education Comparison

Related Work Experience Comparison			Required Education Level Comparison		
Description	Maintenance and Repair Workers, General	Welders, Cutters, and Welder Fitters	Description	Maintenance and Repair Workers, General	Welders, Cutters, and Welder Fitters
10+ years	0%	1%	Doctoral	0%	0%
8-10 years	5%	1%	Professional Degree	0%	0%
6-8 years	7%	0%	Post-Masters Cert	0%	0%
4-6 years	19%	0%	Master's Degree	0%	0%
2-4 years	18%	17%	Post-Bachelor Cert	0%	0%
1-2 years	24%	23%	Bachelors	0%	0%
6-12 months	4%	28%	AA or Equiv	8%	0%
3-6 months	0%	6%	Some College	21%	8%
1-3 months	0%	1%	Post-Secondary Certificate	31%	26%
0-1 month	10%	6%	High School Diploma or GED	25%	26%
None	8%	11%	No HSD or GED	11%	38%

Maintenance and Repair Workers, General

Welders, Cutters, and Welder Fitters

Most Common Educational/Training Requirement:

Moderate-term on-the-job training

Long-term on-the-job training

Job Zone Comparison

3 - Job Zone Three: Medium Preparation Needed

Previous work-related skill, knowledge, or experience is required for these occupations. For example, an electrician must have completed three or four years of apprenticeship or several years of vocational training, and often must have passed a licensing exam, in order to perform the job.

Most occupations in this zone require training in vocational schools, related on-the-job experience, or an associate's degree. Some may require a bachelor's degree.

Employees in these occupations usually need one or two years of training involving both on-the-job experience and informal training with experienced workers.

2 - Job Zone Two: Some Preparation Needed

Some previous work-related skill, knowledge, or experience may be helpful in these occupations, but usually is not needed. For example, a teller might benefit from experience working directly with the public, but an inexperienced person could still learn to be a teller with little difficulty.

These occupations usually require a high school diploma and may require some vocational training or job-related course work. In some cases, an associate's or bachelor's degree could be needed.

Employees in these occupations need anywhere from a few months to one year of working with experienced employees.

Tasks

Maintenance and Repair Workers, General	Welders, Cutters, and Welder Fitters
Core Tasks	Core Tasks
Generalized Work Activities: <ul style="list-style-type: none"> Inspecting Equipment, Structures, or Material - Inspecting equipment, structures, or materials to identify the cause of errors or other problems or defects. Performing General Physical Activities - Performing physical activities that require considerable use of your arms and legs and moving your whole body, such as climbing, lifting, balancing, walking, stooping, and handling of materials. 	Generalized Work Activities: <ul style="list-style-type: none"> Inspecting Equipment, Structures, or Material - Inspecting equipment, structures, or materials to identify the cause of errors or other problems or defects. Identifying Objects, Actions, and Events - Identifying information by categorizing, estimating, recognizing differences or similarities, and detecting changes in circumstances or events. Getting Information - Observing, receiving,



- Repairing and Maintaining Mechanical Equipment - Servicing, repairing, adjusting, and testing machines, devices, moving parts, and equipment that operate primarily on the basis of mechanical (not electronic) principles.
- Handling and Moving Objects - Using hands and arms in handling, installing, positioning, and moving materials, and manipulating things.
- Getting Information - Observing, receiving, and otherwise obtaining information from all relevant sources.

Specific Tasks

Occupation Specific Tasks:

- Adjust functional parts of devices and control instruments, using hand tools, levels, plumb bobs, and straightedges.
- Align and balance new equipment after installation.
- Assemble, install and/or repair wiring, electrical and electronic components, pipe systems and plumbing, machinery, and equipment.
- Clean and lubricate shafts, bearings, gears, and other parts of machinery.
- Diagnose mechanical problems and determine how to correct them, checking blueprints, repair manuals, and parts catalogs as necessary.
- Dismantle devices to gain access to and remove defective parts, using hoists, cranes, hand tools, and power tools.
- Estimate repair costs.
- Fabricate and repair counters, benches, partitions, and other wooden structures such as sheds and outbuildings.
- Grind and reseat valves, using valve-grinding machines.
- Inspect drives, motors, and belts, check fluid levels, replace filters, and perform other maintenance actions, following checklists.
- Inspect used parts to determine changes in dimensional requirements, using rules, calipers, micrometers, and other measuring instruments.
- Inspect, operate, and test machinery and equipment in order to diagnose machine malfunctions.
- Lay brick to repair and maintain buildings, walls, arches and other structures.
- Maintain and repair specialized equipment and machinery found in cafeterias, laundries, hospitals, stores, offices, and factories.
- Operate cutting torches or welding equipment to cut or join metal parts.
- Order parts, supplies, and equipment from catalogs and suppliers, or obtain them from storerooms.
- Paint and repair roofs, windows, doors, floors, woodwork, plaster, drywall, and other parts of building structures.

and otherwise obtaining information from all relevant sources.

- Communicating with Supervisors, Peers, or Subordinates - Providing information to supervisors, co-workers, and subordinates by telephone, in written form, e-mail, or in person.
- Evaluating Information to Determine Compliance with Standards - Using relevant information and individual judgment to determine whether events or processes comply with laws, regulations, or standards.

Specific Tasks

Occupation Specific Tasks:

- Adjust electric current and timing cycles of resistance welding machines to heat metals to bonding temperature.
- Align and clamp workpieces together, using rules, squares, or hand tools, or position items in fixtures, jigs, or vises.
- Brush flux onto joints of workpieces or dip braze rods into flux, to prevent oxidation of metal.
- Clean equipment parts, such as tips of soldering irons, using chemical solutions or cleaning compounds.
- Clean joints of workpieces with wire brushes or by dipping them into cleaning solutions.
- Clean workpieces to remove dirt and excess acid, using chemical solutions, files, wire brushes, or grinders.
- Connect hoses from torches to regulator valves and cylinders of oxygen and specified gas fuels.
- Cut carbon electrodes to specified sizes and shapes, using cutoff saws.
- Dip workpieces into molten solder, or place solder strips between seams and heat seams with irons, to bond items together.
- Examine seams for defects, and rework defective joints or broken parts.
- Grind, cut, buff, or bend edges of workpieces to be joined to ensure snug fit, using power grinders and hand tools.
- Guide torches and rods along joints of workpieces to heat them to brazing temperature, melt braze alloys, and bond workpieces together.
- Heat soldering irons or workpieces to specified temperatures for soldering, using gas flames or electric current.
- Melt and apply solder along adjoining edges of workpieces to solder joints, using soldering irons, gas torches, or electric-ultrasonic equipment.
- Melt and apply solder to fill holes, indentations, and seams of fabricated metal products, using soldering equipment.
- Melt and separate brazed or soldered joints to remove and straighten damaged or misaligned components, using hand torches, irons or furnaces.



- Perform routine preventive maintenance to ensure that machines continue to run smoothly, building systems operate efficiently, and the physical condition of buildings does not deteriorate.
- Plan and lay out repair work using diagrams, drawings, blueprints, maintenance manuals, and schematic diagrams.
- Record maintenance and repair work performed and the costs of the work.
- Repair or replace defective equipment parts using hand tools and power tools, and reassemble equipment.
- Set up and operate machine tools to repair or fabricate machine parts, jigs and fixtures, and tools.
- Use tools ranging from common hand and power tools, such as hammers, hoists, saws, drills, and wrenches, to precision measuring instruments and electrical and electronic testing devices.

Detailed Tasks

Detailed Work Activities:

- adhere to safety procedures
- adjust or set mechanical controls or components
- align or adjust clearances of mechanical components or parts
- apply cleaning solvents
- assemble and install pipe sections, fittings, or plumbing fixtures
- assemble, dismantle, or reassemble equipment or machinery
- bend tubing or conduit
- build or repair structures in construction, repair, or manufacturing setting
- burn (cut), trim, or scarf metal objects
- climb ladders, scaffolding, or utility or telephone poles
- conduct tests to locate mechanical system malfunction
- construct, erect, or repair wooden frameworks or structures
- control HVAC equipment
- coordinate production maintenance activities
- cut, bend, or thread pipe for gas, air, hydraulic, or water lines
- cut, shape, fit, or join wood or other construction materials
- determine installation, service, or repair needed
- diagnose mechanical problems in machinery or equipment
- erect scaffold
- estimate time or cost for installation, repair, or construction projects
- fabricate sheet metal parts or items
- fabricate, assemble, or disassemble

- Place solder bars into containers, and turn knobs to specified positions to melt solder and regulate its temperature.
- Remove workpieces from fixtures, using tongs, and cool workpieces, using air or water.
- Remove workpieces from molten solder and hold parts together until color indicates that solder has set.
- Select torch tips, flux, and brazing alloys from data charts or work orders.
- Smooth soldered areas with alternate strokes of paddles and torches, leaving soldered sections slightly higher than surrounding areas for later filing.
- Sweat together workpieces coated with solder.
- Turn dials to set intensity and duration of ultrasonic impulses, according to work order specifications.
- Turn valves to start flow of gases, and light flames and adjust valves to obtain desired colors and sizes of flames.

Detailed Tasks

Detailed Work Activities:

- adjust welding equipment
- apply cleaning solvents
- apply flux to workpiece before soldering or brazing
- braze metal parts or components together
- clean or degrease weld, or parts to be welded or soldered
- examine products or work to verify conformance to specifications
- fabricate, assemble, or disassemble manufactured products by hand
- file, sand, grind, or polish metal or plastic objects
- identify properties of metals for repair or fabrication activities
- load or unload material or workpiece into machinery
- monitor the quantity of assembly output
- move or fit heavy objects
- perform safety inspections in industrial, manufacturing or repair setting
- position, clamp or assemble workpiece prior to welding
- preheat metal before welding, brazing, or soldering
- read blueprints
- read production layouts
- read technical drawings
- read work order, instructions, formulas, or processing charts
- sharpen metal objects
- solder metal parts or components together
- understand technical operating, service or



manufactured products by hand

- follow safe waste disposal procedures
- identify properties of metals for repair or fabrication activities
- inspect machinery or equipment to determine adjustments or repairs needed
- install doors, wood floors, window frames, trim, or stairs
- install electrical fixtures or components
- install electronic equipment, components, or systems
- install equipment or attachments on machinery or related structures
- install industrial machinery or related heavy equipment
- install insulating materials
- install locks, hinges, or related finish hardware
- install or replace glass in windows, skylights, or other structural surfaces
- install or replace meters, regulators, or related measuring or control devices
- install shingles, tile, slate, asphalt, or related roofing materials
- install/connect electrical equipment to power circuit
- install/string electrical or electronic cable or wiring
- lay or install brick, block, stone, tile, or related masonry material
- lubricate machinery, equipment, or parts
- maintain or repair industrial or related equipment/machinery
- maintain or repair work tools or equipment
- maintain repair records
- maintain specialized manufacturing or commercial equipment or machinery
- maintain welding machines or equipment
- measure and mark reference points or cutting lines on workpieces
- move or fit heavy objects
- observe or listen to machinery or equipment operation to detect malfunctions
- operate crane in construction, manufacturing or repair setting
- operate hoist, winch, or hydraulic boom
- order or purchase supplies, materials, or equipment
- paint walls or other structural surfaces
- perform safety inspections in industrial, manufacturing or repair setting
- plan or organize work
- position, align, or level machines, equipment, or structures
- prepare building surfaces for paint, finishes, wallpaper, or adhesives
- pressure test piping system or equipment for leaks

repair manuals

- use acetylene welding/cutting torch
- use braze-welding equipment
- use hand or power tools
- use soldering equipment

Technology - Examples

Analytical or scientific software

- Scientific Software Group Filter Drain FD

Calendar and scheduling software

- OmniFleet Equipment Maintenance Management

Computer aided design CAD software

- EZ Pipe software

Project management software

- Recordkeeping software

Tools - Examples

- Wrenches
- Anvils
- Bandsaws
- Slitters
- Motorized cutting torches
- Calipers
- Desktop computers
- Underwater electrode holders
- Files
- Gas flow measurement instruments
- Forklifts
- Current converters
- Brazing equipment
- Goggles
- Grinding machinery
- Hand chipping hammers
- Clamps
- Temperature measurement instruments
- Electric overhead hoists
- Hydraulic presses
- Impact wrenches



- read blueprints
- read schematics
- read specifications
- read technical drawings
- read work order, instructions, formulas, or processing charts
- repair cracks, defects, or damage in installed building materials
- repair electronic components, equipment, or systems
- repair or adjust measuring or control devices
- repair or replace electrical wiring, circuits, fixtures, or equipment
- repair or replace gas, steam, sewer, or water piping or fixtures
- repair or replace locks, hinges, or related finish hardware
- repair or replace malfunctioning or worn mechanical components
- replace electronic components
- requisition stock, materials, supplies or equipment
- set up and operate variety of machine tools
- solder electrical or electronic connections or components
- test electrical/electronic wiring, equipment, systems or fixtures
- test mechanical products or equipment
- understand service or repair manuals
- understand technical operating, service or repair manuals
- use acetylene welding/cutting torch
- use arc welding equipment
- use basic carpentry techniques
- use basic plumbing techniques
- use building materials for routine building maintenance
- use combination welding procedures
- use control or regulating devices to adjust or maintain industrial machinery
- use electrical or electronic test devices or equipment
- use hand or power tools
- use hand or power woodworking tools
- use high voltage apparatus
- use knowledge of metric system
- use knowledge of ventilation systems
- use knowledge of welding filler rod types
- use machine tools in installation, maintenance, or repair
- use measuring devices in repairing industrial or heavy equipment
- use pipe fitting equipment
- use precision measuring devices in mechanical repair work
- use precision tools in electronics repair
- Hydraulic jacks
- Ladders
- Laser printers
- Laser welders
- Lathes
- Levels
- Light trucks
- Hydraulic truck lifts
- Metal inert gas MIG welders
- Metal markers
- Punches
- Computerized numerical control CNC programmable welding robot controllers
- Micrometers
- Milling machines
- Nibblers
- Personal computers
- Pipe cutters
- Plasma welders
- Air drills
- Air chisels
- Air scalers
- Buffers
- Power chippers
- Power drills
- Power grinders
- Cutoff saws
- Steamers
- Waterproof gloves
- Angle finders
- Pinchbars
- Comealongs
- Ratchets



- use pressure gauges
- use soldering equipment
- use tube bending equipment
- use voltmeter, ammeter, or ohmmeter
- verify levelness or verticality, using level or plumb bob
- weld together metal parts, components, or structures

Technology - Examples

Calendar and scheduling software

- Computerized time management systems

Electronic mail software

- Microsoft Outlook

Facilities management software

- Computerized maintenance management system
CMMS software

Industrial control software

- Digital Direct Control DDC Energy Management software

Internet browser software

- Web browser software

Office suite software

- Microsoft Office

Spreadsheet software

- Microsoft Excel

Word processing software

- Microsoft Word

Tools - Examples

- Adjustable widemouth pliers
- Adjustable crescent wrenches
- Air compressors
- Security alarm systems
- Volt-ammeters
- Augers
- Tractors with backhoe attachments
- Workshop bench vises
- Biscuit joiners
- Block and tackle equipment
- Cutting torches
- Locking C-clamps

- Self-contained breathing equipment
- Respirator hose masks
- Welding lenses
- Scaffolding
- Scribers
- Shears
- Socket sets
- Soldering irons
- Wire feed rate measurement instruments
- Squares
- Straightedges
- Metal benders
- Dies
- Fillet weld gauges
- Electric pipe threaders
- Hand pipe threaders
- Tungsten inert gas TIG welding equipment
- Two way radios
- Ultrasonic welding equipment
- Arc voltage measurement instruments
- Arc welders
- Underwater electrodes
- Direct current DC sources
- Face shields
- Welding tips
- Welding robots
- Rod ovens
- Electrode wires
- Dive suits
- Winches
- Power wire brushes
- Wire cutters
- Overhead cranes



- Dial calipers
- Caulking guns
- Metal chisels
- Conduit benders
- Desktop computers
- Utility pumps
- Diagonal cut pliers
- Dollies
- Closet augers
- Plungers
- Dump trucks
- Side cutting pliers
- Feeler gauges
- Hand files
- Fish tape pullers
- Two-wheel drive front end loaders
- Fuse pullers
- Brazing equipment
- Dial indicators
- Safety goggles
- Grease guns
- Hand grinders
- Valve grinding machines
- Hammer drills
- Ball peen hammers
- Hand operated spray guns
- Hand trucks
- Electric trimmers
- Allen wrenches
- Hoisting equipment
- Circle cutters
- Gasket cutters

- Brakes



- Boom trucks
- Hand jacks
- Step ladders
- Lathes
- Lawn mowers
- Bubble levels
- Power lifts
- Ultrasonic leak detectors
- Channel lock pliers
- Inspection mirrors
- Rubber mallets
- Digital micrometers
- Miter boxes
- Needlenose pliers
- Laptop computers
- Nut drivers
- Hollow core socket wrenches
- Ohmmeters
- Oil dispensing cans
- Paint application brushes
- Paint application rollers
- Paint spray guns
- Personal computers
- Handheld computers
- Copper cutting machines
- Pipe vises
- End pipe wrenches
- Plumb bobs
- Jackhammers
- Chipping hammers
- Cordless power drills
- Electric nail guns



- Electric planers
- Power routers
- Electric sanders
- Circular saws
- High pressure water sprayers
- Safety gloves
- Crowbars
- Bearing pullers
- Center punches
- Putty knives
- Comealongs
- Dust and particulate respirators
- Rulers
- Protective harnesses
- Protective footwear
- Hacksaws
- Scaffolding
- Screw extractor sets
- Flat blade screwdrivers
- Scribing tools
- Sewage pumps
- Sharpening equipment
- Shears
- Rigging equipment
- Slip joint pliers
- Snow blowers
- Snow plows
- Socket wrench sets
- Soldering equipment
- Basin wrenches
- Combination squares
- Straightedges



- Wire strippers
- Stud locators
- Measuring tapes
- Taps and dies
- Tension gauges
- Pipe threaders
- Tin snips
- Torque wrenches
- Trenchers
- Concrete trowels
- Tube benders
- Flaring tools
- Portable two way radios
- Utility knives
- Current testers
- Water sampling equipment
- Arc welders
- Wire cutting tools
- Wire crimpers
- Conduit cutters
- Workshop cranes
- Drill presses

Labor Market Comparison

Maine Department of Labor.

Description	Maintenance and Repair Workers, General	Welders, Cutters, and Welder Fitters	Difference
Median Wage	\$ 31,020	\$ 38,030	\$ 7,010
10th Percentile Wage	\$ 21,110	\$ 22,680	\$ 1,570
25th Percentile Wage	N/A	N/A	N/A
75th Percentile Wage	\$ 38,440	\$ 46,190	\$ 7,750
90th Percentile Wage	\$ 49,520	\$ 50,780	\$ 1,260
Mean Wage	\$ 32,940	\$ 38,260	\$ 5,320
Total Employment - 2520	5,140	1,610	-3,530



Employment Base - 2006	5,391	1,691	-3,700
Projected Employment - 2529	5,572	1,816	-3,756
Projected Job Growth - 2006-2529	3.4 %	7.4 %	4.0 %
Projected Annual Openings - 2006-2529	31	49	18
Special			
Special Occupations:			

National Job Posting Trends

Trend for Maintenance and Repair Workers, General and Welders, Cutters, and Welder Fitters



Data from [Indeed](#)

Programs

Related Programs

Welder/Welding Technologist

Welding Technology/Welder. A program that prepares individuals to apply technical knowledge and skills to join or cut metal surfaces. Includes instruction in arc welding, resistance welding, brazing and soldering, cutting, high-energy beam welding and cutting, solid state welding, ferrous and non-ferrous materials, oxidation-reduction reactions, welding metallurgy, welding processes and heat treating, structural design, safety, and applicable codes and standards.

Institution	Address	City	URL
Eastern Maine Community College	354 Hogan Rd	Bangor	www.emcc.edu
Eastern Maine Community College	354 Hogan Rd	Bangor	www.emcc.edu
Eastern Maine Community College	354 Hogan Rd	Bangor	www.emcc.edu
Washington County Community College	One College Drive	Calais	www.wccc.me.edu



Maine Statewide Promotion Opportunities for Maintenance and Repair Workers, General

O* NET Code	Title	Grand TORQ	Job Zone	Employment	Median Wage	Difference	Growth	Annual Job Openings	Special
49-9042.00	Maintenance and Repair Workers, General	100	3	5,140	\$31,020.00	\$0.00	3%	31	
51-4121.06	Welders, Cutters, and Welder Fitters	90	2	1,610	\$38,030.00	\$7,010.00	7%	49	
49-9044.00	Millwrights	90	3	830	\$41,280.00	\$10,260.00	-12%	11	
49-9043.00	Maintenance Workers, Machinery	90	1	290	\$34,100.00	\$3,080.00	-17%	5	
49-3031.00	Bus and Truck Mechanics and Diesel Engine Specialists	89	3	1,180	\$34,210.00	\$3,190.00	6%	34	
49-3042.00	Mobile Heavy Equipment Mechanics, Except Engines	88	4	880	\$37,010.00	\$5,990.00	5%	22	
49-9041.00	Industrial Machinery Mechanics	87	3	990	\$39,370.00	\$8,350.00	7%	25	
49-2093.00	Electrical and Electronics Installers and Repairers, Transportation Equipment	87	3	130	\$35,960.00	\$4,940.00	4%	4	
49-3051.00	Motorboat Mechanics	87	3	240	\$34,980.00	\$3,960.00	6%	8	
51-4192.00	Lay-Out Workers, Metal and Plastic	87	2	180	\$43,870.00	\$12,850.00	-24%	3	
47-2011.00	Boilermakers	87	4	60	\$39,260.00	\$8,240.00	12%	3	
47-3013.00	Helpers--Electricians	87	2	560	\$31,250.00	\$230.00	5%	17	
47-5021.00	Earth Drillers, Except Oil and Gas	86	3	140	\$37,470.00	\$6,450.00	2%	4	
49-2092.00	Electric Motor, Power Tool, and Related Repairers	86	3	170	\$31,210.00	\$190.00	-12%	6	
49-9012.00	Control and Valve Installers and Repairers, Except Mechanical Door	86	3	170	\$47,860.00	\$16,840.00	-9%	3	

Special Occupations:

Top Industries for Welders, Cutters, and Welder Fitters



Industry	NAICS	% of Industry	Employment	Projected Employment	% Change
Architectural and structural metals manufacturing	332300	11.33%	46,347	52,658	13.62%
Agriculture, construction, and mining machinery manufacturing	333100	6.36%	26,009	25,834	-0.67%
Self-employed workers, primary job	000601	5.26%	21,505	24,372	13.33%
Motor vehicle body and trailer manufacturing	336200	5.12%	20,924	21,779	4.09%
Commercial and industrial machinery and equipment (except automotive and electronic) repair and maintenance	811300	4.38%	17,916	20,168	12.57%
Other general purpose machinery manufacturing	333900	3.83%	15,672	15,050	-3.97%
Boiler, tank, and shipping container manufacturing	332400	3.10%	12,686	12,161	-4.14%
Motor vehicle parts manufacturing	336300	3.03%	12,410	10,511	-15.31%
Machine shops	332710	3.03%	12,381	10,895	-12.00%
Other fabricated metal product manufacturing	332900	2.73%	11,163	10,522	-5.74%
Employment services	561300	2.58%	10,544	14,196	34.64%
Ship and boat building	336600	2.51%	10,285	12,246	19.07%
Ventilation, heating, air-conditioning, and commercial refrigeration equipment manufacturing	333400	2.39%	9,762	9,553	-2.14%
Nonresidential building construction	236200	2.03%	8,323	9,921	19.20%
Industrial machinery manufacturing	333200	1.31%	5,341	4,655	-12.85%

Top Industries for Maintenance and Repair Workers, General

Industry	NAICS	% of Industry	Employment	Projected Employment	% Change
Lessors of real estate	531100	9.05%	125,853	138,660	10.18%
Local government, excluding education and hospitals	939300	7.30%	101,552	114,081	12.34%
Activities related to real estate	531300	5.42%	75,449	96,150	27.44%
Elementary and secondary schools, public and private	611100	3.99%	55,510	58,497	5.38%
Colleges, universities, and professional schools, public and private	611300	2.72%	37,891	42,390	11.87%
General medical and surgical hospitals, public and private	622100	2.48%	34,495	38,189	10.71%
Religious organizations	813100	2.44%	33,871	40,648	20.01%
Employment services	561300	2.30%	31,932	40,414	26.56%
State government, excluding education and hospitals	929200	1.58%	21,973	21,562	-1.87%
Offices of real estate agents and brokers	531200	1.45%	20,200	24,604	21.81%
Nursing care facilities	623100	1.36%	18,977	20,624	8.68%
Management of companies and enterprises	551100	1.34%	18,609	21,453	15.28%

Plastics product manufacturing	326100	1.10%	15,246	16,161	6.00%
Motor vehicle parts manufacturing	336300	0.96%	13,311	10,598	-20.39%
Animal slaughtering and processing	311600	0.91%	12,633	14,418	14.13%



TORQ Analysis of Maintenance and Repair Workers, General to Maintenance Workers, Machinery

ANALYSIS INPUT					
Transfer	Title	O* NET	Filters		
From Title:	Maintenance and Repair Workers, General	49-9042.00	Abilities:	Importance Level: 50	Weight: 1
To Title:	Maintenance Workers, Machinery	49-9043.00	Skills:	Importance Level: 69	Weight: 1
Labor Market Area:	Maine Statewide		Knowledge:	Importance Level: 69	Weight: 1

TORQ RESULTS											
Grand TORQ:								90			
Ability TORQ			Skills TORQ				Knowledge TORQ				
Level		87	Level		91	Level		93			
Gaps To Narrow if Possible				Upgrade These Skills				Knowledge to Add			
Ability	Level	Gap	Imp	Skill	Level	Gap	Imp	Knowledge	Level	Gap	Imp
Reaction Time	42	7	50	Repairing	77	16	88	Mechanical	87	9	91
Arm-Hand Steadiness	46	2	65	Troubleshooting	72	9	81				
				Programming	32	8	78				
				Equipment Maintenance	75	6	86				
				Installation	74	4	74				
				Reading Comprehension	62	3	75				
<p>LEVEL and IMPT (IMPORTANCE) refer to the Target Maintenance Workers, Machinery. GAP refers to level difference between Maintenance and Repair Workers, General and Maintenance Workers, Machinery.</p>											

ASK ANALYSIS			
Ability Level Comparison - Abilities with importance scores over 50			
Description	Maintenance and Repair Workers, General	Maintenance Workers, Machinery	Importance
Problem Sensitivity	51 	42 	68 
Arm-Hand Steadiness	44 	46 	65 
Oral Comprehension	50 	50 	59 
Oral Expression	51 	46 	59 
Visualization	53 	46 	59 
Manual Dexterity	48 	44 	59 
Near Vision	50 	46 	59 
Deductive Reasoning	48 	44 	56 
Inductive Reasoning	51 	44 	56 
Information Ordering	60 	42 	56 



Finger Dexterity	44	44	56
Written Comprehension	46	42	53
Selective Attention	44	44	53
Control Precision	48	48	53
Multilimb Coordination	53	41	50
Reaction Time	35	42	50
Static Strength	48	42	50

Skill Level Comparison - Abilities with importance scores over 69

Description	Maintenance and Repair Workers, General	Maintenance Workers, Machinery	Importance
Repairing	61	77	88
Equipment Maintenance	69	75	86
Troubleshooting	63	72	81
Programming	24	32	78
Reading Comprehension	59	62	75
Installation	70	74	74

Knowledge Level Comparison - Knowledge with importance scores over 69

Description	Maintenance and Repair Workers, General	Maintenance Workers, Machinery	Importance
Mechanical	78	87	91

Experience & Education Comparison

Related Work Experience Comparison			Required Education Level Comparison		
Description	Maintenance and Repair Workers, General	Maintenance Workers, Machinery	Description	Maintenance and Repair Workers, General	Maintenance Workers, Machinery
10+ years	0%	0%	Doctoral	0%	0%
8-10 years	5%	3%	Professional Degree	0%	0%
6-8 years	7%	0%	Post-Masters Cert	0%	0%
4-6 years	19%	10%	Master's Degree	0%	0%
2-4 years	18%	10%	Post-Bachelor Cert	0%	0%
1-2 years	24%	48%	Bachelors	0%	2%
6-12 months	4%	5%	AA or Equiv	8%	0%
3-6 months	0%	10%	Some College	21%	6%
1-3 months	0%	0%	Post-Secondary Certificate	31%	25%
0-1 month	10%	0%	High School Diploma or GED	25%	64%
None	8%	9%	No HSD or GED	11%	0%

Maintenance and Repair Workers, General

Maintenance Workers, Machinery

Most Common Educational/Training Requirement:

Moderate-term on-the-job training

Short-term on-the-job training

Job Zone Comparison

3 - Job Zone Three: Medium Preparation Needed

1 - Job Zone One: Little or No Preparation Needed



Previous work-related skill, knowledge, or experience is required for these occupations. For example, an electrician must have completed three or four years of apprenticeship or several years of vocational training, and often must have passed a licensing exam, in order to perform the job.	No previous work-related skill, knowledge, or experience is needed for these occupations. For example, a person can become a cashier even if he/she has never worked before.
Most occupations in this zone require training in vocational schools, related on-the-job experience, or an associate's degree. Some may require a bachelor's degree.	These occupations may require a high school diploma or GED certificate. Some may require a formal training course to obtain a license.
Employees in these occupations usually need one or two years of training involving both on-the-job experience and informal training with experienced workers.	Employees in these occupations need anywhere from a few days to a few months of training. Usually, an experienced worker could show you how to do the job.

Tasks

Maintenance and Repair Workers, General	Maintenance Workers, Machinery
<p>Core Tasks</p> <p>Generalized Work Activities:</p> <ul style="list-style-type: none"> • Inspecting Equipment, Structures, or Material - Inspecting equipment, structures, or materials to identify the cause of errors or other problems or defects. • Performing General Physical Activities - Performing physical activities that require considerable use of your arms and legs and moving your whole body, such as climbing, lifting, balancing, walking, stooping, and handling of materials. • Repairing and Maintaining Mechanical Equipment - Servicing, repairing, adjusting, and testing machines, devices, moving parts, and equipment that operate primarily on the basis of mechanical (not electronic) principles. • Handling and Moving Objects - Using hands and arms in handling, installing, positioning, and moving materials, and manipulating things. • Getting Information - Observing, receiving, and otherwise obtaining information from all relevant sources. <p>Specific Tasks</p> <p>Occupation Specific Tasks:</p> <ul style="list-style-type: none"> • Adjust functional parts of devices and control instruments, using hand tools, levels, plumb bobs, and straightedges. • Align and balance new equipment after installation. • Assemble, install and/or repair wiring, electrical and electronic components, pipe systems and plumbing, machinery, and equipment. • Clean and lubricate shafts, bearings, gears, and other parts of machinery. • Diagnose mechanical problems and determine how to correct them, checking blueprints, repair manuals, and parts catalogs as necessary. • Dismantle devices to gain access to and remove defective parts, using hoists, cranes, hand tools, and power tools. 	<p>Core Tasks</p> <p>Generalized Work Activities:</p> <ul style="list-style-type: none"> • Repairing and Maintaining Mechanical Equipment - Servicing, repairing, adjusting, and testing machines, devices, moving parts, and equipment that operate primarily on the basis of mechanical (not electronic) principles. • Controlling Machines and Processes - Using either control mechanisms or direct physical activity to operate machines or processes (not including computers or vehicles). • Handling and Moving Objects - Using hands and arms in handling, installing, positioning, and moving materials, and manipulating things. • Inspecting Equipment, Structures, or Material - Inspecting equipment, structures, or materials to identify the cause of errors or other problems or defects. • Performing General Physical Activities - Performing physical activities that require considerable use of your arms and legs and moving your whole body, such as climbing, lifting, balancing, walking, stooping, and handling of materials. <p>Specific Tasks</p> <p>Occupation Specific Tasks:</p> <ul style="list-style-type: none"> • Clean machines and machine parts, using cleaning solvents, cloths, air guns, hoses, vacuums, or other equipment. • Collaborate with other workers to repair or move machines, machine parts, or equipment. • Collect and discard worn machine parts and other refuse in order to maintain machinery and work areas. • Dismantle machines and remove parts for repair, using hand tools, chain falls, jacks, cranes, or hoists. • Inspect or test damaged machine parts, and mark defective areas or advise supervisors of repair needs. • Install, replace, or change machine parts and attachments, according to production specifications.



- Estimate repair costs.
- Fabricate and repair counters, benches, partitions, and other wooden structures such as sheds and outbuildings.
- Grind and reseal valves, using valve-grinding machines.
- Inspect drives, motors, and belts, check fluid levels, replace filters, and perform other maintenance actions, following checklists.
- Inspect used parts to determine changes in dimensional requirements, using rules, calipers, micrometers, and other measuring instruments.
- Inspect, operate, and test machinery and equipment in order to diagnose machine malfunctions.
- Lay brick to repair and maintain buildings, walls, arches and other structures.
- Maintain and repair specialized equipment and machinery found in cafeterias, laundries, hospitals, stores, offices, and factories.
- Operate cutting torches or welding equipment to cut or join metal parts.
- Order parts, supplies, and equipment from catalogs and suppliers, or obtain them from storerooms.
- Paint and repair roofs, windows, doors, floors, woodwork, plaster, drywall, and other parts of building structures.
- Perform routine preventive maintenance to ensure that machines continue to run smoothly, building systems operate efficiently, and the physical condition of buildings does not deteriorate.
- Plan and lay out repair work using diagrams, drawings, blueprints, maintenance manuals, and schematic diagrams.
- Record maintenance and repair work performed and the costs of the work.
- Repair or replace defective equipment parts using hand tools and power tools, and reassemble equipment.
- Set up and operate machine tools to repair or fabricate machine parts, jigs and fixtures, and tools.
- Use tools ranging from common hand and power tools, such as hammers, hoists, saws, drills, and wrenches, to precision measuring instruments and electrical and electronic testing devices.

Detailed Tasks

Detailed Work Activities:

- adhere to safety procedures
- adjust or set mechanical controls or components
- align or adjust clearances of mechanical components or parts
- apply cleaning solvents
- assemble and install pipe sections, fittings, or plumbing fixtures
- assemble, dismantle, or reassemble

- Inventory and requisition machine parts, equipment, and other supplies so that stock can be maintained and replenished.
- Lubricate or apply adhesives or other materials to machines, machine parts, or other equipment, according to specified procedures.
- Measure, mix, prepare, and test chemical solutions used to clean or repair machinery and equipment.
- Read work orders and specifications to determine machines and equipment requiring repair or maintenance.
- Reassemble machines after the completion of repair or maintenance work.
- Record production, repair, and machine maintenance information.
- Remove hardened material from machines or machine parts, using abrasives, power and hand tools, jackhammers, sledgehammers, or other equipment.
- Replace or repair metal, wood, leather, glass, or other lining in machines, or in equipment compartments or containers.
- Replace, empty, or replenish machine and equipment containers such as gas tanks or boxes.
- Set up and operate machines, and adjust controls to regulate operations.
- Start machines and observe mechanical operation to determine efficiency and to detect problems.
- Transport machine parts, tools, equipment, and other material between work areas and storage, using cranes, hoists, or dollies.

Detailed Tasks

Detailed Work Activities:

- adhere to safety procedures
- adjust or set mechanical controls or components
- apply cleaning solvents
- assist mechanic, or extractive or construction trades craft worker
- clean equipment or machinery
- clean rooms or work areas
- construct, erect, or repair wooden frameworks or structures
- cut, shape, fit, or join wood or other construction materials
- erect scaffold
- fabricate sheet metal parts or items
- fabricate, assemble, or disassemble manufactured products by hand
- inspect machinery or equipment to determine adjustments or repairs needed
- install equipment or attachments on machinery or related structures
- inventory stock to ensure adequate supplies
- load or unload material or workpiece into



- equipment or machinery
- bend tubing or conduit
- build or repair structures in construction, repair, or manufacturing setting
- burn (cut), trim, or scarf metal objects
- climb ladders, scaffolding, or utility or telephone poles
- conduct tests to locate mechanical system malfunction
- construct, erect, or repair wooden frameworks or structures
- control HVAC equipment
- coordinate production maintenance activities
- cut, bend, or thread pipe for gas, air, hydraulic, or water lines
- cut, shape, fit, or join wood or other construction materials
- determine installation, service, or repair needed
- diagnose mechanical problems in machinery or equipment
- erect scaffold
- estimate time or cost for installation, repair, or construction projects
- fabricate sheet metal parts or items
- fabricate, assemble, or disassemble manufactured products by hand
- follow safe waste disposal procedures
- identify properties of metals for repair or fabrication activities
- inspect machinery or equipment to determine adjustments or repairs needed
- install doors, wood floors, window frames, trim, or stairs
- install electrical fixtures or components
- install electronic equipment, components, or systems
- install equipment or attachments on machinery or related structures
- install industrial machinery or related heavy equipment
- install insulating materials
- install locks, hinges, or related finish hardware
- install or replace glass in windows, skylights, or other structural surfaces
- install or replace meters, regulators, or related measuring or control devices
- install shingles, tile, slate, asphalt, or related roofing materials
- install/connect electrical equipment to power circuit
- install/string electrical or electronic cable or wiring
- lay or install brick, block, stone, tile, or related masonry material
- lubricate machinery, equipment, or parts
- maintain or repair industrial or related

machinery

- lubricate machinery, equipment, or parts
- maintain or repair industrial or related equipment/machinery
- maintain repair records
- mix paint, ingredients, or chemicals, according to specifications
- move materials or goods between work areas
- move or fit heavy objects
- observe or listen to machinery or equipment operation to detect malfunctions
- operate crane in construction, manufacturing or repair setting
- operate hoist, winch, or hydraulic boom
- operate sandblasting equipment
- operate vacuum or air hose
- perform safety inspections in industrial, manufacturing or repair setting
- read specifications
- read work order, instructions, formulas, or processing charts
- repair or replace malfunctioning or worn mechanical components
- repair sheet metal products
- requisition stock, materials, supplies or equipment
- signal directions or warnings to coworkers
- test materials or solutions
- test mechanical products or equipment
- understand service or repair manuals
- understand technical operating, service or repair manuals
- use acetylene welding/cutting torch
- use basic carpentry techniques
- use control or regulating devices to adjust or maintain industrial machinery
- use hand or power tools
- use hand or power woodworking tools
- use high voltage apparatus
- use knowledge of metric system
- use measuring devices in repairing industrial or heavy equipment
- use pneumatic tools
- use precision measuring devices in mechanical repair work
- use pressure gauges
- work as a team member

Technology - Examples

Data base user interface and query software

- Database software

Spreadsheet software

- Spreadsheet software

Word processing software



- maintain or repair industrial or related equipment/machinery
- maintain or repair work tools or equipment
- maintain repair records
- maintain specialized manufacturing or commercial equipment or machinery
- maintain welding machines or equipment
- measure and mark reference points or cutting lines on workpieces
- move or fit heavy objects
- observe or listen to machinery or equipment operation to detect malfunctions
- operate crane in construction, manufacturing or repair setting
- operate hoist, winch, or hydraulic boom
- order or purchase supplies, materials, or equipment
- paint walls or other structural surfaces
- perform safety inspections in industrial, manufacturing or repair setting
- plan or organize work
- position, align, or level machines, equipment, or structures
- prepare building surfaces for paint, finishes, wallpaper, or adhesives
- pressure test piping system or equipment for leaks
- read blueprints
- read schematics
- read specifications
- read technical drawings
- read work order, instructions, formulas, or processing charts
- repair cracks, defects, or damage in installed building materials
- repair electronic components, equipment, or systems
- repair or adjust measuring or control devices
- repair or replace electrical wiring, circuits, fixtures, or equipment
- repair or replace gas, steam, sewer, or water piping or fixtures
- repair or replace locks, hinges, or related finish hardware
- repair or replace malfunctioning or worn mechanical components
- replace electronic components
- requisition stock, materials, supplies or equipment
- set up and operate variety of machine tools
- solder electrical or electronic connections or components
- test electrical/electronic wiring, equipment, systems or fixtures
- test mechanical products or equipment
- understand service or repair manuals

- Word processing software

Tools - Examples

- Abrasive wheels
- Abrasive rubbing stones
- Adjustable widemouth pliers
- Adjustable wrenches
- Bandsaws
- Oxyacetylene torches
- Dial calipers
- Compressed air guns
- Deburring tools
- Dollies
- Drill bits
- Ear plugs
- Forklifts
- Dial indicators
- Grease guns
- Lapping equipment
- Hammers
- Hard hats
- Chain falls
- Hold down clamps
- Jacks
- Ladders
- Lathes
- Levels
- Lockout hasps
- Metal cutters
- Metal inert gas MIG welders
- Micrometers
- Milling machines
- Personal computers



- understand technical operating, service or repair manuals
- use acetylene welding/cutting torch
- use arc welding equipment
- use basic carpentry techniques
- use basic plumbing techniques
- use building materials for routine building maintenance
- use combination welding procedures
- use control or regulating devices to adjust or maintain industrial machinery
- use electrical or electronic test devices or equipment
- use hand or power tools
- use hand or power woodworking tools
- use high voltage apparatus
- use knowledge of metric system
- use knowledge of ventilation systems
- use knowledge of welding filler rod types
- use machine tools in installation, maintenance, or repair
- use measuring devices in repairing industrial or heavy equipment
- use pipe fitting equipment
- use precision measuring devices in mechanical repair work
- use precision tools in electronics repair
- use pressure gauges
- use soldering equipment
- use tube bending equipment
- use voltmeter, ammeter, or ohmmeter
- verify levelness or verticality, using level or plumb bob
- weld together metal parts, components, or structures

Technology - Examples

Calendar and scheduling software

- Computerized time management systems

Electronic mail software

- Microsoft Outlook

Facilities management software

- Computerized maintenance management system
CMMS software

Industrial control software

- Digital Direct Control DDC Energy Management software

Internet browser software

- Web browser software

Office suite software

- Microsoft Office

- Plumb bobs

- Jackhammers

- Buffing machines

- Power drills

- Grinding machines

- Bench saws

- Punches

- Reamers

- Respirators

- Rivet guns

- Rulers

- Safety glasses

- Safety belts

- Hacksaws

- Scaffolding

- Screwdrivers

- Shears

- Rigging equipment

- Socket wrench sets

- Soldering guns

- Steel rules

- Sheet metal folders

- Dies

- Pipe threaders

- Tungsten inert gas TIG welding equipment

- Industrial vacuums

- Arc welders

- Welding tips

- Spot-welding equipment

- Workshop cranes

- Brakes



Spreadsheet software

- Microsoft Excel

Word processing software

- Microsoft Word

Tools - Examples

- Adjustable widemouth pliers
- Adjustable crescent wrenches
- Air compressors
- Security alarm systems
- Volt-ammeters
- Augers
- Tractors with backhoe attachments
- Workshop bench vises
- Biscuit joiners
- Block and tackle equipment
- Cutting torches
- Locking C-clamps
- Dial calipers
- Caulking guns
- Metal chisels
- Conduit benders
- Desktop computers
- Utility pumps
- Diagonal cut pliers
- Dollies
- Closet augers
- Plungers
- Dump trucks
- Side cutting pliers
- Feeler gauges
- Hand files
- Fish tape pullers
- Two-wheel drive front end loaders



- Fuse pullers
- Brazing equipment
- Dial indicators
- Safety goggles
- Grease guns
- Hand grinders
- Valve grinding machines
- Hammer drills
- Ball peen hammers
- Hand operated spray guns
- Hand trucks
- Electric trimmers
- Allen wrenches
- Hoisting equipment
- Circle cutters
- Gasket cutters
- Boom trucks
- Hand jacks
- Step ladders
- Lathes
- Lawn mowers
- Bubble levels
- Power lifts
- Ultrasonic leak detectors
- Channel lock pliers
- Inspection mirrors
- Rubber mallets
- Digital micrometers
- Miter boxes
- Needlenose pliers
- Laptop computers
- Nut drivers



- Hollow core socket wrenches
- Ohmmeters
- Oil dispensing cans
- Paint application brushes
- Paint application rollers
- Paint spray guns
- Personal computers
- Handheld computers
- Copper cutting machines
- Pipe vises
- End pipe wrenches
- Plumb bobs
- Jackhammers
- Chipping hammers
- Cordless power drills
- Electric nail guns
- Electric planers
- Power routers
- Electric sanders
- Circular saws
- High pressure water sprayers
- Safety gloves
- Crowbars
- Bearing pullers
- Center punches
- Putty knives
- Comealongs
- Dust and particulate respirators
- Rulers
- Protective harnesses
- Protective footwear
- Hacksaws



- Scaffolding
- Screw extractor sets
- Flat blade screwdrivers
- Scribing tools
- Sewage pumps
- Sharpening equipment
- Shears
- Rigging equipment
- Slip joint pliers
- Snow blowers
- Snow plows
- Socket wrench sets
- Soldering equipment
- Basin wrenches
- Combination squares
- Straightedges
- Wire strippers
- Stud locators
- Measuring tapes
- Taps and dies
- Tension gauges
- Pipe threaders
- Tin snips
- Torque wrenches
- Trenchers
- Concrete trowels
- Tube benders
- Flaring tools
- Portable two way radios
- Utility knives
- Current testers
- Water sampling equipment



- Arc welders
- Wire cutting tools
- Wire crimpers
- Conduit cutters
- Workshop cranes
- Drill presses

Labor Market Comparison

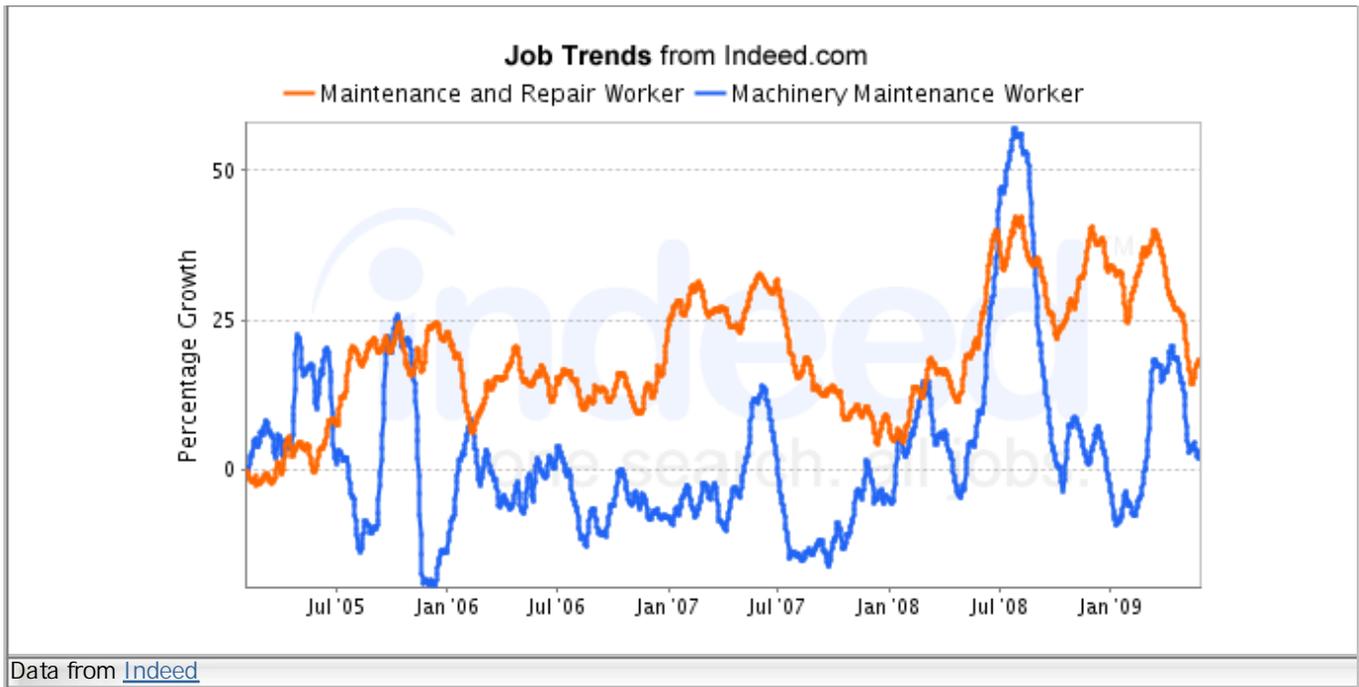
Maine Department of Labor.

Description	Maintenance and Repair Workers, General	Maintenance Workers, Machinery	Difference
Median Wage	\$ 31,020	\$ 34,100	\$ 3,080
10th Percentile Wage	\$ 21,110	\$ 18,630	\$(2,480)
25th Percentile Wage	N/A	N/A	N/A
75th Percentile Wage	\$ 38,440	\$ 38,610	\$ 170
90th Percentile Wage	\$ 49,520	\$ 43,370	\$(6,150)
Mean Wage	\$ 32,940	\$ 32,410	\$(530)
Total Employment - 2520	5,140	290	-4,850
Employment Base - 2006	5,391	337	-5,054
Projected Employment - 2529	5,572	278	-5,294
Projected Job Growth - 2006-2529	3.4 %	-17.5 %	-20.8 %
Projected Annual Openings - 2006-2529	31	5	-26
Special			

Special Occupations:

National Job Posting Trends

Trend for Maintenance and Repair Workers, General and Maintenance Workers, Machinery



Programs

Related Programs

Industrial Equipment Main. and Repairers, Other

Heavy/Industrial Equipment Maintenance Technologies, Other. Any instructional program in industrial equipment maintenance and repair not listed above.

No information on schools for the program

Industrial Machinery Main. and Repairer

Industrial Mechanics and Maintenance Technology. A program that prepares individuals to apply technical knowledge and skills to repair and maintain industrial machinery and equipment such as cranes, pumps, engines and motors, pneumatic tools, conveyor systems, production machinery, marine deck machinery, and steam propulsion, refinery, and pipeline-distribution systems.

Institution	Address	City	URL
Kennebec Valley Community College	92 Western Ave	Fairfield	www.kvcc.me.edu

Maine Statewide Promotion Opportunities for Maintenance and Repair Workers, General

O*NET Code	Title	Grand TORQ	Job Zone	Employment	Median Wage	Difference	Growth	Annual Job Openings	Special
49-9042.00	Maintenance and Repair Workers, General	100	3	5,140	\$31,020.00	\$0.00	3%	31	
51-4121.06	Welders, Cutters, and Welder Fitters	90	2	1,610	\$38,030.00	\$7,010.00	7%	49	
49-9043.00	Maintenance Workers, Machinery	90	1	290	\$34,100.00	\$3,080.00	-17%	5	



49-9044.00	Millwrights	90	3	830	\$41,280.00	\$10,260.00	-12%	11
49-3031.00	Bus and Truck Mechanics and Diesel Engine Specialists	89	3	1,180	\$34,210.00	\$3,190.00	6%	34
49-3042.00	Mobile Heavy Equipment Mechanics, Except Engines	88	4	880	\$37,010.00	\$5,990.00	5%	22
49-9041.00	Industrial Machinery Mechanics	87	3	990	\$39,370.00	\$8,350.00	7%	25
47-2011.00	Boilermakers	87	4	60	\$39,260.00	\$8,240.00	12%	3
47-3013.00	Helpers--Electricians	87	2	560	\$31,250.00	\$230.00	5%	17
49-2093.00	Electrical and Electronics Installers and Repairers, Transportation Equipment	87	3	130	\$35,960.00	\$4,940.00	4%	4
49-3051.00	Motorboat Mechanics	87	3	240	\$34,980.00	\$3,960.00	6%	8
51-4192.00	Lay-Out Workers, Metal and Plastic	87	2	180	\$43,870.00	\$12,850.00	-24%	3
49-9012.00	Control and Valve Installers and Repairers, Except Mechanical Door	86	3	170	\$47,860.00	\$16,840.00	-9%	3
47-5021.00	Earth Drillers, Except Oil and Gas	86	3	140	\$37,470.00	\$6,450.00	2%	4
49-2092.00	Electric Motor, Power Tool, and Related Repairers	86	3	170	\$31,210.00	\$190.00	-12%	6

Special Occupations:

Top Industries for Maintenance Workers, Machinery

Industry	NAICS	% of Industry	Employment	Projected Employment	% Change
Local government, excluding education and hospitals	939300	6.40%	5,397	6,063	12.34%
Motor vehicle parts manufacturing	336300	3.89%	3,278	2,610	-20.39%
Plastics product manufacturing	326100	3.16%	2,666	2,826	6.00%
Animal production; primary job	112000	2.73%	2,304	2,043	-11.34%
Animal slaughtering and processing	311600	2.47%	2,079	2,373	14.13%
Commercial and industrial machinery and equipment (except automotive and electronic) repair and maintenance	811300	2.36%	1,988	2,104	5.82%
Support activities for air transportation	488100	2.25%	1,897	2,292	20.80%



Coal mining	212100	1.76%	1,483	1,498	0.99%
Pharmaceutical and medicine manufacturing	325400	1.71%	1,439	1,814	26.03%
Colleges, universities, and professional schools, public and private	611300	1.70%	1,437	1,608	11.87%
Fabric mills	313200	1.53%	1,286	908	-29.38%
Commercial and industrial machinery and equipment rental and leasing	532400	1.52%	1,281	1,565	22.19%
Pulp, paper, and paperboard mills	322100	1.49%	1,256	871	-30.64%
Electric power generation, transmission and distribution	221100	1.47%	1,241	1,141	-8.03%
Converted paper product manufacturing	322200	1.39%	1,168	980	-16.08%

Top Industries for Maintenance and Repair Workers, General

Industry	NAICS	% of Industry	Employment	Projected Employment	% Change
Lessors of real estate	531100	9.05%	125,853	138,660	10.18%
Local government, excluding education and hospitals	939300	7.30%	101,552	114,081	12.34%
Activities related to real estate	531300	5.42%	75,449	96,150	27.44%
Elementary and secondary schools, public and private	611100	3.99%	55,510	58,497	5.38%
Colleges, universities, and professional schools, public and private	611300	2.72%	37,891	42,390	11.87%
General medical and surgical hospitals, public and private	622100	2.48%	34,495	38,189	10.71%
Religious organizations	813100	2.44%	33,871	40,648	20.01%
Employment services	561300	2.30%	31,932	40,414	26.56%
State government, excluding education and hospitals	929200	1.58%	21,973	21,562	-1.87%
Offices of real estate agents and brokers	531200	1.45%	20,200	24,604	21.81%
Nursing care facilities	623100	1.36%	18,977	20,624	8.68%
Management of companies and enterprises	551100	1.34%	18,609	21,453	15.28%
Plastics product manufacturing	326100	1.10%	15,246	16,161	6.00%
Motor vehicle parts manufacturing	336300	0.96%	13,311	10,598	-20.39%
Animal slaughtering and processing	311600	0.91%	12,633	14,418	14.13%

TORQ Analysis of Maintenance and Repair Workers, General to Millwrights

ANALYSIS INPUT					
Transfer	Title	O* NET	Filters		
From Title:	Maintenance and Repair Workers, General	49-9042.00	Abilities:	Importance Level: 50	Weight: 1
To Title:	Millwrights	49-9044.00	Skills:	Importance Level: 69	Weight: 1
Labor Market Area:	Maine Statewide		Knowledge:	Importance Level: 69	Weight: 1

TORQ RESULTS	
Grand TORQ:	90

Ability TORQ		Skills TORQ		Knowledge TORQ	
Level	86	Level	88	Level	98

Gaps To Narrow if Possible				Upgrade These Skills				Knowledge to Add			
Ability	Level	Gap	Imp	Skill	Level	Gap	Imp	Knowledge	Level	Gap	Imp
Auditory Attention	60	28	59	Installation	75	13	81	No Knowledge Upgrades Required!			
Depth Perception	48	16	62	Repairing	73	12	82				
Dynamic Strength	41	16	50	Troubleshooting	72	9	76				
Spatial Orientation	35	14	50	Equipment Selection	66	4	82				
Visualization	62	9	75	Science	34	3	69				
Speech Clarity	44	10	65								
Static Strength	59	11	59								
Information Ordering	67	7	84								
Reaction Time	46	11	50								
Extent Flexibility	60	9	56								
Selective Attention	51	7	65								
Near Vision	55	5	75								
Control Precision	51	3	62								
Speech Recognition	35	3	59								
Trunk Strength	44	3	53								
Manual Dexterity	50	2	78								
Perceptual Speed	37	3	50								
Gross Body Equilibrium	35	3	50								
Oral Comprehension	51	1	59								

LEVEL and IMP (IMPORTANCE) refer to the Target Millwrights. GAP refers to level difference between Maintenance and Repair Workers, General and Millwrights.

**ASK ANALYSIS**

Ability Level Comparison - Abilities with importance scores over 50

Description	Maintenance and Repair Workers, General	Millwrights	Importance
Information Ordering	60	67	84
Manual Dexterity	48	50	78
Visualization	53	62	75
Near Vision	50	55	75
Problem Sensitivity	51	44	68
Deductive Reasoning	48	46	68
Multilimb Coordination	53	53	68
Selective Attention	44	51	65
Arm-Hand Steadiness	44	42	65
Speech Clarity	34	44	65
Control Precision	48	51	62
Depth Perception	32	48	62
Oral Comprehension	50	51	59
Oral Expression	51	50	59
Static Strength	48	59	59
Auditory Attention	32	60	59
Speech Recognition	32	35	59
Finger Dexterity	44	44	56
Extent Flexibility	51	60	56
Trunk Strength	41	44	53
Inductive Reasoning	51	41	50
Perceptual Speed	34	37	50
Spatial Orientation	21	35	50
Reaction Time	35	46	50
Dynamic Strength	25	41	50
Gross Body Equilibrium	32	35	50

Skill Level Comparison - Abilities with importance scores over 69

Description	Maintenance and Repair Workers, General	Millwrights	Importance
Equipment Selection	62	66	82
Repairing	61	73	82
Installation	62	75	81
Troubleshooting	63	72	76
Science	31	34	69

Knowledge Level Comparison - Knowledge with importance scores over 69



Description	Maintenance and Repair Workers, General	Millwrights	Importance
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Experience & Education Comparison

Related Work Experience Comparison				Required Education Level Comparison			
Description	Maintenance and Repair Workers, General	Millwrights		Description	Maintenance and Repair Workers, General	Millwrights	
10+ years	0%	8%		Doctoral	0%	0%	
8-10 years	5%	0%		Professional Degree	0%	0%	
6-8 years	7%	7%		Post-Masters Cert	0%	0%	
4-6 years	19%	29%		Master's Degree	0%	0%	
2-4 years	18%	8%		Post-Bachelor Cert	0%	0%	
1-2 years	24%	17%		Bachelors	0%	0%	
6-12 months	4%	19%		AA or Equiv	8%	0%	
3-6 months	0%	0%		Some College	21%	1%	
1-3 months	0%	0%		Post-Secondary Certificate	31%	33%	
0-1 month	10%	0%		High School Diploma or GED	25%	43%	
None	8%	7%		No HSD or GED	11%	22%	

Maintenance and Repair Workers, General	Millwrights
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Most Common Educational/Training Requirement:

Moderate-term on-the-job training	Long-term on-the-job training
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Job Zone Comparison

<p>3 - Job Zone Three: Medium Preparation Needed</p> <p>Previous work-related skill, knowledge, or experience is required for these occupations. For example, an electrician must have completed three or four years of apprenticeship or several years of vocational training, and often must have passed a licensing exam, in order to perform the job.</p> <p>Most occupations in this zone require training in vocational schools, related on-the-job experience, or an associate's degree. Some may require a bachelor's degree.</p> <p>Employees in these occupations usually need one or two years of training involving both on-the-job experience and informal training with experienced workers.</p>	<p>3 - Job Zone Three: Medium Preparation Needed</p> <p>Previous work-related skill, knowledge, or experience is required for these occupations. For example, an electrician must have completed three or four years of apprenticeship or several years of vocational training, and often must have passed a licensing exam, in order to perform the job.</p> <p>Most occupations in this zone require training in vocational schools, related on-the-job experience, or an associate's degree. Some may require a bachelor's degree.</p> <p>Employees in these occupations usually need one or two years of training involving both on-the-job experience and informal training with experienced workers.</p>
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Tasks

Maintenance and Repair Workers, General	Millwrights
Core Tasks	Core Tasks
<p>Generalized Work Activities:</p> <ul style="list-style-type: none"> Inspecting Equipment, Structures, or Material - Inspecting equipment, structures, or materials to identify the cause of errors or other problems or defects. Performing General Physical Activities - Performing physical activities that require considerable use of your arms and legs and moving your whole body, such as climbing, lifting, balancing, walking, stooping, and handling of materials. Repairing and Maintaining Mechanical Equipment - Servicing, repairing, adjusting, and testing machines, devices, moving 	<p>Generalized Work Activities:</p> <ul style="list-style-type: none"> Repairing and Maintaining Mechanical Equipment - Servicing, repairing, adjusting, and testing machines, devices, moving parts, and equipment that operate primarily on the basis of mechanical (not electronic) principles. Operating Vehicles, Mechanized Devices, or Equipment - Running, maneuvering, navigating, or driving vehicles or mechanized equipment, such as forklifts, passenger vehicles, aircraft, or water craft. Getting Information - Observing, receiving, and otherwise obtaining information from all



parts, and equipment that operate primarily on the basis of mechanical (not electronic) principles.

- Handling and Moving Objects - Using hands and arms in handling, installing, positioning, and moving materials, and manipulating things.
- Getting Information - Observing, receiving, and otherwise obtaining information from all relevant sources.

Specific Tasks

Occupation Specific Tasks:

- Adjust functional parts of devices and control instruments, using hand tools, levels, plumb bobs, and straightedges.
- Align and balance new equipment after installation.
- Assemble, install and/or repair wiring, electrical and electronic components, pipe systems and plumbing, machinery, and equipment.
- Clean and lubricate shafts, bearings, gears, and other parts of machinery.
- Diagnose mechanical problems and determine how to correct them, checking blueprints, repair manuals, and parts catalogs as necessary.
- Dismantle devices to gain access to and remove defective parts, using hoists, cranes, hand tools, and power tools.
- Estimate repair costs.
- Fabricate and repair counters, benches, partitions, and other wooden structures such as sheds and outbuildings.
- Grind and reseat valves, using valve-grinding machines.
- Inspect drives, motors, and belts, check fluid levels, replace filters, and perform other maintenance actions, following checklists.
- Inspect used parts to determine changes in dimensional requirements, using rules, calipers, micrometers, and other measuring instruments.
- Inspect, operate, and test machinery and equipment in order to diagnose machine malfunctions.
- Lay brick to repair and maintain buildings, walls, arches and other structures.
- Maintain and repair specialized equipment and machinery found in cafeterias, laundries, hospitals, stores, offices, and factories.
- Operate cutting torches or welding equipment to cut or join metal parts.
- Order parts, supplies, and equipment from catalogs and suppliers, or obtain them from storerooms.
- Paint and repair roofs, windows, doors, floors, woodwork, plaster, drywall, and other parts of building structures.
- Perform routine preventive maintenance to ensure that machines continue to run smoothly, building systems operate

relevant sources.

- Inspecting Equipment, Structures, or Material - Inspecting equipment, structures, or materials to identify the cause of errors or other problems or defects.
- Making Decisions and Solving Problems - Analyzing information and evaluating results to choose the best solution and solve problems.

Specific Tasks

Occupation Specific Tasks:

- Align machines and equipment, using hoists, jacks, hand tools, squares, rules, micrometers, and plumb bobs.
- Assemble and install equipment, using hand tools and power tools.
- Assemble machines, and bolt, weld, rivet, or otherwise fasten them to foundation or other structures, using hand tools and power tools.
- Attach moving parts and subassemblies to basic assembly unit, using hand tools and power tools.
- Bolt parts, such as side and deck plates, jaw plates, and journals, to basic assembly unit.
- Connect power unit to machines or steam piping to equipment, and test unit to evaluate its mechanical operation.
- Construct foundation for machines, using hand tools and building materials such as wood, cement, and steel.
- Dismantle machinery and equipment for shipment to installation site, usually performing installation and maintenance work as part of team.
- Dismantle machines, using hammers, wrenches, crowbars, and other hand tools.
- Insert shims, adjust tension on nuts and bolts, or position parts, using hand tools and measuring instruments, to set specified clearances between moving and stationary parts.
- Install robot and modify its program, using teach pendant.
- Lay out mounting holes, using measuring instruments, and drill holes with power drill.
- Level bedplate and establish centerline, using straightedge, levels, and transit.
- Move machinery and equipment, using hoists, dollies, rollers, and trucks.
- Operate engine lathe to grind, file, and turn machine parts to dimensional specifications.
- Position steel beams to support bedplates of machines and equipment, using blueprints and schematic drawings, to determine work procedures.
- Repair and lubricate machines and equipment.
- Replace defective parts of machine or adjust clearances and alignment of moving parts.
- Shrink-fit bushings, sleeves, rings, liners, gears, and wheels to specified items, using



smoothly, building systems operate efficiently, and the physical condition of buildings does not deteriorate.

- Plan and lay out repair work using diagrams, drawings, blueprints, maintenance manuals, and schematic diagrams.
- Record maintenance and repair work performed and the costs of the work.
- Repair or replace defective equipment parts using hand tools and power tools, and reassemble equipment.
- Set up and operate machine tools to repair or fabricate machine parts, jigs and fixtures, and tools.
- Use tools ranging from common hand and power tools, such as hammers, hoists, saws, drills, and wrenches, to precision measuring instruments and electrical and electronic testing devices.

Detailed Tasks

Detailed Work Activities:

- adhere to safety procedures
- adjust or set mechanical controls or components
- align or adjust clearances of mechanical components or parts
- apply cleaning solvents
- assemble and install pipe sections, fittings, or plumbing fixtures
- assemble, dismantle, or reassemble equipment or machinery
- bend tubing or conduit
- build or repair structures in construction, repair, or manufacturing setting
- burn (cut), trim, or scarf metal objects
- climb ladders, scaffolding, or utility or telephone poles
- conduct tests to locate mechanical system malfunction
- construct, erect, or repair wooden frameworks or structures
- control HVAC equipment
- coordinate production maintenance activities
- cut, bend, or thread pipe for gas, air, hydraulic, or water lines
- cut, shape, fit, or join wood or other construction materials
- determine installation, service, or repair needed
- diagnose mechanical problems in machinery or equipment
- erect scaffold
- estimate time or cost for installation, repair, or construction projects
- fabricate sheet metal parts or items
- fabricate, assemble, or disassemble manufactured products by hand
- follow safe waste disposal procedures
-

portable gas heating equipment.

- Signal crane operator to lower basic assembly units to bedplate, and align unit to centerline.

Detailed Tasks

Detailed Work Activities:

- adhere to safety procedures
- adjust or set mechanical controls or components
- align or adjust clearances of mechanical components or parts
- assemble and install pipe sections, fittings, or plumbing fixtures
- assemble, dismantle, or reassemble equipment or machinery
- conduct performance testing
- conduct tests to locate mechanical system malfunction
- construct, erect, or repair wooden frameworks or structures
- cut, bend, or thread pipe for gas, air, hydraulic, or water lines
- determine installation, service, or repair needed
- determine project methods and procedures
- diagnose mechanical problems in machinery or equipment
- drive truck with capacity greater than 3 tons
- erect scaffold
- estimate time or cost for installation, repair, or construction projects
- fabricate sheet metal parts or items
- fabricate, assemble, or disassemble manufactured products by hand
- identify properties of metals for repair or fabrication activities
- inspect electrical installation for code conformance
- install electrical conduit or tubing
- install electrical fixtures or components
- install electronic equipment, components, or systems
- install equipment or attachments on machinery or related structures
- install generating plant equipment
- install industrial machinery or related heavy equipment
- install or replace meters, regulators, or related measuring or control devices
- install/connect electrical equipment to power circuit
- install/string electrical or electronic cable or wiring
- lay out machining, welding or precision assembly projects
- lubricate machinery, equipment, or parts
- maintain or repair industrial or related



primary properties of metals for repair or fabrication activities

- inspect machinery or equipment to determine adjustments or repairs needed
- install doors, wood floors, window frames, trim, or stairs
- install electrical fixtures or components
- install electronic equipment, components, or systems
- install equipment or attachments on machinery or related structures
- install industrial machinery or related heavy equipment
- install insulating materials
- install locks, hinges, or related finish hardware
- install or replace glass in windows, skylights, or other structural surfaces
- install or replace meters, regulators, or related measuring or control devices
- install shingles, tile, slate, asphalt, or related roofing materials
- install/connect electrical equipment to power circuit
- install/string electrical or electronic cable or wiring
- lay or install brick, block, stone, tile, or related masonry material
- lubricate machinery, equipment, or parts
- maintain or repair industrial or related equipment/machinery
- maintain or repair work tools or equipment
- maintain repair records
- maintain specialized manufacturing or commercial equipment or machinery
- maintain welding machines or equipment
- measure and mark reference points or cutting lines on workpieces
- move or fit heavy objects
- observe or listen to machinery or equipment operation to detect malfunctions
- operate crane in construction, manufacturing or repair setting
- operate hoist, winch, or hydraulic boom
- order or purchase supplies, materials, or equipment
- paint walls or other structural surfaces
- perform safety inspections in industrial, manufacturing or repair setting
- plan or organize work
- position, align, or level machines, equipment, or structures
- prepare building surfaces for paint, finishes, wallpaper, or adhesives
- pressure test piping system or equipment for leaks
- read blueprints
- read schematics

equipment/machinery

- maintain or repair work tools or equipment
- maintain welding machines or equipment
- move materials or goods between work areas
- move or fit heavy objects
- operate hoist, winch, or hydraulic boom
- operate lathes
- operate pneumatic test equipment
- perform detailed welding techniques
- perform hydraulic plumbing
- perform safety inspections in industrial, manufacturing or repair setting
- plan or organize work
- position, align, or level machines, equipment, or structures
- program computer numerical controlled machines
- read blueprints
- read schematics
- read specifications
- read technical drawings
- read work order, instructions, formulas, or processing charts
- repair or replace malfunctioning or worn mechanical components
- set up and operate variety of machine tools
- set up computer numerical control machines
- signal directions or warnings to coworkers
- test electrical/electronic wiring, equipment, systems or fixtures
- test mechanical products or equipment
- understand service or repair manuals
- understand technical operating, service or repair manuals
- use acetylene welding/cutting torch
- use arc welding equipment
- use basic carpentry techniques
- use basic plumbing techniques
- use combination welding procedures
- use concrete fabrication techniques
- use control or regulating devices to adjust or maintain industrial machinery
- use electrical or electronic test devices or equipment
- use hand or power tools
- use high voltage apparatus
- use knowledge of metric system
- use knowledge of welding filler rod types
- use machine tools in installation, maintenance, or repair
- use measuring devices in repairing industrial or heavy equipment
- use pipe fitting equipment
- use pneumatic tools



- read specifications
- read technical drawings
- read work order, instructions, formulas, or processing charts
- repair cracks, defects, or damage in installed building materials
- repair electronic components, equipment, or systems
- repair or adjust measuring or control devices
- repair or replace electrical wiring, circuits, fixtures, or equipment
- repair or replace gas, steam, sewer, or water piping or fixtures
- repair or replace locks, hinges, or related finish hardware
- repair or replace malfunctioning or worn mechanical components
- replace electronic components
- requisition stock, materials, supplies or equipment
- set up and operate variety of machine tools
- solder electrical or electronic connections or components
- test electrical/electronic wiring, equipment, systems or fixtures
- test mechanical products or equipment
- understand service or repair manuals
- understand technical operating, service or repair manuals
- use acetylene welding/cutting torch
- use arc welding equipment
- use basic carpentry techniques
- use basic plumbing techniques
- use building materials for routine building maintenance
- use combination welding procedures
- use control or regulating devices to adjust or maintain industrial machinery
- use electrical or electronic test devices or equipment
- use hand or power tools
- use hand or power woodworking tools
- use high voltage apparatus
- use knowledge of metric system
- use knowledge of ventilation systems
- use knowledge of welding filler rod types
- use machine tools in installation, maintenance, or repair
- use measuring devices in repairing industrial or heavy equipment
- use pipe fitting equipment
- use precision measuring devices in mechanical repair work
- use precision tools in electronics repair
- use pressure gauges
- use soldering equipment

- use precision measuring devices in mechanical repair work
- use pressure gauges
- use robotics systems technology
- use soldering equipment
- verify levelness or verticality, using level or plumb bob
- weld together metal parts, components, or structures
- work as a team member

Technology - Examples

Computer aided design CAD software

- Autodesk AutoCAD software
- Computer aided design CAD software
- SolidWorks CAD software

Office suite software

- Microsoft Office

Tools - Examples

- Adjustable wrenches
- Air compressors
- Bandsaws
- Workshop bench vises
- Block and tackle equipment
- Oxyacetylene torches
- Box end wrenches
- Keyway broaches
- Dial calipers
- Cold chisels
- Combination wrenches
- Dividers
- Depth gauges
- Diagonal cutters
- Dollies
- Cylinder hones
- Protective ear muffs
- Welding electrode holders
- Angled feeler gauges
- Flat files



- use tube bending equipment
- use voltmeter, ammeter, or ohmmeter
- verify levelness or verticality, using level or plumb bob
- weld together metal parts, components, or structures

Technology - Examples

Calendar and scheduling software

- Computerized time management systems

Electronic mail software

- Microsoft Outlook

Facilities management software

- Computerized maintenance management system
CMMS software

Industrial control software

- Digital Direct Control DDC Energy Management software

Internet browser software

- Web browser software

Office suite software

- Microsoft Office

Spreadsheet software

- Microsoft Excel

Word processing software

- Microsoft Word

Tools - Examples

- Adjustable widemouth pliers
- Adjustable crescent wrenches
- Air compressors
- Security alarm systems
- Volt-ammeters
- Augers
- Tractors with backhoe attachments
- Workshop bench vises
- Biscuit joiners
- Block and tackle equipment
- Cutting torches
- Locking C-clamps
- Dial calipers

- Forklifts
- Gage blocks
- Gas-powered generators
- Dial indicators
- Gear shapers
- Safety goggles
- Filler pumps
- Surface grinders
- Chipping hammers
- Ball peen hammers
- Hand clamps
- Bucket pumps
- Handtrucks
- Height gauges
- Allen wrenches
- Chain falls
- Gasket cutters
- Hydraulic press frames
- Hydraulic pumps
- Bearing heaters
- Hydraulic jacks
- Ladders
- Turning lathes
- Transit levels
- Carpenters' levels
- Hoisting hooks
- Inspection mirrors
- Chain cutters
- Metal inert gas MIG welders
- Prick punches
- Teach pendants
- Depth micrometers



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|-------------------------------------|----------------------------|
| • Caulking guns | • End mills |
| • Metal chisels | • Needlenose pliers |
| • Conduit benders | • Nibblers |
| • Desktop computers | • Nut splitters |
| • Utility pumps | • Lubrication guns |
| • Diagonal cut pliers | • Personal computers |
| • Dollies | • Pipe cutters |
| • Closet augers | • Pipe wrenches |
| • Plungers | • Planing machines |
| • Dump trucks | • Plasma welders |
| • Side cutting pliers | • Plumb bobs |
| • Feeler gauges | • Pneumatic needle scalers |
| • Hand files | • Core drills |
| • Fish tape pullers | • Power grinders |
| • Two-wheel drive front end loaders | • Belt sanders |
| • Fuse pullers | • Cutoff saws |
| • Brazing equipment | • Welding gloves |
| • Dial indicators | • Bevel protractors |
| • Safety goggles | • Crowbars |
| • Grease guns | • Bearing pullers |
| • Hand grinders | • Center punches |
| • Valve grinding machines | • Putty knives |
| • Hammer drills | • Pyrometers |
| • Ball peen hammers | • Scrapers |
| • Hand operated spray guns | • Reamers |
| • Hand trucks | • Respirators |
| • Electric trimmers | • Retaining ring pliers |
| • Allen wrenches | • Rivet guns |
| • Hoisting equipment | • Shrink rules |
| • Circle cutters | • Scaffolding |
| • Gasket cutters | • Spiral screw extractors |
| • Boom trucks | • Scribes |



- | | |
|-------------------------------|--|
| • Hand jacks | • Honing stones |
| • Step ladders | • Scissors |
| • Lathes | • Material-hoisting slings |
| • Lawn mowers | • Socket sets |
| • Bubble levels | • Soldering guns |
| • Power lifts | • Spanner wrenches |
| • Ultrasonic leak detectors | • Chain wrenches |
| • Channel lock pliers | • Stroboscopes |
| • Inspection mirrors | • Combination squares |
| • Rubber mallets | • Straightedges |
| • Digital micrometers | • Strap wrenches |
| • Miter boxes | • Tachometers |
| • Needlenose pliers | • Tap extractors |
| • Laptop computers | • Measuring tapes |
| • Nut drivers | • Dies |
| • Hollow core socket wrenches | • Alignment telescopes |
| • Ohmmeters | • Layout templates |
| • Oil dispensing cans | • Tension indicators |
| • Paint application brushes | • Snap gauges |
| • Paint application rollers | • Thread gauges |
| • Paint spray guns | • Pipe threading machines |
| • Personal computers | • Tin snips |
| • Handheld computers | • Torque multipliers |
| • Copper cutting machines | • Tungsten inert gas TIG welding equipment |
| • Pipe vises | • Ultrasonic thickness detectors |
| • End pipe wrenches | • Utility knives |
| • Plumb bobs | • Vibration indicators |
| • Jackhammers | • Arc welders |
| • Chipping hammers | • Welding shields |
| • Cordless power drills | • Spot welding equipment |
| • Electric nail guns | • Wire brushes |
| • Electric planers | • Cable cutters |



- Power routers
- Electric sanders
- Circular saws
- High pressure water sprayers
- Safety gloves
- Crowbars
- Bearing pullers
- Center punches
- Putty knives
- Comealongs
- Dust and particulate respirators
- Rulers
- Protective harnesses
- Protective footwear
- Hacksaws
- Scaffolding
- Screw extractor sets
- Flat blade screwdrivers
- Scribing tools
- Sewage pumps
- Sharpening equipment
- Shears
- Rigging equipment
- Slip joint pliers
- Snow blowers
- Snow plows
- Socket wrench sets
- Soldering equipment
- Basin wrenches
- Combination squares
- Straightedges
- Wire strippers
- Hydraulic cranes
- Arbor presses



- Stud locators
- Measuring tapes
- Taps and dies
- Tension gauges
- Pipe threaders
- Tin snips
- Torque wrenches
- Trenchers
- Concrete trowels
- Tube benders
- Flaring tools
- Portable two way radios
- Utility knives
- Current testers
- Water sampling equipment
- Arc welders
- Wire cutting tools
- Wire crimpers
- Conduit cutters
- Workshop cranes
- Drill presses

Labor Market Comparison

Maine Department of Labor.

Description	Maintenance and Repair Workers, General	Millwrights	Difference
Median Wage	\$ 31,020	\$ 41,280	\$ 10,260
10th Percentile Wage	\$ 21,110	\$ 30,940	\$ 9,830
25th Percentile Wage	N/A	N/A	N/A
75th Percentile Wage	\$ 38,440	\$ 49,110	\$ 10,670
90th Percentile Wage	\$ 49,520	\$ 54,780	\$ 5,260
Mean Wage	\$ 32,940	\$ 41,500	\$ 8,560
Total Employment - 2520	5,140	830	-4,310
Employment Base - 2006	5,391	883	-4,508
Projected Employment - 2529	5,572	774	-4,798



Projected Job Growth - 2006-2529	3.4 %	-12.3 %	-15.7 %
Projected Annual Openings - 2006-2529	31	11	-20
Special			
Special Occupations:			

National Job Posting Trends

Trend for Maintenance and Repair Workers, General and Millwrights



Data from [Indeed](#)

Programs

Related Programs

Heavy/Industrial Equipment Maintenance Technologies, Other

Heavy/Industrial Equipment Maintenance Technologies, Other. Any instructional program in industrial equipment maintenance and repair not listed above.

No information on schools for the program

Industrial Machinery Main. and Repairer

Industrial Mechanics and Maintenance Technology. A program that prepares individuals to apply technical knowledge and skills to repair and maintain industrial machinery and equipment such as cranes, pumps, engines and motors, pneumatic tools, conveyor systems, production machinery, marine deck machinery, and steam propulsion, refinery, and pipeline-distribution systems.

Institution	Address	City	URL
Kennebec Valley Community College	92 Western Ave	Fairfield	www.kvcc.me.edu

Maine Statewide Promotion Opportunities for Maintenance and Repair Workers, General



O* NET Code	Title	Grand TORQ	Job Zone	Employment	Median Wage	Difference	Growth	Annual Job Openings	Special
49-9042.00	Maintenance and Repair Workers, General	100	3	5,140	\$31,020.00	\$0.00	3%	31	
51-4121.06	Welders, Cutters, and Welder Fitters	90	2	1,610	\$38,030.00	\$7,010.00	7%	49	
49-9044.00	Millwrights	90	3	830	\$41,280.00	\$10,260.00	-12%	11	
49-9043.00	Maintenance Workers, Machinery	90	1	290	\$34,100.00	\$3,080.00	-17%	5	
49-3031.00	Bus and Truck Mechanics and Diesel Engine Specialists	89	3	1,180	\$34,210.00	\$3,190.00	6%	34	
49-3042.00	Mobile Heavy Equipment Mechanics, Except Engines	88	4	880	\$37,010.00	\$5,990.00	5%	22	
49-9041.00	Industrial Machinery Mechanics	87	3	990	\$39,370.00	\$8,350.00	7%	25	
49-2093.00	Electrical and Electronics Installers and Repairers, Transportation Equipment	87	3	130	\$35,960.00	\$4,940.00	4%	4	
49-3051.00	Motorboat Mechanics	87	3	240	\$34,980.00	\$3,960.00	6%	8	
51-4192.00	Lay-Out Workers, Metal and Plastic	87	2	180	\$43,870.00	\$12,850.00	-24%	3	
47-2011.00	Boilermakers	87	4	60	\$39,260.00	\$8,240.00	12%	3	
47-3013.00	Helpers--Electricians	87	2	560	\$31,250.00	\$230.00	5%	17	
47-5021.00	Earth Drillers, Except Oil and Gas	86	3	140	\$37,470.00	\$6,450.00	2%	4	
49-2092.00	Electric Motor, Power Tool, and Related Repairers	86	3	170	\$31,210.00	\$190.00	-12%	6	
49-9012.00	Control and Valve Installers and Repairers, Except Mechanical Door	86	3	170	\$47,860.00	\$16,840.00	-9%	3	

Special Occupations:

Top Industries for Millwrights

Industry	NAICS	% of Industry	Employment	Projected Employment	% Change
Other building equipment contractors	238290	20.13%	11,049	12,977	17.45%
Nonresidential building construction	236200	8.45%	4,639	5,633	21.42%



Pulp, paper, and paperboard mills	322100	5.62%	3,084	2,318	-24.83%
Iron and steel mills and ferroalloy manufacturing	331100	4.25%	2,335	1,703	-27.05%
Plumbing, heating, and air-conditioning contractors	238220	3.94%	2,160	2,644	22.38%
Sawmills and wood preservation	321100	3.80%	2,088	1,814	-13.12%
Self-employed workers, primary job	000601	3.19%	1,752	2,023	15.45%
Veneer, plywood, and engineered wood product manufacturing	321200	2.94%	1,615	1,905	18.01%
Foundries	331500	2.50%	1,371	1,077	-21.42%
Commercial and industrial machinery and equipment (except automotive and electronic) repair and maintenance	811300	2.19%	1,204	1,381	14.68%
Employment services	561300	1.22%	671	921	37.15%
Nonferrous metal (except aluminum) production and processing	331400	1.15%	633	480	-24.19%
Other specialty trade contractors	238900	1.14%	627	751	19.77%
Other heavy and civil engineering construction	237900	0.88%	486	565	16.39%
Resin, synthetic rubber, and artificial synthetic fibers and filaments manufacturing	325200	0.85%	466	406	-13.01%

Top Industries for Maintenance and Repair Workers, General

Industry	NAICS	% of Industry	Employment	Projected Employment	% Change
Lessors of real estate	531100	9.05%	125,853	138,660	10.18%
Local government, excluding education and hospitals	939300	7.30%	101,552	114,081	12.34%
Activities related to real estate	531300	5.42%	75,449	96,150	27.44%
Elementary and secondary schools, public and private	611100	3.99%	55,510	58,497	5.38%
Colleges, universities, and professional schools, public and private	611300	2.72%	37,891	42,390	11.87%
General medical and surgical hospitals, public and private	622100	2.48%	34,495	38,189	10.71%
Religious organizations	813100	2.44%	33,871	40,648	20.01%
Employment services	561300	2.30%	31,932	40,414	26.56%
State government, excluding education and hospitals	929200	1.58%	21,973	21,562	-1.87%
Offices of real estate agents and brokers	531200	1.45%	20,200	24,604	21.81%
Nursing care facilities	623100	1.36%	18,977	20,624	8.68%
Management of companies and enterprises	551100	1.34%	18,609	21,453	15.28%
Plastics product manufacturing	326100	1.10%	15,246	16,161	6.00%
Motor vehicle parts manufacturing	336300	0.96%	13,311	10,598	-20.39%

Animal slaughtering and processing	311600	0.91%	12,633	14,418	14.13%
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TORQ Analysis of Maintenance and Repair Workers, General to Bus and Truck Mechanics and Diesel Engine Specialists

ANALYSIS INPUT					
Transfer	Title	O*NET	Filters		
From Title:	Maintenance and Repair Workers, General	49-9042.00	Abilities:	Importance Level: 50	Weight: 1
To Title:	Bus and Truck Mechanics and Diesel Engine Specialists	49-3031.00	Skills:	Importance Level: 69	Weight: 1
Labor Market Area:	Maine Statewide		Knowledge:	Importance Level: 69	Weight: 1

TORQ RESULTS	
Grand TORQ:	89

Ability TORQ		Skills TORQ		Knowledge TORQ	
Level	92	Level	90	Level	86

Gaps To Narrow if Possible				Upgrade These Skills				Knowledge to Add			
Ability	Level	Gap	Imp	Skill	Level	Gap	Imp	Knowledge	Level	Gap	Imp
Problem Sensitivity	62	11	78	Troubleshooting	71	8	83	No Knowledge Upgrades Required!			
Auditory Attention	46	14	59	Repairing	67	6	82				
Hearing Sensitivity	55	13	62	Equipment Maintenance	72	3	86				
Depth Perception	41	9	50								
Inductive Reasoning	57	6	62								
Visualization	59	6	62								
Finger Dexterity	50	6	62								
Flexibility of Closure	50	6	50								
Selective Attention	48	4	62								
Oral Comprehension	53	3	65								
Control Precision	51	3	65								
Oral Expression	53	2	65								
Deductive Reasoning	50	2	62								
Extent Flexibility	53	2	62								
Static Strength	50	2	50								
Speech Recognition	34	2	50								
Speech Clarity	35	1	56								

LEVEL and IMPT (IMPORTANCE) refer to the Target Bus and Truck Mechanics and Diesel Engine Specialists. GAP refers to level difference between Maintenance and Repair Workers, General and Bus and Truck Mechanics and Diesel Engine Specialists.



ASK ANALYSIS

Ability Level Comparison - Abilities with importance scores over 50

Description	Maintenance and Repair Workers, General	Bus and Truck Mechanics and Diesel Engine Specialists	Importance
Problem Sensitivity	51	62	78
Manual Dexterity	48	46	75
Multilimb Coordination	53	48	68
Near Vision	50	50	68
Oral Comprehension	50	53	65
Oral Expression	51	53	65
Arm-Hand Steadiness	44	41	65
Control Precision	48	51	65
Deductive Reasoning	48	50	62
Inductive Reasoning	51	57	62
Information Ordering	60	59	62
Visualization	53	59	62
Selective Attention	44	48	62
Finger Dexterity	44	50	62
Trunk Strength	41	41	62
Extent Flexibility	51	53	62
Hearing Sensitivity	42	55	62
Auditory Attention	32	46	59
Speech Clarity	34	35	56
Flexibility of Closure	44	50	50
Static Strength	48	50	50
Depth Perception	32	41	50
Speech Recognition	32	34	50

Skill Level Comparison - Abilities with importance scores over 69

Description	Maintenance and Repair Workers, General	Bus and Truck Mechanics and Diesel Engine Specialists	Importance
Equipment Maintenance	69	72	86
Troubleshooting	63	71	83
Repairing	61	67	82

Knowledge Level Comparison - Knowledge with importance scores over 69

Description	Maintenance and Repair Workers, General	Bus and Truck Mechanics and Diesel Engine Specialists	Importance
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Experience & Education Comparison

Related Work Experience Comparison

Required Education Level Comparison



Maintenance and Repair Workers, General		Bus and Truck Mechanics and Diesel Engine Specialists	
10+ years	0%	4%	
8-10 years	5%	0%	
6-8 years	7%	0%	
4-6 years	19%	27%	
2-4 years	18%	36%	
1-2 years	24%	31%	
6-12 months	4%	0%	
3-6 months	0%	0%	
1-3 months	0%	0%	
0-1 month	10%	0%	
None	8%	0%	

Maintenance and Repair Workers, General		Bus and Truck Mechanics and Diesel Engine Specialists	
Doctoral	0%	0%	
Professional Degree	0%	0%	
Post-Masters Cert	0%	0%	
Master's Degree	0%	0%	
Post-Bachelor Cert	0%	0%	
Bachelors	0%	0%	
AA or Equiv	8%	0%	
Some College	21%	0%	
Post-Secondary Certificate	31%	80%	
High School Diploma or GED	25%	19%	
No HSD or GED	11%	0%	

Maintenance and Repair Workers, General

Bus and Truck Mechanics and Diesel Engine Specialists

Most Common Educational/Training Requirement:

Moderate-term on-the-job training

Postsecondary vocational award

Job Zone Comparison

3 - Job Zone Three: Medium Preparation Needed

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Previous work-related skill, knowledge, or experience is required for these occupations. For example, an electrician must have completed three or four years of apprenticeship or several years of vocational training, and often must have passed a licensing exam, in order to perform the job.

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Most occupations in this zone require training in vocational schools, related on-the-job experience, or an associate's degree. Some may require a bachelor's degree.

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Employees in these occupations usually need one or two years of training involving both on-the-job experience and informal training with experienced workers.

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Tasks

Maintenance and Repair Workers, General

Bus and Truck Mechanics and Diesel Engine Specialists

Core Tasks

Core Tasks

Generalized Work Activities:

Generalized Work Activities:

- Inspecting Equipment, Structures, or Material - Inspecting equipment, structures, or materials to identify the cause of errors or other problems or defects.
- Performing General Physical Activities - Performing physical activities that require considerable use of your arms and legs and moving your whole body, such as climbing, lifting, balancing, walking, stooping, and handling of materials.
- Repairing and Maintaining Mechanical Equipment - Servicing, repairing, adjusting, and testing machines, devices, moving parts, and equipment that operate primarily on the basis of mechanical (not electronic) principles.
- Handling and Moving Objects - Using hands and arms in handling, installing, positioning, and moving materials, and manipulating things.

- Repairing and Maintaining Mechanical Equipment - Servicing, repairing, adjusting, and testing machines, devices, moving parts, and equipment that operate primarily on the basis of mechanical (not electronic) principles.
- Inspecting Equipment, Structures, or Material - Inspecting equipment, structures, or materials to identify the cause of errors or other problems or defects.
- Operating Vehicles, Mechanized Devices, or Equipment - Running, maneuvering, navigating, or driving vehicles or mechanized equipment, such as forklifts, passenger vehicles, aircraft, or water craft.
- Handling and Moving Objects - Using hands and arms in handling, installing, positioning, and moving materials, and manipulating things.
- Getting Information - Observing, receiving,



- Getting Information - Observing, receiving, and otherwise obtaining information from all relevant sources.

Specific Tasks

Occupation Specific Tasks:

- Adjust functional parts of devices and control instruments, using hand tools, levels, plumb bobs, and straightedges.
- Align and balance new equipment after installation.
- Assemble, install and/or repair wiring, electrical and electronic components, pipe systems and plumbing, machinery, and equipment.
- Clean and lubricate shafts, bearings, gears, and other parts of machinery.
- Diagnose mechanical problems and determine how to correct them, checking blueprints, repair manuals, and parts catalogs as necessary.
- Dismantle devices to gain access to and remove defective parts, using hoists, cranes, hand tools, and power tools.
- Estimate repair costs.
- Fabricate and repair counters, benches, partitions, and other wooden structures such as sheds and outbuildings.
- Grind and reseat valves, using valve-grinding machines.
- Inspect drives, motors, and belts, check fluid levels, replace filters, and perform other maintenance actions, following checklists.
- Inspect used parts to determine changes in dimensional requirements, using rules, calipers, micrometers, and other measuring instruments.
- Inspect, operate, and test machinery and equipment in order to diagnose machine malfunctions.
- Lay brick to repair and maintain buildings, walls, arches and other structures.
- Maintain and repair specialized equipment and machinery found in cafeterias, laundries, hospitals, stores, offices, and factories.
- Operate cutting torches or welding equipment to cut or join metal parts.
- Order parts, supplies, and equipment from catalogs and suppliers, or obtain them from storerooms.
- Paint and repair roofs, windows, doors, floors, woodwork, plaster, drywall, and other parts of building structures.
- Perform routine preventive maintenance to ensure that machines continue to run smoothly, building systems operate efficiently, and the physical condition of buildings does not deteriorate.

and otherwise obtaining information from all relevant sources.

Specific Tasks

Occupation Specific Tasks:

- Adjust and reline brakes, align wheels, tighten bolts and screws, and reassemble equipment.
- Align front ends and suspension systems.
- Attach test instruments to equipment, and read dials and gauges to diagnose malfunctions.
- Disassemble and overhaul internal combustion engines, pumps, generators, transmissions, clutches, and differential units.
- Examine and adjust protective guards, loose bolts, and specified safety devices.
- Inspect and verify dimensions and clearances of parts to ensure conformance to factory specifications.
- Inspect brake systems, steering mechanisms, wheel bearings, and other important parts to ensure that they are in proper operating condition.
- Inspect, repair, and maintain automotive and mechanical equipment and machinery such as pumps and compressors.
- Inspect, test, and listen to defective equipment to diagnose malfunctions, using test instruments such as handheld computers, motor analyzers, chassis charts, and pressure gauges.
- Operate valve-grinding machines to grind and reset valves.
- Perform routine maintenance such as changing oil, checking batteries, and lubricating equipment and machinery.
- Raise trucks, buses, and heavy parts or equipment using hydraulic jacks or hoists.
- Rebuild gas or diesel engines.
- Recondition and replace parts, pistons, bearings, gears, and valves.
- Repair and adjust seats, doors, and windows, and install and repair accessories.
- Rewire ignition systems, lights, and instrument panels.
- Specialize in repairing and maintaining parts of the engine, such as fuel injection systems.
- Test drive trucks and buses to diagnose malfunctions or to ensure that they are working properly.
- Use handtools such as screwdrivers, pliers, wrenches, pressure gauges, and precision instruments, as well as power tools such as pneumatic wrenches, lathes, welding equipment, and jacks and hoists.

Detailed Tasks



- Plan and lay out repair work using diagrams, drawings, blueprints, maintenance manuals, and schematic diagrams.
- Record maintenance and repair work performed and the costs of the work.
- Repair or replace defective equipment parts using hand tools and power tools, and reassemble equipment.
- Set up and operate machine tools to repair or fabricate machine parts, jigs and fixtures, and tools.
- Use tools ranging from common hand and power tools, such as hammers, hoists, saws, drills, and wrenches, to precision measuring instruments and electrical and electronic testing devices.

Detailed Tasks

Detailed Work Activities:

- adhere to safety procedures
- adjust or set mechanical controls or components
- align or adjust clearances of mechanical components or parts
- apply cleaning solvents
- assemble and install pipe sections, fittings, or plumbing fixtures
- assemble, dismantle, or reassemble equipment or machinery
- bend tubing or conduit
- build or repair structures in construction, repair, or manufacturing setting
- burn (cut), trim, or scarf metal objects
- climb ladders, scaffolding, or utility or telephone poles
- conduct tests to locate mechanical system malfunction
- construct, erect, or repair wooden frameworks or structures
- control HVAC equipment
- coordinate production maintenance activities
- cut, bend, or thread pipe for gas, air, hydraulic, or water lines
- cut, shape, fit, or join wood or other construction materials
- determine installation, service, or repair needed
- diagnose mechanical problems in machinery or equipment
- erect scaffold
- estimate time or cost for installation, repair, or construction projects
- fabricate sheet metal parts or items
- fabricate, assemble, or disassemble manufactured products by hand
- follow safe waste disposal procedures
- identify properties of metals for repair or fabrication activities
- inspect machinery or equipment to

Detailed Work Activities:

- adhere to safety procedures
- adjust or set mechanical controls or components
- align or adjust clearances of vehicle body parts or components
- align vehicle frame
- assemble, dismantle, or reassemble equipment or machinery
- conduct tests to locate mechanical system malfunction
- determine installation, service, or repair needed
- diagnose malfunctioning vehicle systems
- diagnose mechanical problems in machinery or equipment
- estimate time or cost for installation, repair, or construction projects
- examine vehicle to detect malfunctions, damage, or maintenance needed
- fabricate, assemble, or disassemble manufactured products by hand
- follow safe waste disposal procedures
- follow vehicle repair procedures
- identify base metals for welding
- inspect machinery or equipment to determine adjustments or repairs needed
- locate puncture in tubeless tires or inner tubes
- lubricate machinery, equipment, or parts
- maintain or repair cargo or passenger vehicle
- maintain repair records
- maintain welding machines or equipment
- move or fit heavy objects
- operate hoist, winch, or hydraulic boom
- operate lathes
- operate pneumatic test equipment
- operate vehicle engine electrical system test equipment
- overhaul vehicle major operating units, such as engines or transmissions
- perform safety inspections in industrial, manufacturing or repair setting
- read blueprints
- read schematics
- read technical drawings
- read vehicle manufacturer's specifications
- read work order, instructions, formulas, or processing charts
- repair commercial transportation equipment
- repair or install tires
- repair or replace electrical wiring, circuits, fixtures, or equipment
- repair or replace malfunctioning or worn mechanical components
- repair vehicle transmissions



- determine adjustments or repairs needed
- install doors, wood floors, window frames, trim, or stairs
- install electrical fixtures or components
- install electronic equipment, components, or systems
- install equipment or attachments on machinery or related structures
- install industrial machinery or related heavy equipment
- install insulating materials
- install locks, hinges, or related finish hardware
- install or replace glass in windows, skylights, or other structural surfaces
- install or replace meters, regulators, or related measuring or control devices
- install shingles, tile, slate, asphalt, or related roofing materials
- install/connect electrical equipment to power circuit
- install/string electrical or electronic cable or wiring
- lay or install brick, block, stone, tile, or related masonry material
- lubricate machinery, equipment, or parts
- maintain or repair industrial or related equipment/machinery
- maintain or repair work tools or equipment
- maintain repair records
- maintain specialized manufacturing or commercial equipment or machinery
- maintain welding machines or equipment
- measure and mark reference points or cutting lines on workpieces
- move or fit heavy objects
- observe or listen to machinery or equipment operation to detect malfunctions
- operate crane in construction, manufacturing or repair setting
- operate hoist, winch, or hydraulic boom
- order or purchase supplies, materials, or equipment
- paint walls or other structural surfaces
- perform safety inspections in industrial, manufacturing or repair setting
- plan or organize work
- position, align, or level machines, equipment, or structures
- prepare building surfaces for paint, finishes, wallpaper, or adhesives
- pressure test piping system or equipment for leaks
- read blueprints
- read schematics
- read specifications
- read technical drawings

- repair vehicle transmissions
- service vehicle with water, fuel, or oil
- set up and operate variety of machine tools
- solder vehicle components
- test mechanical products or equipment
- test operate vehicles before or after repair
- test vehicle computer processors to detect malfunctions
- understand service or repair manuals
- understand technical operating, service or repair manuals
- use acetylene welding/cutting torch
- use combination welding procedures
- use electrical or electronic test devices or equipment
- use electronic calibration devices
- use engine diagnostic equipment
- use hand or power tools
- use knowledge of metric system
- use knowledge of welding filler rod types
- use lifting equipment in vehicle repair setting
- use machine tools in installation, maintenance, or repair
- use oral or written communication techniques
- use pneumatic tools
- use precision measuring devices in mechanical repair work
- use soldering equipment
- use vehicle repair tools or safety equipment
- use voltmeter, ammeter, or ohmmeter
- weld together metal parts, components, or structures
- write vehicle damage repair estimates

Technology - Examples

Data base user interface and query software

- Database software

Facilities management software

- Shop management software

Word processing software

- Word processing software

Tools - Examples

- Pliers
- Adjustable crescent wrenches
- Battery chargers
- Acetylene torches
- Boring bars
- Box end wrenches



- | | |
|---|--|
| <ul style="list-style-type: none"> • read work order, instructions, formulas, or processing charts • repair cracks, defects, or damage in installed building materials • repair electronic components, equipment, or systems • repair or adjust measuring or control devices • repair or replace electrical wiring, circuits, fixtures, or equipment • repair or replace gas, steam, sewer, or water piping or fixtures • repair or replace locks, hinges, or related finish hardware • repair or replace malfunctioning or worn mechanical components • replace electronic components • requisition stock, materials, supplies or equipment • set up and operate variety of machine tools • solder electrical or electronic connections or components • test electrical/electronic wiring, equipment, systems or fixtures • test mechanical products or equipment • understand service or repair manuals • understand technical operating, service or repair manuals • use acetylene welding/cutting torch • use arc welding equipment • use basic carpentry techniques • use basic plumbing techniques • use building materials for routine building maintenance • use combination welding procedures • use control or regulating devices to adjust or maintain industrial machinery • use electrical or electronic test devices or equipment • use hand or power tools • use hand or power woodworking tools • use high voltage apparatus • use knowledge of metric system • use knowledge of ventilation systems • use knowledge of welding filler rod types • use machine tools in installation, maintenance, or repair • use measuring devices in repairing industrial or heavy equipment • use pipe fitting equipment • use precision measuring devices in mechanical repair work • use precision tools in electronics repair • use pressure gauges • use soldering equipment • use tube bending equipment | <ul style="list-style-type: none"> • Brake shoe adjusting tools • Dial calipers • Test lights • Chisels • Combination wrenches • Blow guns • Depth gauges • Desktop computers • Diagonal cut pliers • Hones • Dynamometers • Hearing protectors • Fuel pump test stands • Feeler gauges • Files • Forklifts • Brazing equipment • Bore gauges • Ball peen hammers • Hex keys • Hoists • Hydraulic pumps • Impact wrenches • Bearing heating ovens • Jacks • Lathes • Locking pliers • Metal inert gas MIG welders • Micrometers • Milling machines • Multimeters • Needlenose pliers |
|---|--|



- use voltmeter, ammeter, or ohmmeter
- verify levelness or verticality, using level or plumb bob
- weld together metal parts, components, or structures

Technology - Examples

Calendar and scheduling software

- Computerized time management systems

Electronic mail software

- Microsoft Outlook

Facilities management software

- Computerized maintenance management system CMMS software

Industrial control software

- Digital Direct Control DDC Energy Management software

Internet browser software

- Web browser software

Office suite software

- Microsoft Office

Spreadsheet software

- Microsoft Excel

Word processing software

- Microsoft Word

Tools - Examples

- Adjustable widemouth pliers
- Adjustable crescent wrenches
- Air compressors
- Security alarm systems
- Volt-ammeters
- Augers
- Tractors with backhoe attachments
- Workshop bench vises
- Biscuit joiners
- Block and tackle equipment
- Cutting torches
- Locking C-clamps
- Dial calipers
- Caulking guns

- Open end wrenches
- Paint spray guns
- Personal computers
- Pneumatic wrenches
- Blast cleaning cabinets
- Detroit diesel electronic control DDEC readers
- Drill machines
- Grinding machines
- Power sanders
- Power saws
- Pressure gauges
- Steam cleaning equipment
- Injector pop testers
- Safety gloves
- Pry bars
- Brass drifts
- Putty knives
- Ratchets
- Reamers
- Valve seat grinders
- Snap ring pliers
- Riveting equipment
- Safety glasses
- Hacksaws
- Screwdrivers
- Shears
- Chain slings
- Slip joint pliers
- Socket sets
- Spark plug sockets
- Bleeder wrenches
- Decelerometers
- Punches



- Metal chisels
- Conduit benders
- Desktop computers
- Utility pumps
- Diagonal cut pliers
- Dollies
- Closet augers
- Plungers
- Dump trucks
- Side cutting pliers
- Feeler gauges
- Hand files
- Fish tape pullers
- Two-wheel drive front end loaders
- Fuse pullers
- Brazing equipment
- Dial indicators
- Safety goggles
- Grease guns
- Hand grinders
- Valve grinding machines
- Hammer drills
- Ball peen hammers
- Hand operated spray guns
- Hand trucks
- Electric trimmers
- Allen wrenches
- Hoisting equipment
- Circle cutters
- Gasket cutters
- Boom trucks
- Hand jacks

• TRENCHES

- Wire stripping tools
- Tachometers
- Tape measures
- Snap gauges
- Torque wrenches
- Tungsten inert gas TIG welding equipment
- Two way radios
- Utility knives
- Vacuum pumps
- Voltmeters
- Arc welders
- Welding hoods
- Welding equipment
- Wheel balancers
- Wire cutting tools
- Wire crimping tools
- Workshop cranes
- Drill presses



- Step ladders
- Lathes
- Lawn mowers
- Bubble levels
- Power lifts
- Ultrasonic leak detectors
- Channel lock pliers
- Inspection mirrors
- Rubber mallets
- Digital micrometers
- Miter boxes
- Needlenose pliers
- Laptop computers
- Nut drivers
- Hollow core socket wrenches
- Ohmmeters
- Oil dispensing cans
- Paint application brushes
- Paint application rollers
- Paint spray guns
- Personal computers
- Handheld computers
- Copper cutting machines
- Pipe vises
- End pipe wrenches
- Plumb bobs
- Jackhammers
- Chipping hammers
- Cordless power drills
- Electric nail guns
- Electric planers
- Power routers



- Electric sanders
- Circular saws
- High pressure water sprayers
- Safety gloves
- Crowbars
- Bearing pullers
- Center punches
- Putty knives
- Comealongs
- Dust and particulate respirators
- Rulers
- Protective harnesses
- Protective footwear
- Hacksaws
- Scaffolding
- Screw extractor sets
- Flat blade screwdrivers
- Scribing tools
- Sewage pumps
- Sharpening equipment
- Shears
- Rigging equipment
- Slip joint pliers
- Snow blowers
- Snow plows
- Socket wrench sets
- Soldering equipment
- Basin wrenches
- Combination squares
- Straightedges
- Wire strippers
- Stud locators



- Measuring tapes
- Taps and dies
- Tension gauges
- Pipe threaders
- Tin snips
- Torque wrenches
- Trenchers
- Concrete trowels
- Tube benders
- Flaring tools
- Portable two way radios
- Utility knives
- Current testers
- Water sampling equipment
- Arc welders
- Wire cutting tools
- Wire crimpers
- Conduit cutters
- Workshop cranes
- Drill presses

Labor Market Comparison

Maine Department of Labor.

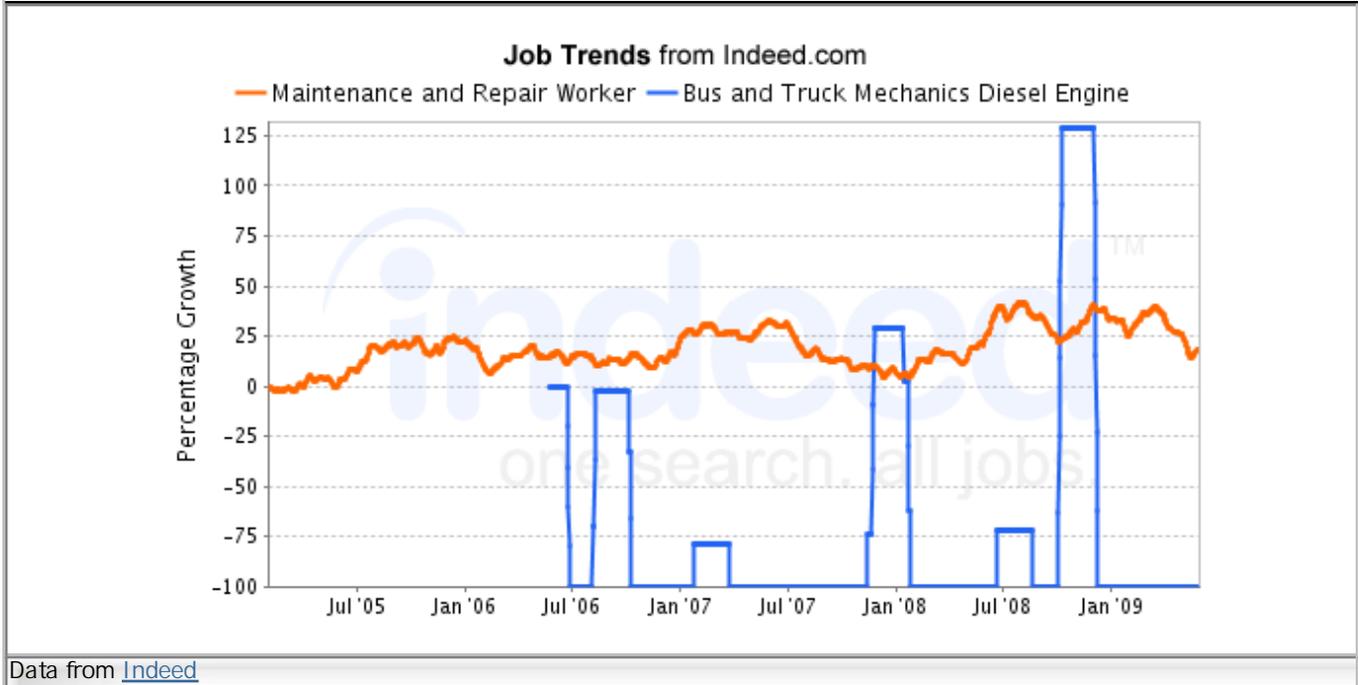
Description	Maintenance and Repair Workers, General	Bus and Truck Mechanics and Diesel Engine Specialists	Difference
Median Wage	\$ 31,020	\$ 34,210	\$ 3,190
10th Percentile Wage	\$ 21,110	\$ 25,180	\$ 4,070
25th Percentile Wage	N/A	N/A	N/A
75th Percentile Wage	\$ 38,440	\$ 40,360	\$ 1,920
90th Percentile Wage	\$ 49,520	\$ 47,380	\$(2,140)
Mean Wage	\$ 32,940	\$ 34,990	\$ 2,050
Total Employment - 2520	5,140	1,180	-3,960
Employment Base - 2006	5,391	1,241	-4,150
Projected Employment - 2529	5,572	1,310	-4,262



Projected Job Growth - 2006-2529	3.4 %	5.6 %	2.2 %
Projected Annual Openings - 2006-2529	31	34	3
Special			
Special Occupations:			

National Job Posting Trends

Trend for Maintenance and Repair Workers, General and Bus and Truck Mechanics and Diesel Engine Specialists



Programs

Related Programs

Diesel Engine Mechanic and Repairer

Diesel Mechanics Technology/Technician. A program that prepares individuals to apply technical knowledge and skills to repair, service, and maintain diesel engines in vehicles such as automobiles, buses, ships, trucks, railroad locomotives, and construction equipment; as well as stationary diesel engines in electrical generators and related equipment.

Institution	Address	City	URL
Washington County Community College	One College Drive	Calais	www.wccc.me.edu

Heavy Equipment Main. and Repairer

Heavy Equipment Maintenance Technology/Technician. A program that prepares individuals to apply technical knowledge and skills in the field maintenance and repair of heavy equipment, and in the general maintenance and overhaul of such equipment. Includes instruction in inspection, maintenance, and repair of tracks, wheels, brakes, operating controls, pneumatic and hydraulic systems, electrical circuitry, engines and in techniques of welding and brazing.

Institution	Address	City	URL
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Eastern Maine Community College	354 Hogan Rd	Bangor	www.emcc.edu
Eastern Maine Community College	354 Hogan Rd	Bangor	www.emcc.edu
Washington County Community College	One College Drive	Calais	www.wccc.me.edu

Medium/Heavy Vehicle and Truck Technology/Technician

Medium/Heavy Vehicle and Truck Technology/Technician. A program that prepares individuals to apply technical knowledge and skills to the specialized maintenance and repair of trucks, buses, and other commercial and industrial vehicles. Includes instruction in diesel engine mechanics, suspension and steering, brake systems, electrical and electronic systems, preventive maintenance inspections, drive trains, gasoline engine mechanics, HVAC systems, and auxiliary equipment installation and repair.

No information on schools for the program

Maine Statewide Promotion Opportunities for Maintenance and Repair Workers, General

O* NET Code	Title	Grand TORQ	Job Zone	Employment	Median Wage	Difference	Growth	Annual Job Openings	Special
49-9042.00	Maintenance and Repair Workers, General	100	3	5,140	\$31,020.00	\$0.00	3%	31	
51-4121.06	Welders, Cutters, and Welder Fitters	90	2	1,610	\$38,030.00	\$7,010.00	7%	49	
49-9044.00	Millwrights	90	3	830	\$41,280.00	\$10,260.00	-12%	11	
49-9043.00	Maintenance Workers, Machinery	90	1	290	\$34,100.00	\$3,080.00	-17%	5	
49-3031.00	Bus and Truck Mechanics and Diesel Engine Specialists	89	3	1,180	\$34,210.00	\$3,190.00	6%	34	
49-3042.00	Mobile Heavy Equipment Mechanics, Except Engines	88	4	880	\$37,010.00	\$5,990.00	5%	22	
49-9041.00	Industrial Machinery Mechanics	87	3	990	\$39,370.00	\$8,350.00	7%	25	
49-2093.00	Electrical and Electronics Installers and Repairers, Transportation Equipment	87	3	130	\$35,960.00	\$4,940.00	4%	4	
49-3051.00	Motorboat Mechanics	87	3	240	\$34,980.00	\$3,960.00	6%	8	
51-4192.00	Lay-Out Workers, Metal and Plastic	87	2	180	\$43,870.00	\$12,850.00	-24%	3	
47-2011.00	Boilermakers	87	4	60	\$39,260.00	\$8,240.00	12%	3	
47-3013.00	Helpers--Electricians	87	2	560	\$31,250.00	\$230.00	5%	17	



47-5021.00	Earth Drillers, Except Oil and Gas	86	3	140	\$37,470.00	\$6,450.00	2%	4
49-2092.00	Electric Motor, Power Tool, and Related Repairers	86	3	170	\$31,210.00	\$190.00	-12%	6
49-9012.00	Control and Valve Installers and Repairers, Except Mechanical Door	86	3	170	\$47,860.00	\$16,840.00	-9%	3

Special Occupations:

Top Industries for Bus and Truck Mechanics and Diesel Engine Specialists

Industry	NAICS	% of Industry	Employment	Projected Employment	% Change
General freight trucking	484100	11.56%	31,771	35,936	13.11%
Automotive mechanical and electrical repair and maintenance	811110	9.27%	25,468	32,234	26.56%
Local government, excluding education and hospitals	939300	8.73%	23,990	26,949	12.34%
Motor vehicle and motor vehicle parts and supplies merchant wholesalers	423100	6.38%	17,544	20,025	14.14%
Self-employed workers, primary job	000601	5.61%	15,411	16,418	6.54%
Specialized freight trucking	484200	5.00%	13,746	15,482	12.64%
Elementary and secondary schools, public and private	611100	4.67%	12,827	13,517	5.38%
Automotive equipment rental and leasing	532100	4.60%	12,653	14,356	13.47%
Automobile dealers	441100	2.10%	5,769	6,544	13.44%
Rail transportation	482100	2.03%	5,583	4,805	-13.94%
Cement and concrete product manufacturing	327300	1.88%	5,180	5,623	8.55%
School and employee bus transportation	485400	1.79%	4,930	5,429	10.13%
Waste collection	562100	1.68%	4,630	5,838	26.08%
Couriers	492100	1.52%	4,166	4,476	7.46%
Other specialty trade contractors	238900	1.36%	3,730	4,123	10.52%

Top Industries for Maintenance and Repair Workers, General

Industry	NAICS	% of Industry	Employment	Projected Employment	% Change
Lessors of real estate	531100	9.05%	125,853	138,660	10.18%
Local government, excluding education and hospitals	939300	7.30%	101,552	114,081	12.34%
Activities related to real estate	531300	5.42%	75,449	96,150	27.44%
Elementary and secondary schools, public and private	611100	3.99%	55,510	58,497	5.38%



Colleges, universities, and professional schools, public and private	611300	2.72%	37,891	42,390	11.87%
General medical and surgical hospitals, public and private	622100	2.48%	34,495	38,189	10.71%
Religious organizations	813100	2.44%	33,871	40,648	20.01%
Employment services	561300	2.30%	31,932	40,414	26.56%
State government, excluding education and hospitals	929200	1.58%	21,973	21,562	-1.87%
Offices of real estate agents and brokers	531200	1.45%	20,200	24,604	21.81%
Nursing care facilities	623100	1.36%	18,977	20,624	8.68%
Management of companies and enterprises	551100	1.34%	18,609	21,453	15.28%
Plastics product manufacturing	326100	1.10%	15,246	16,161	6.00%
Motor vehicle parts manufacturing	336300	0.96%	13,311	10,598	-20.39%
Animal slaughtering and processing	311600	0.91%	12,633	14,418	14.13%



TORQ Analysis of Maintenance and Repair Workers, General to Recreational Vehicle Service Technicians

ANALYSIS INPUT					
Transfer	Title	O*NET	Filters		
From Title:	Maintenance and Repair Workers, General	49-9042.00	Abilities:	Importance Level: 50	Weight: 1
To Title:	Recreational Vehicle Service Technicians	49-3092.00	Skills:	Importance Level: 69	Weight: 1
Labor Market Area:	Maine Statewide		Knowledge:	Importance Level: 69	Weight: 1

TORQ RESULTS														
Grand TORQ:												89		
Ability TORQ				Skills TORQ				Knowledge TORQ						
Level				88	Level				90	Level				91
Gaps To Narrow if Possible				Upgrade These Skills				Knowledge to Add						
Ability	Level	Gap	Imp	Skill	Level	Gap	Imp	Knowledge	Level	Gap	Imp	No Knowledge Upgrades Required!		
Speech Recognition	44	12	59	Repairing	72	11	89							
Extent Flexibility	59	8	62	Troubleshooting	68	5	91							
Speech Clarity	41	7	56	Installation	64	2	74							
Finger Dexterity	50	6	65											
Oral Comprehension	55	5	72											
Manual Dexterity	53	5	68											
Control Precision	53	5	65											
Depth Perception	37	5	50											
Near Vision	53	3	68											
Hearing Sensitivity	46	4	50											
Oral Expression	53	2	68											
Deductive Reasoning	50	2	59											
LEVEL and IMPT (IMPORTANCE) refer to the Target Recreational Vehicle Service Technicians. GAP refers to level difference between Maintenance and Repair Workers, General and Recreational Vehicle Service Technicians.														

ASK ANALYSIS				
Ability Level Comparison - Abilities with importance scores over 50				
Description	Maintenance and Repair Workers, General		Recreational Vehicle Service Technicians	Importance
Oral Comprehension	50		55	72
Oral Expression	51		53	68
Manual Dexterity	48		53	68



Near Vision	50	53	68
Problem Sensitivity	51	50	65
Finger Dexterity	44	50	65
Control Precision	48	53	65
Extent Flexibility	51	59	62
Deductive Reasoning	48	50	59
Inductive Reasoning	51	50	59
Arm-Hand Steadiness	44	44	59
Multilimb Coordination	53	46	59
Speech Recognition	32	44	59
Written Comprehension	46	46	56
Information Ordering	60	51	56
Speech Clarity	34	41	56
Visualization	53	48	50
Static Strength	48	42	50
Visual Color Discrimination	50	48	50
Depth Perception	32	37	50
Hearing Sensitivity	42	46	50

Skill Level Comparison - Abilities with importance scores over 69

Description	Maintenance and Repair Workers, General	Recreational Vehicle Service Technicians	Importance
Troubleshooting	63	68	91
Repairing	61	72	89
Installation	62	64	74

Knowledge Level Comparison - Knowledge with importance scores over 69

Description	Maintenance and Repair Workers, General	Recreational Vehicle Service Technicians	Importance
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Experience & Education Comparison

Related Work Experience Comparison			Required Education Level Comparison		
Description	Maintenance and Repair Workers, General	Recreational Vehicle Service Technicians	Description	Maintenance and Repair Workers, General	Recreational Vehicle Service Technicians
10+ years	0%	0%	Doctoral	0%	0%
8-10 years	5%	0%	Professional Degree	0%	0%
6-8 years	7%	0%	Post-Masters Cert	0%	0%
4-6 years	19%	0%	Master's Degree	0%	0%
2-4 years	18%	34%	Post-Bachelor Cert	0%	0%
1-2 years	24%	34%	Bachelors	0%	0%
6-12 months	4%	17%	AA or Equiv	8%	4%
3-6 months	0%	4%	Some College	21%	0%
1-3 months	0%	0%	Post-Secondary Certificate	31%	39%
0-1 month	10%	0%	High School Diploma or GED	25%	52%



None	8%	No HSD or GED	11%
Maintenance and Repair Workers, General		Recreational Vehicle Service Technicians	
Most Common Educational/Training Requirement:			
Moderate-term on-the-job training		Long-term on-the-job training	
Job Zone Comparison			
3 - Job Zone Three: Medium Preparation Needed		2 - Job Zone Two: Some Preparation Needed	
Previous work-related skill, knowledge, or experience is required for these occupations. For example, an electrician must have completed three or four years of apprenticeship or several years of vocational training, and often must have passed a licensing exam, in order to perform the job.		Some previous work-related skill, knowledge, or experience may be helpful in these occupations, but usually is not needed. For example, a teller might benefit from experience working directly with the public, but an inexperienced person could still learn to be a teller with little difficulty.	
Most occupations in this zone require training in vocational schools, related on-the-job experience, or an associate's degree. Some may require a bachelor's degree.		These occupations usually require a high school diploma and may require some vocational training or job-related course work. In some cases, an associate's or bachelor's degree could be needed.	
Employees in these occupations usually need one or two years of training involving both on-the-job experience and informal training with experienced workers.		Employees in these occupations need anywhere from a few months to one year of working with experienced employees.	

Tasks

Maintenance and Repair Workers, General	Recreational Vehicle Service Technicians
Core Tasks	Core Tasks
<p>Generalized Work Activities:</p> <ul style="list-style-type: none"> Inspecting Equipment, Structures, or Material - Inspecting equipment, structures, or materials to identify the cause of errors or other problems or defects. Performing General Physical Activities - Performing physical activities that require considerable use of your arms and legs and moving your whole body, such as climbing, lifting, balancing, walking, stooping, and handling of materials. Repairing and Maintaining Mechanical Equipment - Servicing, repairing, adjusting, and testing machines, devices, moving parts, and equipment that operate primarily on the basis of mechanical (not electronic) principles. Handling and Moving Objects - Using hands and arms in handling, installing, positioning, and moving materials, and manipulating things. Getting Information - Observing, receiving, and otherwise obtaining information from all relevant sources. 	<p>Generalized Work Activities:</p> <ul style="list-style-type: none"> Updating and Using Relevant Knowledge - Keeping up-to-date technically and applying new knowledge to your job. Getting Information - Observing, receiving, and otherwise obtaining information from all relevant sources. Performing General Physical Activities - Performing physical activities that require considerable use of your arms and legs and moving your whole body, such as climbing, lifting, balancing, walking, stooping, and handling of materials. Handling and Moving Objects - Using hands and arms in handling, installing, positioning, and moving materials, and manipulating things. Operating Vehicles, Mechanized Devices, or Equipment - Running, maneuvering, navigating, or driving vehicles or mechanized equipment, such as forklifts, passenger vehicles, aircraft, or water craft.
Specific Tasks	Specific Tasks
<p>Occupation Specific Tasks:</p> <ul style="list-style-type: none"> Adjust functional parts of devices and control instruments, using hand tools, levels, plumb bobs, and straightedges. Align and balance new equipment after installation. Assemble, install and/or repair wiring, electrical and electronic components, pipe systems and plumbing, machinery, and equipment. Clean and lubricate shafts, bearings, gears, 	<p>Occupation Specific Tasks:</p> <ul style="list-style-type: none"> Confer with customers, read work orders, and examine vehicles needing repair in order to determine the nature and extent of damage. Connect electrical systems to outside power sources, and activate switches to test the operation of appliances and light fixtures. Connect water hoses to inlet pipes of plumbing systems, and test operation of toilets and sinks. Examine or test operation of parts or systems that have been repaired to ensure



and other parts of machinery.

- Diagnose mechanical problems and determine how to correct them, checking blueprints, repair manuals, and parts catalogs as necessary.
- Dismantle devices to gain access to and remove defective parts, using hoists, cranes, hand tools, and power tools.
- Estimate repair costs.
- Fabricate and repair counters, benches, partitions, and other wooden structures such as sheds and outbuildings.
- Grind and reseat valves, using valve-grinding machines.
- Inspect drives, motors, and belts, check fluid levels, replace filters, and perform other maintenance actions, following checklists.
- Inspect used parts to determine changes in dimensional requirements, using rules, calipers, micrometers, and other measuring instruments.
- Inspect, operate, and test machinery and equipment in order to diagnose machine malfunctions.
- Lay brick to repair and maintain buildings, walls, arches and other structures.
- Maintain and repair specialized equipment and machinery found in cafeterias, laundries, hospitals, stores, offices, and factories.
- Operate cutting torches or welding equipment to cut or join metal parts.
- Order parts, supplies, and equipment from catalogs and suppliers, or obtain them from storerooms.
- Paint and repair roofs, windows, doors, floors, woodwork, plaster, drywall, and other parts of building structures.
- Perform routine preventive maintenance to ensure that machines continue to run smoothly, building systems operate efficiently, and the physical condition of buildings does not deteriorate.
- Plan and lay out repair work using diagrams, drawings, blueprints, maintenance manuals, and schematic diagrams.
- Record maintenance and repair work performed and the costs of the work.
- Repair or replace defective equipment parts using hand tools and power tools, and reassemble equipment.
- Set up and operate machine tools to repair or fabricate machine parts, jigs and fixtures, and tools.
- Use tools ranging from common hand and power tools, such as hammers, hoists, saws, drills, and wrenches, to precision measuring instruments and electrical and electronic testing devices.

Detailed Tasks

completeness of repairs.

- Inspect recreational vehicles to diagnose problems, then perform necessary adjustment, repair, or overhaul.
- List parts needed, estimate costs, and plan work procedures, using parts lists, technical manuals, and diagrams.
- Locate and repair frayed wiring, broken connections, or incorrect wiring, using ohmmeters, soldering irons, tape, and hand tools.
- Open and close doors, windows, and drawers to test their operation, trimming edges to fit as necessary.
- Refinish wood surfaces on cabinets, doors, moldings, and floors, using power sanders, putty, spray equipment, brushes, paints, or varnishes.
- Remove damaged exterior panels, and repair and replace structural frame members.
- Repair leaks with caulking compound, or replace pipes, using pipe wrenches.
- Repair plumbing and propane gas lines, using caulking compounds and plastic or copper pipe.
- Reset hardware, using chisels, mallets, and screwdrivers.
- Seal open sides of modular units to prepare them for shipment, using polyethylene sheets, nails, and hammers.

Detailed Tasks

Detailed Work Activities:

- adhere to safety procedures
- adjust or set mechanical controls or components
- align or adjust clearances of vehicle body parts or components
- apply adhesives, caulking, sealants, or coatings
- assemble and install pipe sections, fittings, or plumbing fixtures
- assemble, dismantle, or reassemble equipment or machinery
- build or repair structures in construction, repair, or manufacturing setting
- conduct tests to locate mechanical system malfunction
- construct, erect, or repair wooden frameworks or structures
- cut, shape, fit, or join wood or other construction materials
- determine installation, service, or repair needed
- diagnose malfunctioning vehicle systems
- diagnose mechanical problems in machinery or equipment



Detailed Work Activities:

- adhere to safety procedures
- adjust or set mechanical controls or components
- align or adjust clearances of mechanical components or parts
- apply cleaning solvents
- assemble and install pipe sections, fittings, or plumbing fixtures
- assemble, dismantle, or reassemble equipment or machinery
- bend tubing or conduit
- build or repair structures in construction, repair, or manufacturing setting
- burn (cut), trim, or scarf metal objects
- climb ladders, scaffolding, or utility or telephone poles
- conduct tests to locate mechanical system malfunction
- construct, erect, or repair wooden frameworks or structures
- control HVAC equipment
- coordinate production maintenance activities
- cut, bend, or thread pipe for gas, air, hydraulic, or water lines
- cut, shape, fit, or join wood or other construction materials
- determine installation, service, or repair needed
- diagnose mechanical problems in machinery or equipment
- erect scaffold
- estimate time or cost for installation, repair, or construction projects
- fabricate sheet metal parts or items
- fabricate, assemble, or disassemble manufactured products by hand
- follow safe waste disposal procedures
- identify properties of metals for repair or fabrication activities
- inspect machinery or equipment to determine adjustments or repairs needed
- install doors, wood floors, window frames, trim, or stairs
- install electrical fixtures or components
- install electronic equipment, components, or systems
- install equipment or attachments on machinery or related structures
- install industrial machinery or related heavy equipment
- install insulating materials
- install locks, hinges, or related finish hardware
- install or replace glass in windows, skylights, or other structural surfaces
- install or replace meters, regulators, or
 - estimate time or cost for installation, repair, or construction projects
 - fabricate, assemble, or disassemble manufactured products by hand
 - finish or refinish floor, furniture, or related wood surfaces
 - identify properties of metals for repair or fabrication activities
 - inspect machinery or equipment to determine adjustments or repairs needed
 - install carpet, linoleum, tile, or related material onto floors or walls
 - install household appliances
 - install prefabricated building components
 - install siding or sheathing
 - maintain repair records
 - move or fit heavy objects
 - obtain information from clients, customers, or patients
 - paint walls or other structural surfaces
 - perform safety inspections in construction or resource extraction setting
 - plan or organize work
 - prepare building surfaces for paint, finishes, wallpaper, or adhesives
 - prime or paint vehicle or transportation equipment surfaces
 - read blueprints
 - read schematics
 - read specifications
 - read tape measure
 - read technical drawings
 - read vehicle manufacturer's specifications
 - read work order, instructions, formulas, or processing charts
 - repair or replace electrical wiring, circuits, fixtures, or equipment
 - repair or replace gas, steam, sewer, or water piping or fixtures
 - repair or replace malfunctioning or worn mechanical components
 - repair prefabricated wooden building components
 - solder electrical or electronic connections or components
 - test electrical/electronic wiring, equipment, systems or fixtures
 - test mechanical products or equipment
 - understand service or repair manuals
 - use acetylene welding/cutting torch
 - use arc welding equipment
 - use basic carpentry techniques
 - use basic plumbing techniques
 - use hand or power tools
 - use hand or power woodworking tools
 - use knowledge of metric system



- related measuring or control devices
- install shingles, tile, slate, asphalt, or related roofing materials
- install/connect electrical equipment to power circuit
- install/string electrical or electronic cable or wiring
- lay or install brick, block, stone, tile, or related masonry material
- lubricate machinery, equipment, or parts
- maintain or repair industrial or related equipment/machinery
- maintain or repair work tools or equipment
- maintain repair records
- maintain specialized manufacturing or commercial equipment or machinery
- maintain welding machines or equipment
- measure and mark reference points or cutting lines on workpieces
- move or fit heavy objects
- observe or listen to machinery or equipment operation to detect malfunctions
- operate crane in construction, manufacturing or repair setting
- operate hoist, winch, or hydraulic boom
- order or purchase supplies, materials, or equipment
- paint walls or other structural surfaces
- perform safety inspections in industrial, manufacturing or repair setting
- plan or organize work
- position, align, or level machines, equipment, or structures
- prepare building surfaces for paint, finishes, wallpaper, or adhesives
- pressure test piping system or equipment for leaks
- read blueprints
- read schematics
- read specifications
- read technical drawings
- read work order, instructions, formulas, or processing charts
- repair cracks, defects, or damage in installed building materials
- repair electronic components, equipment, or systems
- repair or adjust measuring or control devices
- repair or replace electrical wiring, circuits, fixtures, or equipment
- repair or replace gas, steam, sewer, or water piping or fixtures
- repair or replace locks, hinges, or related finish hardware
- repair or replace malfunctioning or worn mechanical components
- replace electronic components

- use knowledge of welding filler rod types
- use measuring devices in construction or extraction work
- use oral or written communication techniques
- use soldering equipment
- use spray paint equipment
- use voltmeter, ammeter, or ohmmeter
- weld together metal parts, components, or structures

Technology - Examples



- requisition stock, materials, supplies or equipment
- set up and operate variety of machine tools
- solder electrical or electronic connections or components
- test electrical/electronic wiring, equipment, systems or fixtures
- test mechanical products or equipment
- understand service or repair manuals
- understand technical operating, service or repair manuals
- use acetylene welding/cutting torch
- use arc welding equipment
- use basic carpentry techniques
- use basic plumbing techniques
- use building materials for routine building maintenance
- use combination welding procedures
- use control or regulating devices to adjust or maintain industrial machinery
- use electrical or electronic test devices or equipment
- use hand or power tools
- use hand or power woodworking tools
- use high voltage apparatus
- use knowledge of metric system
- use knowledge of ventilation systems
- use knowledge of welding filler rod types
- use machine tools in installation, maintenance, or repair
- use measuring devices in repairing industrial or heavy equipment
- use pipe fitting equipment
- use precision measuring devices in mechanical repair work
- use precision tools in electronics repair
- use pressure gauges
- use soldering equipment
- use tube bending equipment
- use voltmeter, ammeter, or ohmmeter
- verify levelness or verticality, using level or plumb bob
- weld together metal parts, components, or structures

Technology - Examples

Calendar and scheduling software

- Computerized time management systems

Electronic mail software

- Microsoft Outlook

Facilities management software

- Computerized maintenance management system
CMMS software

Industrial control software



- Digital Direct Control DDC Energy Management software

Internet browser software

- Web browser software

Office suite software

- Microsoft Office

Spreadsheet software

- Microsoft Excel

Word processing software

- Microsoft Word

Tools - Examples

- Adjustable widemouth pliers
- Adjustable crescent wrenches
- Air compressors
- Security alarm systems
- Volt-ammeters
- Augers
- Tractors with backhoe attachments
- Workshop bench vises
- Biscuit joiners
- Block and tackle equipment
- Cutting torches
- Locking C-clamps
- Dial calipers
- Caulking guns
- Metal chisels
- Conduit benders
- Desktop computers
- Utility pumps
- Diagonal cut pliers
- Dollies
- Closet augers
- Plungers
- Dump trucks



- Side cutting pliers
- Feeler gauges
- Hand files
- Fish tape pullers
- Two-wheel drive front end loaders
- Fuse pullers
- Brazing equipment
- Dial indicators
- Safety goggles
- Grease guns
- Hand grinders
- Valve grinding machines
- Hammer drills
- Ball peen hammers
- Hand operated spray guns
- Hand trucks
- Electric trimmers
- Allen wrenches
- Hoisting equipment
- Circle cutters
- Gasket cutters
- Boom trucks
- Hand jacks
- Step ladders
- Lathes
- Lawn mowers
- Bubble levels
- Power lifts
- Ultrasonic leak detectors
- Channel lock pliers
- Inspection mirrors
- Rubber mallets



- Digital micrometers
- Miter boxes
- Needlenose pliers
- Laptop computers
- Nut drivers
- Hollow core socket wrenches
- Ohmmeters
- Oil dispensing cans
- Paint application brushes
- Paint application rollers
- Paint spray guns
- Personal computers
- Handheld computers
- Copper cutting machines
- Pipe vises
- End pipe wrenches
- Plumb bobs
- Jackhammers
- Chipping hammers
- Cordless power drills
- Electric nail guns
- Electric planers
- Power routers
- Electric sanders
- Circular saws
- High pressure water sprayers
- Safety gloves
- Crowbars
- Bearing pullers
- Center punches
- Putty knives
- Comealongs



- Dust and particulate respirators
- Rulers
- Protective harnesses
- Protective footwear
- Hacksaws
- Scaffolding
- Screw extractor sets
- Flat blade screwdrivers
- Scribing tools
- Sewage pumps
- Sharpening equipment
- Shears
- Rigging equipment
- Slip joint pliers
- Snow blowers
- Snow plows
- Socket wrench sets
- Soldering equipment
- Basin wrenches
- Combination squares
- Straightedges
- Wire strippers
- Stud locators
- Measuring tapes
- Taps and dies
- Tension gauges
- Pipe threaders
- Tin snips
- Torque wrenches
- Trenchers
- Concrete trowels
- Tube benders



- Flaring tools
- Portable two way radios
- Utility knives
- Current testers
- Water sampling equipment
- Arc welders
- Wire cutting tools
- Wire crimpers
- Conduit cutters
- Workshop cranes
- Drill presses

Labor Market Comparison

Maine Department of Labor.

Description	Maintenance and Repair Workers, General	Recreational Vehicle Service Technicians	Difference
Median Wage	\$ 31,020	\$ 29,640	\$(1,380)
10th Percentile Wage	\$ 21,110	\$ 22,130	\$ 1,020
25th Percentile Wage	N/A	N/A	N/A
75th Percentile Wage	\$ 38,440	\$ 34,510	\$(3,930)
90th Percentile Wage	\$ 49,520	\$ 38,290	\$(11,230)
Mean Wage	\$ 32,940	\$ 29,710	\$(3,230)
Total Employment - 2520	5,140	70	-5,070
Employment Base - 2006	5,391	67	-5,324
Projected Employment - 2529	5,572	71	-5,501
Projected Job Growth - 2006-2529	3.4 %	6.0 %	2.6 %
Projected Annual Openings - 2006-2529	31	1	-30
Special			

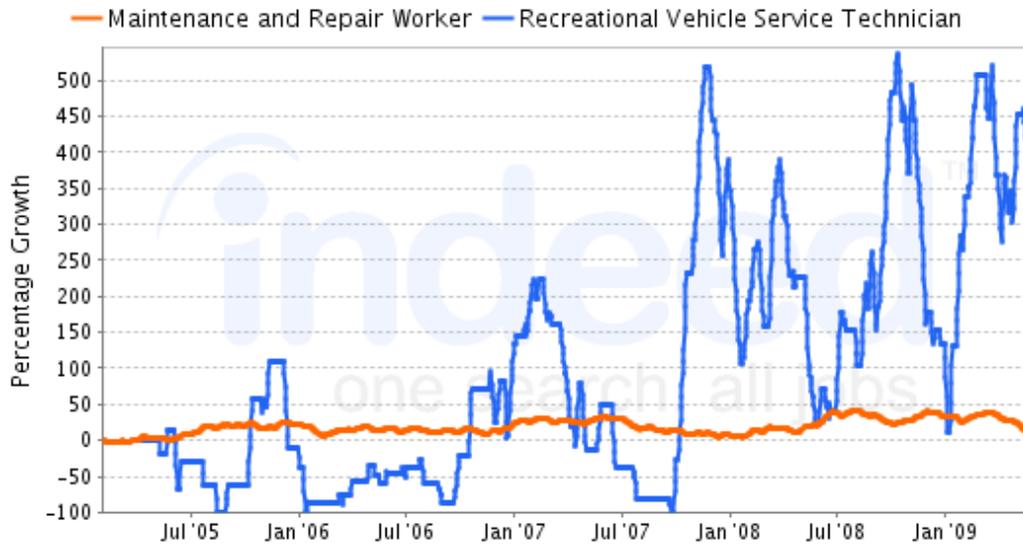
Special Occupations:

National Job Posting Trends

Trend for Maintenance and Repair Workers, General and Recreational Vehicle Service Technicians



Job Trends from Indeed.com



Data from [Indeed](http://Indeed.com)

Programs

Related Programs

Building/Property Main. and Manager

Heavy Equipment Maintenance Technology/Technician. A program that prepares individuals to apply technical knowledge and skills in the field maintenance and repair of heavy equipment, and in the general maintenance and overhaul of such equipment. Includes instruction in inspection, maintenance, and repair of tracks, wheels, brakes, operating controls, pneumatic and hydraulic systems, electrical circuitry, engines and in techniques of welding and brazing.

Institution	Address	City	URL
Eastern Maine Community College	354 Hogan Rd	Bangor	www.emcc.edu
Eastern Maine Community College	354 Hogan Rd	Bangor	www.emcc.edu
Washington County Community College	One College Drive	Calais	www.wccc.me.edu

Vehicle Maintenance and Repair Technologies, Other.

Vehicle Maintenance and Repair Technologies, Other. Any instructional program in vehicle and mobile equipment mechanics and repairers not listed above.

Institution	Address	City	URL
Landing School of Boat Building and Design	286 River Rd	Arundel	www.landingschool.edu
Eastern Maine Community College	354 Hogan Rd	Bangor	www.emcc.edu
Eastern Maine Community College	354 Hogan Rd	Bangor	www.emcc.edu
Northern Maine Community College	33 Edgemont Dr	Presque Isle	www.nmcc.edu
Northern Maine Community College	33 Edgemont Dr	Presque Isle	www.nmcc.edu
Northern Maine Community College	33 Edgemont Dr	Presque Isle	www.nmcc.edu



Maine Statewide Promotion Opportunities for Maintenance and Repair Workers, General

O* NET Code	Title	Grand TORQ	Job Zone	Employment	Median Wage	Difference	Growth	Annual Job Openings	Special
49-9042.00	Maintenance and Repair Workers, General	100	3	5,140	\$31,020.00	\$0.00	3%	31	
51-4121.06	Welders, Cutters, and Welder Fitters	90	2	1,610	\$38,030.00	\$7,010.00	7%	49	
49-9044.00	Millwrights	90	3	830	\$41,280.00	\$10,260.00	-12%	11	
49-9043.00	Maintenance Workers, Machinery	90	1	290	\$34,100.00	\$3,080.00	-17%	5	
49-3031.00	Bus and Truck Mechanics and Diesel Engine Specialists	89	3	1,180	\$34,210.00	\$3,190.00	6%	34	
49-3042.00	Mobile Heavy Equipment Mechanics, Except Engines	88	4	880	\$37,010.00	\$5,990.00	5%	22	
49-9041.00	Industrial Machinery Mechanics	87	3	990	\$39,370.00	\$8,350.00	7%	25	
49-2093.00	Electrical and Electronics Installers and Repairers, Transportation Equipment	87	3	130	\$35,960.00	\$4,940.00	4%	4	
49-3051.00	Motorboat Mechanics	87	3	240	\$34,980.00	\$3,960.00	6%	8	
51-4192.00	Lay-Out Workers, Metal and Plastic	87	2	180	\$43,870.00	\$12,850.00	-24%	3	
47-2011.00	Boilermakers	87	4	60	\$39,260.00	\$8,240.00	12%	3	
47-3013.00	Helpers--Electricians	87	2	560	\$31,250.00	\$230.00	5%	17	
47-5021.00	Earth Drillers, Except Oil and Gas	86	3	140	\$37,470.00	\$6,450.00	2%	4	
49-2092.00	Electric Motor, Power Tool, and Related Repairers	86	3	170	\$31,210.00	\$190.00	-12%	6	
49-9012.00	Control and Valve Installers and Repairers, Except Mechanical Door	86	3	170	\$47,860.00	\$16,840.00	-9%	3	

Special Occupations:

Top Industries for Recreational Vehicle Service Technicians



Industry	NAICS	% of Industry	Employment	Projected Employment	% Change
Other motor vehicle dealers	441200	69.59%	9,741	11,854	21.69%
Automotive mechanical and electrical repair and maintenance	811110	4.13%	578	686	18.73%
Automobile dealers	441100	3.93%	550	623	13.44%
Self-employed workers, primary job	000601	3.55%	497	529	6.54%
Automotive body, paint, interior, and glass repair	811120	3.37%	471	550	16.76%
Motor vehicle body and trailer manufacturing	336200	2.82%	395	387	-2.15%
Other miscellaneous store retailers	453900	1.85%	259	278	7.20%
Automotive parts, accessories, and tire stores	441300	1.81%	253	247	-2.44%
Motor vehicle and motor vehicle parts and supplies merchant wholesalers	423100	1.78%	249	284	14.14%
Automotive equipment rental and leasing	532100	1.20%	168	191	13.46%
Commercial and industrial machinery and equipment (except automotive and electronic) repair and maintenance	811300	0.92%	129	137	5.82%

Top Industries for Maintenance and Repair Workers, General

Industry	NAICS	% of Industry	Employment	Projected Employment	% Change
Lessors of real estate	531100	9.05%	125,853	138,660	10.18%
Local government, excluding education and hospitals	939300	7.30%	101,552	114,081	12.34%
Activities related to real estate	531300	5.42%	75,449	96,150	27.44%
Elementary and secondary schools, public and private	611100	3.99%	55,510	58,497	5.38%
Colleges, universities, and professional schools, public and private	611300	2.72%	37,891	42,390	11.87%
General medical and surgical hospitals, public and private	622100	2.48%	34,495	38,189	10.71%
Religious organizations	813100	2.44%	33,871	40,648	20.01%
Employment services	561300	2.30%	31,932	40,414	26.56%
State government, excluding education and hospitals	929200	1.58%	21,973	21,562	-1.87%
Offices of real estate agents and brokers	531200	1.45%	20,200	24,604	21.81%
Nursing care facilities	623100	1.36%	18,977	20,624	8.68%
Management of companies and enterprises	551100	1.34%	18,609	21,453	15.28%
Plastics product manufacturing	326100	1.10%	15,246	16,161	6.00%
Motor vehicle parts manufacturing	336300	0.96%	13,311	10,598	-20.39%
Animal slaughtering and processing	311600	0.91%	12,633	14,418	14.13%

Industry & Occupational Data Sources

TORQ Results: The TORQ Scores is based upon an proprietary algorithm applied against Knowledge, Skills and Ability levels and importance derived from O*NET 12.

ASK Analysis, Experience & Education Levels and Tasks: O*Net 12

Labor Market Comparisons Occupational Projections data from Maine Department of Labor

National Posting Trends Indeed.com

Labor Pool & Promotions Opportunities: Occupational Projections data from Maine Department of Labor

Top Industries: Occupational Employment Statistics program (U.S. Bureau of Labor Statistics)