



TORQ Analysis of Millwrights to Welders, Cutters, and Welder Fitters

ANALYSIS INPUT					
Transfer	Title	O* NET	Filters		
From Title:	Millwrights	49-9044.00	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:					88						
Ability TORQ		Skills TORQ		Knowledge TORQ							
Level	 88	Level	 86	Level	 90						
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	9	75	No Skills Upgrade Required!		No Knowledge Upgrades Required!					
<p>LEVEL and IMPT (IMPORTANCE) refer to the Target Welders, Cutters, and Welder Fitters. GAP refers to level difference between Millwrights and Welders, Cutters, and Welder Fitters.</p>											

ASK ANALYSIS			
Ability Level Comparison - Abilities with importance scores over 50			
Description	Millwrights	Welders, Cutters, and Welder Fitters	Importance
Arm-Hand Steadiness	42 	51 	75 
Near Vision	55 	50 	65 
Manual Dexterity	50 	46 	62 
Control Precision	51 	44 	62 
Oral Expression	50 	50 	56 
Problem Sensitivity	44 	39 	56 
Finger Dexterity	44 	42 	56 
Multilimb Coordination	53 	44 	56 
Oral Comprehension	51 	46 	53 
Visualization	62 	51 	50 
Selective Attention	51 	44 	50 
Skill Level Comparison - Abilities with importance scores over 69			

Description	Millwrights	Welders, Cutters, and Welder Fitters	Importance
Knowledge Level Comparison - Knowledge with importance scores over 69			
Description	Millwrights	Welders, Cutters, and Welder Fitters	Importance

Experience & Education Comparison

Related Work Experience Comparison				Required Education Level Comparison		
Description	Millwrights	Welders, Cutters, and Welder Fitters	Description	Millwrights	Welders, Cutters, and Welder Fitters	
10+ years	8% 	1% 	Doctoral	0%	0%	
8-10 years	0%	1% 	Professional Degree	0%	0%	
6-8 years	7% 	0%	Post-Masters Cert	0%	0%	
4-6 years	29% 	0%	Master's Degree	0%	0%	
2-4 years	8% 	17% 	Post-Bachelor Cert	0%	0%	
1-2 years	17% 	23% 	Bachelors	0%	0%	
6-12 months	19% 	28% 	AA or Equiv	0%	0%	
3-6 months	0%	6% 	Some College	1% 	8% 	
1-3 months	0%	1% 	Post-Secondary Certificate	33% 	26% 	
0-1 month	0%	6% 	High School Diploma or GED	43% 	26% 	
None	7% 	11% 	No HSD or GED	22% 	38% 	

Millwrights	Welders, Cutters, and Welder Fitters
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Most Common Educational/Training Requirement:

Long-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>2 - Job Zone Two: Some Preparation Needed</p> <p>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.</p> <p>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.</p> <p>Employees in these occupations need anywhere from a few months to one year of working with experienced employees.</p>
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Tasks

Millwrights	Welders, Cutters, and Welder Fitters
Core Tasks	Core Tasks

Generalized Work Activities:

- 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 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.

Generalized Work Activities:

- 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, 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

- 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 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

- 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.
- 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

- 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 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

- 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 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

- 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
- 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

- Grinding machinery
- Hand chipping hammers
- Clamps
- Temperature measurement instruments
- Electric overhead hoists
- Hydraulic presses
- Impact wrenches
- Hydraulic jacks
- Ladders
- Laser printers
- Laser welders
- Lathes
- Levels
- Light trucks
- Hydraulic truck lifts
- Metal inert gas MG 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

- Combination wrenches
- Dividers
- Depth gauges
- Diagonal cutters
- Dollies
- Cylinder hones
- Protective ear muffs
- Welding electrode holders
- Angled feeler gauges
- Flat files
- 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

- Cutoff saws
- Steamers
- Waterproof gloves
- Angle finders
- Pinchbars
- Comealongs
- Ratchets
- Self-contained breathing equipment
- Respirator hose masks
- Welding lenses
- Scaffolding
- Scribes
- 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

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|-------------------------------|----------------------|
| • Turning lathes | • Welding robots |
| • Transit levels | • Rod ovens |
| • Carpenters' levels | • Electrode wires |
| • Hoisting hooks | • Dive suits |
| • Inspection mirrors | • Winches |
| • Chain cutters | • Power wire brushes |
| • Metal inert gas MIG welders | • Wire cutters |
| • Prick punches | • Overhead cranes |
| • Teach pendants | • Brakes |
| • Depth micrometers | |
| • End mills | |
| • Needlenose pliers | |
| • Nibblers | |
| • Nut splitters | |
| • Lubrication guns | |
| • Personal computers | |
| • Pipe cutters | |
| • Pipe wrenches | |
| • Planing machines | |
| • Plasma welders | |
| • Plumb bobs | |
| • Pneumatic needle scalers | |
| • Core drills | |
| • Power grinders | |
| • Belt sanders | |
| • Cutoff saws | |
| • Welding gloves | |
| • Bevel protractors | |
| • Crowbars | |
| • Bearing pullers | |
| • Center punches | |
| • Putty knives | |

- Pyrometers
- Scrapers
- Reamers
- Respirators
- Retaining ring pliers
- Rivet guns
- Shrink rules
- Scaffolding
- Spiral screw extractors
- Scribes
- Honing stones
- Scissors
- Material-hoisting slings
- Socket sets
- Soldering guns
- Spanner wrenches
- Chain wrenches
- Stroboscopes
- Combination squares
- Straightedges
- Strap wrenches
- Tachometers
- Tap extractors
- Measuring tapes
- Dies
- Alignment telescopes
- Layout templates
- Tension indicators
- Snap gauges
- Thread gauges
- Pipe threading machines
- Tin snips

- Torque multipliers
- Tungsten inert gas TIG welding equipment
- Ultrasonic thickness detectors
- Utility knives
- Vibration indicators
- Arc welders
- Welding shields
- Spot welding equipment
- Wire brushes
- Cable cutters
- Hydraulic cranes
- Arbor presses

Labor Market Comparison

Maine Department of Labor.

Description	Millwrights	Welders, Cutters, and Welder Fitters	Difference
Median Wage	\$ 41,280	\$ 38,030	\$(3,250)
10th Percentile Wage	\$ 30,940	\$ 22,680	\$(8,260)
25th Percentile Wage	N/A	N/A	N/A
75th Percentile Wage	\$ 49,110	\$ 46,190	\$(2,920)
90th Percentile Wage	\$ 54,780	\$ 50,780	\$(4,000)
Mean Wage	\$ 41,500	\$ 38,260	\$(3,240)
Total Employment - 2522	830	1,610	780
Employment Base - 2006	883	1,691	808
Projected Employment - 2531	774	1,816	1,042
Projected Job Growth - 2006-2531	-12.3 %	7.4 %	19.7 %
Projected Annual Openings - 2006-2531	11	49	38
Special			

Special Occupations:

National Job Posting Trends

Trend for Millwrights and Welders, Cutters, and Welder Fitters



Programs			
Related Programs			
Welder/Welding Technologist			
<p>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.</p>			
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
Wasington County Community College	One College Drive	Calais	www.wccc.me.edu

Maine Statewide Promotion Opportunities for Millwrights									
O* NET Code	Title	Grand TORQ	Job Zone	Employment	Median Wage	Difference	Growth	Annual Job Openings	Special
49-9044.00	Millwrights	100	3	830	\$41,280.00	\$0.00	-12%	11	
51-4192.00	Lay-Out Workers, Metal and Plastic	83	2	180	\$43,870.00	\$2,590.00	-24%	3	

51-4111.00	Tool and Die Makers	82	3	160	\$51,670.00	\$10,390.00	-11%	2	
51-4041.00	Machinists	81	3	1,860	\$41,560.00	\$280.00	4%	35	
49-2094.00	Electrical and Electronics Repairers, Commercial and Industrial Equipment	78	3	440	\$49,450.00	\$8,170.00	-19%	15	
47-2111.00	Electricians	77	3	2,910	\$43,650.00	\$2,370.00	1%	89	
49-2095.00	Electrical and Electronics Repairers, Powerhouse, Substation, and Relay	77	5	20	\$60,790.00	\$19,510.00	5%	1	
49-9012.00	Control and Valve Installers and Repairers, Except Mechanical Door	77	3	170	\$47,860.00	\$6,580.00	-9%	3	
49-9051.00	Electrical Power-Line Installers and Repairers	76	3	280	\$47,750.00	\$6,470.00	9%	12	
49-3011.00	Aircraft Mechanics and Service Technicians	75	3	210	\$44,280.00	\$3,000.00	-2%	2	
47-2152.01	Pipe Fitters and Steamfitters	74	3	2,110	\$42,430.00	\$1,150.00	2%	67	
47-2152.02	Plumbers	73	3	2,110	\$42,430.00	\$1,150.00	2%	67	
51-4012.00	Numerical Tool and Process Control Programmers	73	3	60	\$43,530.00	\$2,250.00	21%	2	
53-6051.07	Transportation Vehicle, Equipment and Systems Inspectors, Except Aviation	73	3	60	\$42,890.00	\$1,610.00	5%	2	
53-7021.00	Crane and Tower Operators	73	3	240	\$41,940.00	\$660.00	-2%	4	

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 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%

TORO Analysis of Millwrights to Maintenance Workers, Machinery

ANALYSIS INPUT					
Transfer	Title	O* NET	Filters		
From Title:	Millwrights	49-9044.00	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:					87						
Ability TORQ		Skills TORQ		Knowledge TORQ							
Level	87	Level	89	Level	85						
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	46	4	65	Equipment Maintenance	75	11	86	Mechanical	87	7	91
Inductive Reasoning	44	3	56	Quality Control Analysis	44	9	77				
Written Comprehension	42	1	53	Repairing	88	6	81				
				Active Listening	71	4	75				
LEVEL and IMPT (IMPORTANCE) refer to the Target Maintenance Workers, Machinery. GAP refers to level difference between Millwrights and Maintenance Workers, Machinery.											

ASK ANALYSIS			
Ability Level Comparison - Abilities with importance scores over 50			
Description	Millwrights	Maintenance Workers, Machinery	Importance
Problem Sensitivity	44	42	68
Arm-Hand Steadiness	42	46	65
Oral Comprehension	51	50	59
Oral Expression	50	46	59
Visualization	62	46	59
Manual Dexterity	50	44	59
Near Vision	55	46	59
Deductive Reasoning	46	44	56
Inductive Reasoning	41	44	56

Information Ordering	67		42		56	
Finger Dexterity	44		44		56	
Written Comprehension	41		42		53	
Selective Attention	51		44		53	
Control Precision	51		48		53	
Multilimb Coordination	53		41		50	
Reaction Time	46		42		50	
Static Strength	59		42		50	

Skill Level Comparison - Abilities with importance scores over 69

Description	Millwrights	Maintenance Workers, Machinery	Importance
Equipment Maintenance	64	75	86
Repairing	82	88	81
Quality Control Analysis	35	44	77
Active Listening	67	71	75

Knowledge Level Comparison - Knowledge with importance scores over 69

Description	Millwrights	Maintenance Workers, Machinery	Importance
Mechanical	80	87	91

Experience & Education Comparison

Related Work Experience Comparison			Required Education Level Comparison		
Description	Millwrights	Maintenance Workers, Machinery	Description	Millwrights	Maintenance Workers, Machinery
10+ years	8%	0%	Doctoral	0%	0%
8-10 years	0%	3%	Professional Degree	0%	0%
6-8 years	7%	0%	Post-Masters Cert	0%	0%
4-6 years	29%	10%	Master's Degree	0%	0%
2-4 years	8%	10%	Post-Bachelor Cert	0%	0%
1-2 years	17%	48%	Bachelors	0%	2%
6-12 months	19%	5%	AA or Equiv	0%	0%
3-6 months	0%	10%	Some College	1%	6%
1-3 months	0%	0%	Post-Secondary Certificate	33%	25%
0-1 month	0%	0%	High Scol Diploma or GED	43%	64%
None	7%	9%	No HSD or GED	22%	0%

Millwrights

Maintenance Workers, Machinery

Most Common Educational/Training Requirement:

Long-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

Millwrights	Maintenance Workers, Machinery
<p style="text-align: center; background-color: #f2f2f2; margin: 0;">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. • 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 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. 	<p style="text-align: center; background-color: #f2f2f2; margin: 0;">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 style="text-align: center; background-color: #f2f2f2; margin: 0;">Specific Tasks</p> <p>Occupation Specific Tasks:</p> <ul style="list-style-type: none"> • 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 	<p style="text-align: center; background-color: #f2f2f2; margin: 0;">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

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 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

Specifications:

- 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

- 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 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

- load or unload material or workpiece into 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

- 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
- 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

- Spreadsheet software

Word processing software

- 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 MG welders
- Micrometers
- Milling machines

- | | |
|------------------------------|--|
| • Air compressors | • Personal computers |
| • Bandsaws | • Plumb bobs |
| • Workshop bench vises | • Jackhammers |
| • Block and tackle equipment | • Buffing machines |
| • Oxyacetylene torches | • Power drills |
| • Box end wrenches | • Grinding machines |
| • Keyway broaches | • Bench saws |
| • Dial calipers | • Punches |
| • Cold chisels | • Reamers |
| • Combination wrenches | • Respirators |
| • Dividers | • Rivet guns |
| • Depth gauges | • Rulers |
| • Diagonal cutters | • Safety glasses |
| • Dollies | • Safety belts |
| • Cylinder hones | • Hacksaws |
| • Protective ear muffs | • Scaffolding |
| • Welding electrode holders | • Screwdrivers |
| • Angled feeler gauges | • Shears |
| • Flat files | • Rigging equipment |
| • Forklifts | • Socket wrench sets |
| • Gage blocks | • Soldering guns |
| • Gas-powered generators | • Steel rules |
| • Dial indicators | • Sheet metal folders |
| • Gear shapers | • Dies |
| • Safety goggles | • Pipe threaders |
| • Filler pumps | • Tungsten inert gas TIG welding equipment |
| • Surface grinders | • Industrial vacuums |
| • Chipping hammers | • Arc welders |
| • Ball peen hammers | • Welding tips |
| • Hand clamps | • Spot-welding equipment |
| • Bucket pumps | • Workshop cranes |
| • Handtrucks | • Brakes |

- 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
- End mills
- Needlenose pliers
- Nibblers
- Nut splitters
- Lubrication guns
- Personal computers
- Pipe cutters
- Pipe wrenches
- Planing machines
- Plasma welders
- Plumb bobs
- Pneumatic needle scalers
- Core drills

- Power grinders
- Belt sanders
- Cutoff saws
- Welding gloves
- Bevel protractors
- Crowbars
- Bearing pullers
- Center punches
- Putty knives
- Pyrometers
- Scrapers
- Reamers
- Respirators
- Retaining ring pliers
- Rivet guns
- Shrink rules
- Scaffolding
- Spiral screw extractors
- Scribes
- Honing stones
- Scissors
- Material-hoisting slings
- Socket sets
- Soldering guns
- Spanner wrenches
- Chain wrenches
- Stroboscopes
- Combination squares
- Straightedges
- Strap wrenches
- Tachometers
- Tap extractors

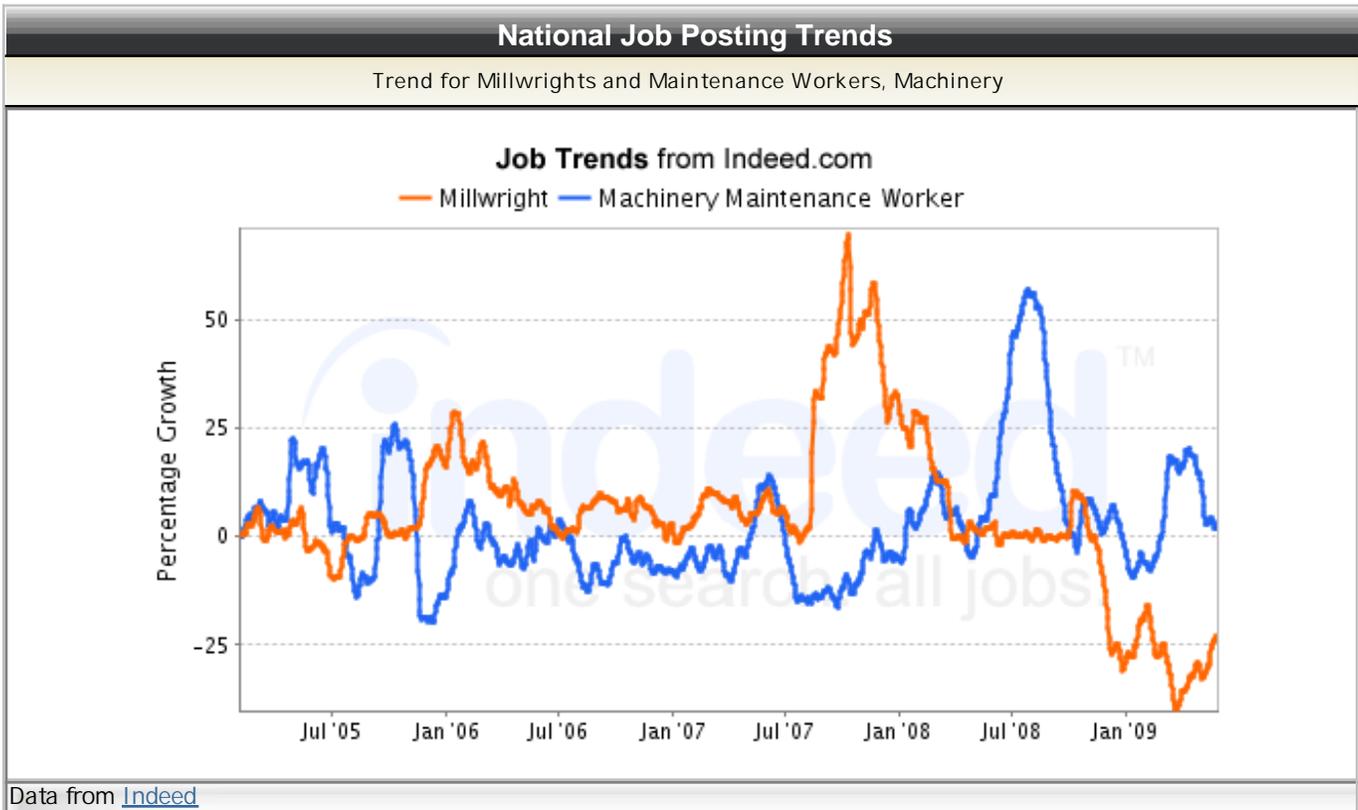
- Measuring tapes
- Dies
- Alignment telescopes
- Layout templates
- Tension indicators
- Snap gauges
- Thread gauges
- Pipe threading machines
- Tin snips
- Torque multipliers
- Tungsten inert gas TIG welding equipment
- Ultrasonic thickness detectors
- Utility knives
- Vibration indicators
- Arc welders
- Welding shields
- Spot welding equipment
- Wire brushes
- Cable cutters
- Hydraulic cranes
- Arbor presses

Labor Market Comparison

Maine Department of Labor.

Description	Millwrights	Maintenance Workers, Machinery	Difference
Median Wage	\$ 41,280	\$ 34,100	\$(7,180)
10th Percentile Wage	\$ 30,940	\$ 18,630	\$(12,310)
25th Percentile Wage	N/A	N/A	N/A
75th Percentile Wage	\$ 49,110	\$ 38,610	\$(10,500)
90th Percentile Wage	\$ 54,780	\$ 43,370	\$(11,410)
Mean Wage	\$ 41,500	\$ 32,410	\$(9,090)
Total Employment - 2522	830	290	-540
Employment Base - 2006	883	337	-546

Projected Employment - 2531	774	278	-496
Projected Job Growth - 2006-2531	-12.3 %	-17.5 %	-5.2 %
Projected Annual Openings - 2006-2531	11	5	-6
Special			
Special Occupations:			



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 Millwrights

O* NET Code	Title	Grand TORQ	Job Zone	Employment	Median Wage	Difference	Growth	Annual Job Openings	Special
49-9044.00	Millwrights	100	3	830	\$41,280.00	\$0.00	-12%	11	
51-4192.00	Lay-Out Workers, Metal and Plastic	83	2	180	\$43,870.00	\$2,590.00	-24%	3	
51-4111.00	Tool and Die Makers	82	3	160	\$51,670.00	\$10,390.00	-11%	2	
51-4041.00	Machinists	81	3	1,860	\$41,560.00	\$280.00	4%	35	★
49-2094.00	Electrical and Electronics Repairers, Commercial and Industrial Equipment	78	3	440	\$49,450.00	\$8,170.00	-19%	15	
47-2111.00	Electricians	77	3	2,910	\$43,650.00	\$2,370.00	1%	89	★
49-2095.00	Electrical and Electronics Repairers, Powerhouse, Substation, and Relay	77	5	20	\$60,790.00	\$19,510.00	5%	1	
49-9012.00	Control and Valve Installers and Repairers, Except Mechanical Door	77	3	170	\$47,860.00	\$6,580.00	-9%	3	
49-9051.00	Electrical Power-Line Installers and Repairers	76	3	280	\$47,750.00	\$6,470.00	9%	12	★
49-3011.00	Aircraft Mechanics and Service Technicians	75	3	210	\$44,280.00	\$3,000.00	-2%	2	
47-2152.01	Pipe Fitters and Steamfitters	74	3	2,110	\$42,430.00	\$1,150.00	2%	67	★
47-2152.02	Plumbers	73	3	2,110	\$42,430.00	\$1,150.00	2%	67	★
51-4012.00	Numerical Tool and Process Control Programmers	73	3	60	\$43,530.00	\$2,250.00	21%	2	

53-6051.07	Transportation Vehicle, Equipment and Systems Inspectors, Except Aviation	73	3	60	\$42,890.00	\$1,610.00	5%	2
53-7021.00	Crane and Tower Operators	73	3	240	\$41,940.00	\$660.00	-2%	4

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%

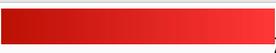
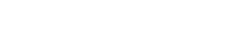
Top Industries for Millwrights					
Industry	NAICS	% of Industry	Employment	Projected Employment	% Change
Other building equipment contractors	238290	20.13%	11,049	12,977	17.45%
Nonresidential building construction	236200	8.45%	4,639	5,633	21.42%
Pulp, paper, and paperboard mills	322100	5.62%	3,084	2,318	-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%

TORQ Analysis of Millwrights to Maintenance and Repair Workers, General

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

TORQ RESULTS											
Grand TORQ:									86		
Ability TORQ			Skills TORQ			Knowledge TORQ					
Level			90	Level			89	Level			80
Gaps To Narrow if Possible				Upgrade These Skills				Knowledge to Add			
Ability	Level	Gap	Impt	Skill	Level	Gap	Impt	Knowledge	Level	Gap	Impt
Inductive Reasoning	51	10	62	Quality Control Analysis	50	15	69	Building and Construction	65	11	70
Problem Sensitivity	51	7	75	Writing	45	9	70				
Arm-Hand Steadiness	44	2	62								
Deductive Reasoning	48	2	56								
Oral Expression	51	1	53								
LEVEL and IMPT (IMPORTANCE) refer to the Target Maintenance and Repair Workers, General. GAP refers to level difference between Millwrights and Maintenance and Repair Workers, General.											

ASK ANALYSIS			
Ability Level Comparison - Abilities with importance scores over 50			
Description	Millwrights	Maintenance and Repair Workers, General	Importance
Problem Sensitivity	44 	51 	75 
Information Ordering	67 	60 	68 
Manual Dexterity	50 	48 	68 
Multilimb Coordination	53 	53 	65 
Near Vision	55 	50 	65 
Inductive Reasoning	41 	51 	62 
Arm-Hand Steadiness	42 	44 	62 

Visualization	62	53	59
Deductive Reasoning	46	48	56
Selective Attention	51	44	56
Finger Dexterity	44	44	56
Static Strength	59	48	56
Oral Comprehension	51	50	53
Oral Expression	50	51	53
Control Precision	51	48	53
Speech Clarity	44	34	53

Skill Level Comparison - Abilities with importance scores over 69

Description	Millwrights	Maintenance and Repair Workers, General	Importance
Writing	36	45	70
Quality Control Analysis	35	50	69

Knowledge Level Comparison - Knowledge with importance scores over 69

Description	Millwrights	Maintenance and Repair Workers, General	Importance
Building and Construction	54	65	70

Experience & Education Comparison

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

Millwrights

Maintenance and Repair Workers, General

Most Common Educational/Training Requirement:

Long-term on-the-job training

Moderate-term on-the-job training

Job Zone Comparison

3 - Job Zone Three: Medium Preparation Needed

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.

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Tasks

Millwrights	Maintenance and Repair Workers, General
Core Tasks	Core Tasks
<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 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. 	<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.
Specific Tasks	Specific Tasks
<p>Occupation Specific Tasks:</p> <ul style="list-style-type: none"> • 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 	<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. • Estimate repair costs. • Fabricate and repair counters, benches, partitions, and other wooden structures such as sheds and outbuildings.

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 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

- 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 equipment or machinery



- 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 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
- 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 equipment/machinery



- 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
- 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

- 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
- understand technical operating, service or repair manuals

- 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
- 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

- 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

- 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 MG welders
- Prick punches
- Teach pendants
- Depth micrometers
- End mills
- Needlenose pliers
- Nibblers
- Nut splitters
- Lubrication guns
- Personal computers
- Pipe cutters
- Pipe wrenches
- Planing machines
- Plasma welders
- Plumb bobs
- Pneumatic needle scalers
- Core drills
- Power grinders
- Belt sanders
- Cutoff saws

- 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

- Cut-off saws

- Welding gloves
- Bevel protractors
- Crowbars
- Bearing pullers
- Center punches
- Putty knives
- Pyrometers
- Scrapers
- Reamers
- Respirators
- Retaining ring pliers
- Rivet guns
- Shrink rules
- Scaffolding
- Spiral screw extractors
- Scribes
- Honing stones
- Scissors
- Material-hoisting slings
- Socket sets
- Soldering guns
- Spanner wrenches
- Chain wrenches
- Stroboscopes
- Combination squares
- Straightedges
- Strap wrenches
- Tachometers
- Tap extractors
- Measuring tapes
- Dies
- Alignment telescopes

- 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



- Layout templates
- Tension indicators
- Snap gauges
- Thread gauges
- Pipe threading machines
- Tin snips
- Torque multipliers
- Tungsten inert gas TIG welding equipment
- Ultrasonic thickness detectors
- Utility knives
- Vibration indicators
- Arc welders
- Welding shields
- Spot welding equipment
- Wire brushes
- Cable cutters
- Hydraulic cranes
- Arbor presses
- Crimmeters
- 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

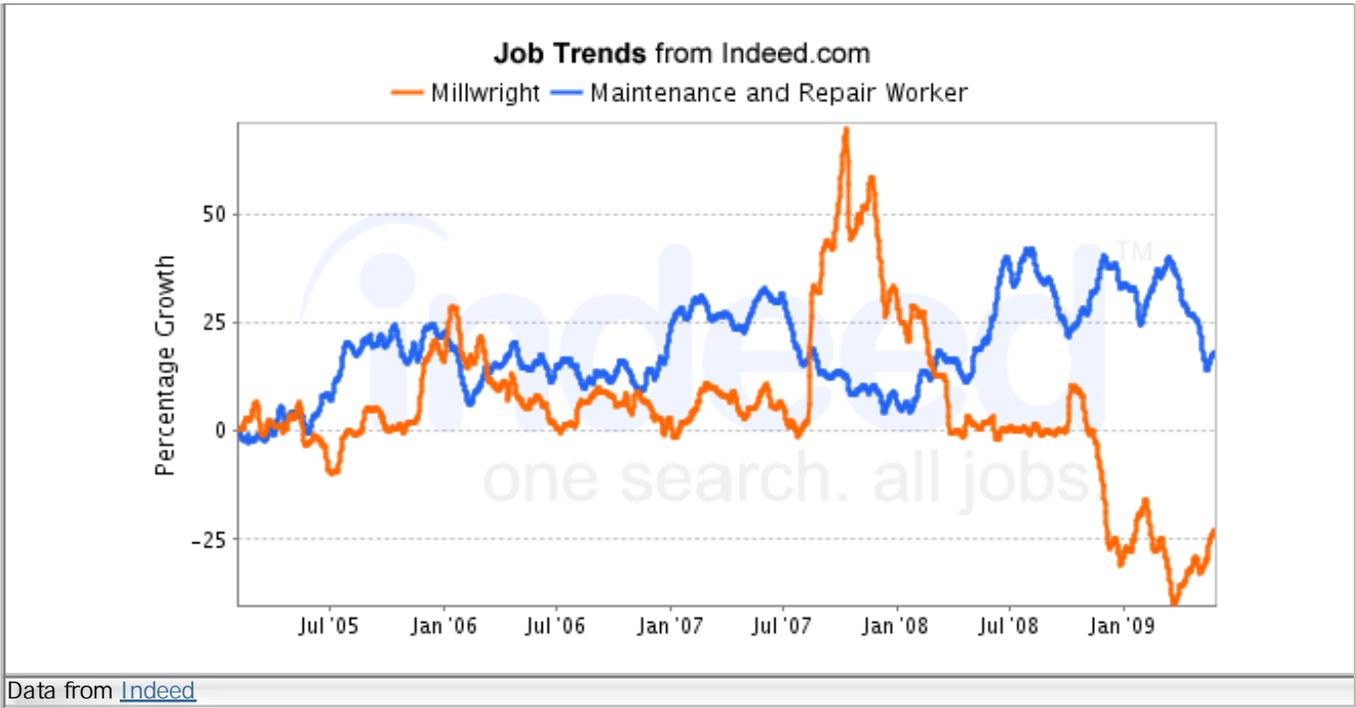
Labor Market Comparison

Maine Department of Labor.

Description	Millwrights	Maintenance and Repair Workers, General	Difference
Median Wage	\$ 41,280	\$ 31,020	\$(10,260)
10th Percentile Wage	\$ 30,940	\$ 21,110	\$(9,830)
25th Percentile Wage	N/A	N/A	N/A
75th Percentile Wage	\$ 49,110	\$ 38,440	\$(10,670)
90th Percentile Wage	\$ 54,780	\$ 49,520	\$(5,260)
Mean Wage	\$ 41,500	\$ 32,940	\$(8,560)
Total Employment - 2522	830	5,140	4,310
Employment Base - 2006	883	5,391	4,508
Projected Employment - 2531	774	5,572	4,798
Projected Job Growth - 2006-2531	-12.3 %	3.4 %	15.7 %
Projected Annual Openings - 2006-2531	11	31	20
Special			
Special Occupations:			

National Job Posting Trends

Trend for Millwrights and Maintenance and Repair Workers, General



Programs			
Related Programs			
Agricultural Mechanization, General			
<p>Agricultural Mechanization, General. A program that generally prepares individuals to sell, select, and service agricultural or agribusiness technical equipment and facilities, including computers, specialized software, power units, machinery, equipment structures, and utilities. Includes instruction in agricultural power systems; planning and selecting materials for the construction of support facilities; mechanical practices associated with irrigation and water conservation; erosion control; and agricultural data processing systems.</p> <p>No information on schools for the program</p>			
Building/Construction Site Management/Manager			
<p>Building/Construction Site Management/Manager. A program that prepares individuals to supervise, manage, and inspect construction sites, buildings, and associated facilities. Includes instruction in site safety, personnel supervision, labor relations, diversity training, construction documentation, scheduling, resource and cost control, bid strategies, rework prevention, construction insurance and bonding, accident management and investigation, applicable law and regulations, and communication skills.</p> <p>No information on schools for the program</p>			
Building/Property Main. and Manager			
<p>Building/Property Maintenance and Management. A program that prepares individuals to apply technical knowledge and skills to keep a building functioning, and to service a variety of structures including commercial and industrial buildings and mobile homes. Includes instruction in the basic maintenance and repair skills required to service building systems, such as air conditioning, heating, plumbing, electrical, major appliances, and other mechanical systems.</p> <p>No information on schools for the program</p>			
Mechanics and Repairers, Other			
Mechanic and Repair Technologies/Technicians, Other. Any instructional program in mechanics and repairs not listed above.			
Institution	Address	City	URL
Washington County Community College	One College Drive	Calais	www.wccc.me.edu

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Maine Statewide Promotion Opportunities for Millwrights

O*NET Code	Title	Grand TORO	Job Zone	Employment	Median Wage	Difference	Growth	Annual Job Openings	Special
49-9044.00	Millwrights	100	3	830	\$41,280.00	\$0.00	-12%	11	
51-4192.00	Lay-Out Workers, Metal and Plastic	83	2	180	\$43,870.00	\$2,590.00	-24%	3	
51-4111.00	Tool and Die Makers	82	3	160	\$51,670.00	\$10,390.00	-11%	2	
51-4041.00	Machinists	81	3	1,860	\$41,560.00	\$280.00	4%	35	★
49-2094.00	Electrical and Electronics Repairers, Commercial and Industrial Equipment	78	3	440	\$49,450.00	\$8,170.00	-19%	15	
47-2111.00	Electricians	77	3	2,910	\$43,650.00	\$2,370.00	1%	89	★
49-2095.00	Electrical and Electronics Repairers, Powerhouse, Substation, and Relay	77	5	20	\$60,790.00	\$19,510.00	5%	1	
49-9012.00	Control and Valve Installers and Repairers, Except Mechanical Door	77	3	170	\$47,860.00	\$6,580.00	-9%	3	
49-9051.00	Electrical Power-Line Installers and Repairers	76	3	280	\$47,750.00	\$6,470.00	9%	12	★
49-3011.00	Aircraft Mechanics and Service Technicians	75	3	210	\$44,280.00	\$3,000.00	-2%	2	
47-2152.01	Pipe Fitters and Steamfitters	74	3	2,110	\$42,430.00	\$1,150.00	2%	67	★
47-2152.02	Plumbers	73	3	2,110	\$42,430.00	\$1,150.00	2%	67	★

51-4012.00	Numerical Tool and Process Control Programmers	73	3	60	\$43,530.00	\$2,250.00	21%	2
53-6051.07	Transportation Vehicle, Equipment and Systems Inspectors, Except Aviation	73	3	60	\$42,890.00	\$1,610.00	5%	2
53-7021.00	Crane and Tower Operators	73	3	240	\$41,940.00	\$660.00	-2%	4

Special Occupations:

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%

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%



TORQ Analysis of Millwrights to Mobile Heavy Equipment Mechanics, Except Engines

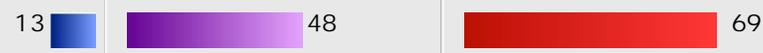
ANALYSIS INPUT					
Transfer	Title	O*NET	Filters		
From Title:	Millwrights	49-9044.00	Abilities:	Importance Level: 50	Weight: 1
To Title:	Mobile Heavy Equipment Mechanics, Except Engines	49-3042.00	Skills:	Importance Level: 69	Weight: 1
Labor Market Area:	Maine Statewide		Knowledge:	Importance Level: 69	Weight: 1

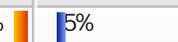
TORQ RESULTS					
Grand TORQ:					86
Ability TORQ		Skills TORQ		Knowledge TORQ	
Level	92	Level	85	Level	82

Gaps To Narrow if Possible				Upgrade These Skills				Knowledge to Add			
Ability	Level	Gap	Impt	Skill	Level	Gap	Impt	Knowledge	Level	Gap	Impt
Written Comprehension	57	16	62	Operation Mbnitoring	83	32	82	Customer and Personal Service	48	35	69
Flexibility of Closure	51	14	50	Troubleshooting	95	19	77	Mathematics	53	8	85
Selective Attention	59	8	72	Operation and Control	74	19	71				
Oral Comprehension	60	9	56	Judgment and Decision Making	60	13	71				
Problem Sensitivity	50	6	78	Repairing	94	12	74				
Deductive Reasoning	53	7	65	Installation	87	6	70				
Control Precision	57	6	72								
Inductive Reasoning	48	7	59								
Oral Expression	57	7	53								
Auditory Attention	66	6	56								
Multilimb Coordination	57	4	75								
Arm-Hand Steadiness	46	4	68								
Manual Dexterity	53	3	78								
Speech Recognition	39	4	50								
Depth Perception	50	2	62								
Reaction Time	48	2	50								

LEVEL and IMPT (IMPORTANCE) refer to the Target Mobile Heavy Equipment Mechanics, Except Engines. GAP refers to level difference between Millwrights and Mobile Heavy Equipment Mechanics, Except Engines.

ASK ANALYSIS			
Ability Level Comparison - Abilities with importance scores over 50			
Description	Millwrights	Mobile Heavy Equipment Mechanics, Except Engines	Importance
Problem Sensitivity	44	50	78
Information Ordering	67	62	78
Manual Dexterity	50	53	78
Near Vision	55	51	78
Multilimb Coordination	53	57	75
Visualization	62	62	72
Selective Attention	51	59	72
Control Precision	51	57	72
Arm-Hand Steadiness	42	46	68
Deductive Reasoning	46	53	65
Written Comprehension	41	57	62
Depth Perception	48	50	62
Inductive Reasoning	41	48	59
Finger Dexterity	44	44	59
Oral Comprehension	51	60	56
Extent Flexibility	60	59	56
Auditory Attention	60	66	56
Oral Expression	50	57	53
Static Strength	59	50	53
Trunk Strength	44	39	53
Speech Clarity	44	44	53
Flexibility of Closure	37	51	50
Reaction Time	46	48	50
Speech Recognition	35	39	50
Skill Level Comparison - Abilities with importance scores over 69			
Description	Millwrights	Mobile Heavy Equipment Mechanics, Except Engines	Importance
Operation Monitoring	51	83	82
Troubleshooting	76	95	77
Repairing	82	94	74
Operation and Control	55	74	71

Judgment and Decision Making	47 	60	71
Installation	81 	87	70
Knowledge Level Comparison - Knowledge with importance scores over 69			
Description	Millwrights	Mobile Heavy Equipment Mechanics, Except Engines	Importance
Mathematics	45 	53	85
Customer and Personal Service	13 	48	69

Experience & Education Comparison			
Related Work Experience Comparison		Required Education Level Comparison	
Description	Millwrights	Description	Mobile Heavy Equipment Mechanics, Except Engines
10+ years	8% 	Doctoral	0%
8-10 years	0%	Professional Degree	0%
6-8 years	7% 	Post-Masters Cert	0%
4-6 years	29% 	Master's Degree	0%
2-4 years	8% 	Post-Bachelor Cert	0%
1-2 years	17% 	Bachelors	0%
6-12 months	19% 	AA or Equiv	2%
3-6 months	0%	Some College	1%
1-3 months	0%	Post-Secondary Certificate	33%
0-1 month	0%	High School Diploma or GED	43%
None	7% 	No HSD or GED	22%
			65%
			29%
			0%
Millwrights		Mobile Heavy Equipment Mechanics, Except Engines	
Most Common Educational/Training Requirement:			
Long-term on-the-job training		Postsecondary vocational award	
Job Zone Comparison			
3 - Job Zone Three: Medium Preparation Needed		4 - Job Zone Four: Considerable Preparation Needed	
<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>A minimum of two to four years of work-related skill, knowledge, or experience is needed for these occupations. For example, an accountant must complete four years of college and work for several years in accounting to be considered qualified.</p> <p>Most of these occupations require a four - year bachelor's degree, but some do not.</p> <p>Employees in these occupations usually need several years of work-related experience, on-the-job training, and/or vocational training.</p>	

Tasks	
Millwrights	Mobile Heavy Equipment Mechanics, Except Engines
Core Tasks	Core Tasks

Generalized Work Activities:

- 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 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.

Generalized Work Activities:

- 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.
- Making Decisions and Solving Problems - Analyzing information and evaluating results to choose the best solution and solve problems.
- Updating and Using Relevant Knowledge - Keeping up-to-date technically and applying new knowledge to your job.
- Inspecting Equipment, Structures, or Material - Inspecting equipment, structures, or materials to identify the cause of errors or other problems or defects.

Specific Tasks

Occupation Specific Tasks:

- Adjust and maintain industrial machinery, using control and regulating devices.
- Adjust, maintain, and repair or replace subassemblies, such as transmissions and crawler heads, using hand tools, jacks, and cranes.
- Assemble gear systems, and align frames and gears.
- Clean parts by spraying them with grease solvent or immersing them in tanks of solvent.
- Clean, lubricate, and perform other routine maintenance work on equipment and vehicles.
- Diagnose faults or malfunctions to determine required repairs, using engine diagnostic equipment such as computerized test equipment and calibration devices.
- Direct workers who are assembling or disassembling equipment or cleaning parts.
- Dismantle and reassemble heavy equipment using hoists and hand tools.
- Examine parts for damage or excessive wear, using micrometers and gauges.
- Fabricate needed parts or items from sheet metal.
- Fit bearings to adjust, repair, or overhaul mobile mechanical, hydraulic, and pneumatic equipment.
- Operate and inspect machines or heavy equipment to diagnose defects.
- Overhaul and test machines or equipment to ensure operating efficiency.
- Read and understand operating manuals, blueprints, and technical drawings.



- 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 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,

- Repair and replace damaged or worn parts.
- Schedule maintenance for industrial machines and equipment, and keep equipment service records.
- Test mechanical products and equipment after repair or assembly to ensure proper performance and compliance with manufacturers' specifications.
- Weld or solder broken parts and structural members, using electric or gas welders and soldering tools.

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
- align or adjust clearances of vehicle body parts or components
- align vehicle frame
- apply cleaning solvents
- assemble gear systems
- assemble, dismantle, or reassemble equipment or machinery
- burn (cut), trim, or scarf metal objects
- conduct tests to locate mechanical system malfunction
- determine installation, service, or repair needed
- develop maintenance schedules
- diagnose malfunctioning vehicle systems
- diagnose mechanical problems in machinery or equipment
- direct and coordinate activities of workers or staff
- examine vehicle to detect malfunctions, damage, or maintenance needed
- fabricate sheet metal parts or items
- 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
- lubricate machinery, equipment, or parts
- maintain or repair industrial or related equipment/machinery
- maintain repair records
- maintain welding machines or equipment
- move or fit heavy objects
- operate crane in construction, manufacturing or repair setting
- operate hoist, winch, or hydraulic boom
- operate pneumatic test equipment



- 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 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

- operate sheet metal fabrication machines
- operate vehicle engine electrical system test equipment
- overhaul industrial or construction machinery or 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 work order, instructions, formulas, or processing charts
- repair or replace malfunctioning or worn mechanical components
- service vehicle with water, fuel, or oil
- set up and operate variety of machine tools
- solder metal parts or components together
- solder vehicle components
- test mechanical products or equipment
- test operate vehicles before or after repair
- understand service or repair manuals
- understand technical operating, service or repair manuals
- use acetylene welding/cutting torch
- use arc welding equipment
- use combination welding procedures
- use control or regulating devices to adjust or maintain industrial machinery
- use electrical or electronic test devices or equipment
- use electronic calibration devices
- use engine diagnostic equipment
- use gas welding equipment
- use hand or power tools
- 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 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

Technology - Examples

Data base user interface and query software

- Database software

Facilities management software

- 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
- 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

- Maintenance management software

Project management software

- Recordkeeping software

Tools - Examples

- Dual action pliers
- Adjustable monkey wrenches
- Air compressors
- Ammeters
- Exhaust emission analyzers
- Awls
- Battery chargers
- Handheld battery testers
- Cutting torches
- Bolt cutters
- Boring bars
- Offset box wrenches
- Hose clamps
- Dial calipers
- Circuit testers
- Clamp-on multimeters
- Cold chisels
- Combination wrenches
- Desktop computers
- Cutting pliers
- Electronic engine analyzers
- Dynamometers
- Protective ear devices
- End nippers
- Jack stands
- Feeler gauges
- Files
- Brazing equipment
- Dial gauges



- Combination wrenches
- Dividers
- Depth gauges
- Diagonal cutters
- Dollies
- Cylinder hones
- Protective ear muffs
- Welding electrode holders
- Angled feeler gauges
- Flat files
- 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

- Safety goggles
- Grease guns
- Ball peen hammers
- Solvent sprayers
- Hard hats
- Protective clothing
- Heat guns
- Allen wrenches
- Hoists
- Jacks
- Lathes
- Leak detection equipment
- Hydraulic lifts
- Lineman's pliers
- Leak detectors
- Channel lock pliers
- Long nose pliers
- Magnetic pickup tools
- Inspection mirrors
- Rubber mallets
- Metal inert gas MG welders
- On board computers
- Micrometers
- Multimeters
- Needlenose pliers
- Nut drivers
- Ohmmeters
- Oscilloscopes
- Paint sprayers
- Personal computers
- Pipe wrenches
- Pitch gauges



- Turning lathes
- Transit levels
- Carpenters' levels
- Hoisting hooks
- Inspection mirrors
- Chain cutters
- Metal inert gas MIG welders
- Prick punches
- Teach pendants
- Depth micrometers
- End mills
- Needlenose pliers
- Nibblers
- Nut splitters
- Lubrication guns
- Personal computers
- Pipe cutters
- Pipe wrenches
- Planing machines
- Plasma welders
- Plumb bobs
- Pneumatic needle scalers
- Core drills
- Power grinders
- Belt sanders
- Cutoff saws
- Welding gloves
- Bevel protractors
- Crowbars
- Bearing pullers
- Center punches
- Putty knives
- Plasma welding equipment
- Impact air wrenches
- Hand held diagnostic computers
- Power drills
- Grinding machines
- Power sanders
- Power saws
- Cordless screwdrivers
- Pressure gauges
- Pry bars
- Brass drifts
- Putty knives
- Ratchets
- Razor knives
- Respirators
- Snap ring pliers
- Riveting equipment
- Rulers
- Hard-toed shoes
- Hacksaws
- Screw extractors
- Phillips head screwdrivers
- Groove joint/water pump pliers
- Socket sets
- Sockets
- Brake bleeder wrenches
- Wire strippers
- Tachometers
- Tape measures
- Snips
- Torx screwdrivers
- Tungsten inert gas TIG welding equipment



- Pyrometers
- Scrapers
- Reamers
- Respirators
- Retaining ring pliers
- Rivet guns
- Shrink rules
- Scaffolding
- Spiral screw extractors
- Scribes
- Honing stones
- Scissors
- Material-hoisting slings
- Socket sets
- Soldering guns
- Spanner wrenches
- Chain wrenches
- Stroboscopes
- Combination squares
- Straightedges
- Strap wrenches
- Tachometers
- Tap extractors
- Measuring tapes
- Dies
- Alignment telescopes
- Layout templates
- Tension indicators
- Snap gauges
- Thread gauges
- Pipe threading machines
- Tin snips
- Two way radios
- Utility knives
- Voltmeters
- Arc welders
- Welding hoods
- Wheel alignment gauges
- Wire brushes
- Wire cutters
- Crimping pliers
- Drill presses



- Torque multipliers
- Tungsten inert gas TIG welding equipment
- Ultrasonic thickness detectors
- Utility knives
- Vibration indicators
- Arc welders
- Welding shields
- Spot welding equipment
- Wire brushes
- Cable cutters
- Hydraulic cranes
- Arbor presses

Labor Market Comparison

Maine Department of Labor.

Description	Millwrights	Mobile Heavy Equipment Mechanics, Except Engines	Difference
Median Wage	\$ 41,280	\$ 37,010	\$(4,270)
10th Percentile Wage	\$ 30,940	\$ 26,380	\$(4,560)
25th Percentile Wage	N/A	N/A	N/A
75th Percentile Wage	\$ 49,110	\$ 44,370	\$(4,740)
90th Percentile Wage	\$ 54,780	\$ 52,650	\$(2,130)
Mean Wage	\$ 41,500	\$ 38,030	\$(3,470)
Total Employment - 2522	830	880	50
Employment Base - 2006	883	886	3
Projected Employment - 2531	774	933	159
Projected Job Growth - 2006-2531	-12.3 %	5.3 %	17.6 %
Projected Annual Openings - 2006-2531	11	22	11
Special			

Special Occupations:

National Job Posting Trends

Trend for Millwrights and Mobile Heavy Equipment Mechanics, Except Engines



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

Programs

Related Programs

Agricultural Mechanics and Equipment/Machine Technology

Agricultural Mechanics and Equipment/Machine Technology. A program that prepares individuals to maintain and repair specialized farm, ranch, and agribusiness power equipment and vehicles. Includes instruction in the principles of diesel, combustion, electrical, steam, hydraulic, and mechanical systems and their application to the maintenance of terrestrial and airborne crop spraying equipment; tractors and hauling equipment; planting and harvesting equipment; cutting equipment; power sources and systems for silos; irrigation and pumping equipment; dairy, feeding and, shearing operations; and processing systems.

No information on schools for the program

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
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 Millwrights

O* NET Code	Title	Grand TORQ	Job Zone	Employment	Median Wage	Difference	Growth	Annual Job Openings	Special
49-9044.00	Millwrights	100	3	830	\$41,280.00	\$0.00	-12%	11	
51-4192.00	Lay-Out Workers, Metal and Plastic	83	2	180	\$43,870.00	\$2,590.00	-24%	3	
51-4111.00	Tool and Die Makers	82	3	160	\$51,670.00	\$10,390.00	-11%	2	
51-4041.00	Machinists	81	3	1,860	\$41,560.00	\$280.00	4%	35	★
49-2094.00	Electrical and Electronics Repairers, Commercial and Industrial Equipment	78	3	440	\$49,450.00	\$8,170.00	-19%	15	
47-2111.00	Electricians	77	3	2,910	\$43,650.00	\$2,370.00	1%	89	★
49-2095.00	Electrical and Electronics Repairers, Powerhouse, Substation, and Relay	77	5	20	\$60,790.00	\$19,510.00	5%	1	
49-9012.00	Control and Valve Installers and Repairers, Except Mechanical Door	77	3	170	\$47,860.00	\$6,580.00	-9%	3	
49-9051.00	Electrical Power-Line Installers and Repairers	76	3	280	\$47,750.00	\$6,470.00	9%	12	★
49-3011.00	Aircraft Mechanics and Service Technicians	75	3	210	\$44,280.00	\$3,000.00	-2%	2	
47-2152.01	Pipe Fitters and Steamfitters	74	3	2,110	\$42,430.00	\$1,150.00	2%	67	★
47-2152.02	Plumbers	73	3	2,110	\$42,430.00	\$1,150.00	2%	67	★
51-4012.00	Numerical Tool and Process Control Programmers	73	3	60	\$43,530.00	\$2,250.00	21%	2	
53-6051.07	Transportation Vehicle, Equipment and Systems Inspectors, Except Aviation	73	3	60	\$42,890.00	\$1,610.00	5%	2	



53-7021.00	Crane and Tower Operators	73	3	240	\$41,940.00	\$660.00	-2%	4
Special Occupations:								

Top Industries for Mobile Heavy Equipment Mechanics, Except Engines

Industry	NAICS	% of Industry	Employment	Projected Employment	% Change
Federal government, excluding postal service	919999	7.28%	9,503	8,984	-5.47%
Other specialty trade contractors	238900	6.94%	9,064	10,018	10.52%
Local government, excluding education and hospitals	939300	6.28%	8,199	9,210	12.34%
Commercial and industrial machinery and equipment rental and leasing	532400	5.73%	7,487	9,148	22.19%
Highway, street, and bridge construction	237300	4.91%	6,404	6,895	7.66%
Self-employed workers, primary job	000601	4.77%	6,229	6,636	6.54%
Commercial and industrial machinery and equipment (except automotive and electronic) repair and maintenance	811300	3.92%	5,112	5,409	5.82%
Metal ore mining	212200	2.04%	2,658	3,403	28.00%
State government, excluding education and hospitals	929200	2.01%	2,618	2,569	-1.87%
Nonmetallic mineral mining and quarrying	212300	1.95%	2,549	2,736	7.32%
Coal mining	212100	1.74%	2,268	2,291	0.99%
Support activities for mining	213100	1.55%	2,028	1,908	-5.93%
Other heavy and civil engineering construction	237900	1.48%	1,934	2,077	7.41%
Animal production; primary job	112000	1.40%	1,829	1,622	-11.34%
Nonresidential building construction	236200	1.26%	1,639	1,837	12.05%

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%

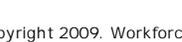
Veneer, plywood, and engineered wood product manufacturing	321200	2.94%	1,615	1,905	18.01%
Foundries	331500	2.50%	1,371	1,077	-21.42%
Commercial and industrial machinery and equipment (except automotive and electronic) repair and maintenance	811300	2.19%	1,204	1,381	14.68%
Employment services	561300	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%



TORQ Analysis of Millwrights to Helpers--Electricians

ANALYSIS INPUT					
Transfer	Title	O*NET	Filters		
From Title:	Millwrights	49-9044.00	Abilities:	Importance Level: 50	Weight: 1
To Title:	Helpers--Electricians	47-3013.00	Skills:	Importance Level: 69	Weight: 1
Labor Market Area:	Maine Statewide		Knowledge:	Importance Level: 69	Weight: 1

TORQ RESULTS																	
Grand TORQ:												85					
Ability TORQ				Skills TORQ				Knowledge TORQ									
Level				87		Level				88		Level				81	
Gaps To Narrow if Possible				Upgrade These Skills				Knowledge to Add									
Ability	Level	Gap	Impt	Skill	Level	Gap	Impt	Knowledge	Level	Gap	Impt						
Visual Color Discrimination	51	17	53	No Skills Upgrade Required!				Building and Construction	65	11	74						
Gross Body Equilibrium	46	11	53														
Arm-Hand Steadiness	48	6	59														
Gross Body Coordination	39	7	50														
Manual Dexterity	53	3	75														
Finger Dexterity	46	2	59														
Trunk Strength	46	2	59														
<p>LEVEL and IMPT (IMPORTANCE) refer to the Target Helpers--Electricians. GAP refers to level difference between Millwrights and Helpers--Electricians.</p>																	

ASK ANALYSIS			
Ability Level Comparison - Abilities with importance scores over 50			
Description	Millwrights	Helpers--Electricians	Importance
Manual Dexterity	50 	53 	75 
Near Vision	55 	55 	72 
Problem Sensitivity	44 	42 	62 
Information Ordering	67 	50 	62 
Extent Flexibility	60 	59 	62 
Arm-Hand Steadiness	42 	48 	59 
Finger Dexterity	44 	46 	59 

Trunk Strength	44	46	59
Oral Comprehension	51	51	56
Control Precision	51	48	56
Multilimb Coordination	53	42	56
Static Strength	59	44	56
Visualization	62	50	53
Gross Body Equilibrium	35	46	53
Visual Color Discrimination	34	51	53
Deductive Reasoning	46	39	50
Gross Body Coordination	32	39	50

Skill Level Comparison - Abilities with importance scores over 69

Description	Millwrights	Helpers--Electricians	Importance
Knowledge Level Comparison - Knowledge with importance scores over 69			
Description	Millwrights	Helpers--Electricians	Importance
Building and Construction	54	65	74

Experience & Education Comparison

Related Work Experience Comparison			Required Education Level Comparison		
Description	Millwrights	Helpers--Electricians	Description	Millwrights	Helpers--Electricians
10+ years	8%	0%	Doctoral	0%	0%
8-10 years	0%	2%	Professional Degree	0%	0%
6-8 years	7%	0%	Post-Masters Cert	0%	0%
4-6 years	29%	2%	Master's Degree	0%	0%
2-4 years	8%	10%	Post-Bachelor Cert	0%	0%
1-2 years	17%	14%	Bachelors	0%	0%
6-12 months	19%	18%	AA or Equiv	0%	0%
3-6 months	0%	19%	Some College	1%	2%
1-3 months	0%	0%	Post-Secondary Certificate	33%	20%
0-1 month	0%	0%	High School Diploma or GED	43%	50%
None	7%	32%	No HSD or GED	22%	27%

Millwrights

Helpers--Electricians

Most Common Educational/Training Requirement:

Long-term on-the-job training

Short-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.

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 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

Millwrights

Core Tasks

Generalized Work Activities:

- 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 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,

Helpers--Electricians

Core Tasks

Generalized Work Activities:

- Getting Information - Observing, receiving, and otherwise obtaining information from all relevant sources.
- Handling and Moving Objects - Using hands and arms in handling, installing, positioning, and moving materials, and manipulating things.
- Communicating with Supervisors, Peers, or Subordinates - Providing information to supervisors, co-workers, and subordinates by telephone, in written form, e-mail, or in person.
- 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.
- Organizing, Planning, and Prioritizing Work - Developing specific goals and plans to prioritize, organize, and accomplish your work.

Specific Tasks

Occupation Specific Tasks:

- Bolt component parts together to form tower assemblies, using hand tools.
- Break up concrete, using airhammer, to facilitate installation, construction, or repair of equipment.
- Clean work area and wash parts.
- Construct controllers and panels, using power drills, drill presses, taps, saws and punches.
- Dig trenches or holes for installation of conduit or supports.
- Disassemble defective electrical equipment, replace defective or worn parts, and reassemble equipment, using hand tools.
- Drill holes and pull or push wiring through openings, using hand and power tools.
- Erect electrical system components and barricades, and rig scaffolds, hoists, and shoring.
- Examine electrical units for loose connections and broken insulation and tighten connections, using hand tools.
- Install copper-clad ground rods, using a manual post driver.
- Maintain tools, vehicles, and equipment and



- 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 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

keep parts and supplies in order.

- Measure, cut, and bend wire and conduit, using measuring instruments and hand tools.
- Operate cutting torches and welding equipment, while working with conduit and metal components to construct devices associated with electrical functions.
- Paint a variety of objects related to electrical functions.
- Perform semi-skilled and unskilled laboring duties related to the installation, maintenance and repair of a wide variety of electrical systems and equipment.
- Raise, lower, or position equipment, tools, and materials, using hoist, hand line, or block and tackle.
- Requisition materials, using warehouse requisition or release forms.
- Solder electrical connections, using soldering iron.
- String transmission lines or cables through ducts or conduits, under the ground, through equipment, or to towers.
- Strip insulation from wire ends, using wire stripping pliers, and attach wires to terminals for subsequent soldering.
- Thread conduit ends, connect couplings, and fabricate and secure conduit support brackets, using hand tools.
- Trace out short circuits in wiring, using test meter.
- Transport tools, materials, equipment, and supplies to work site by hand, handtruck, or heavy, motorized truck.
- Trim trees and clear undergrowth along right-of-way.

Detailed Tasks

Detailed Work Activities:

- apply cleaning solvents
- assist mechanic, or extractive or construction trades craft worker
- bend tubing or conduit
- clean equipment or machinery
- clean rooms or work areas
- climb ladders, scaffolding, or utility or telephone poles
- construct or fabricate electrical parts or fixtures
- dig holes or trenches for foundations, posts, poles, or related items
- dismantle or reassemble rigging
- distinguish colors
- drive automobile, van, or light truck
- erect scaffold
- fabricate, assemble, or disassemble manufactured products by hand
- install electrical conduit or tubing
- install/string electrical or electronic cable or



- 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 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

wiring

- maintain electrician's tools or equipment
- maintain inventory of supplies
- maintain or repair cargo or passenger vehicle
- measure, weigh, or count products or materials
- move or fit heavy objects
- operate hoist, winch, or hydraulic boom
- paint walls or other structural surfaces
- read blueprints
- read tape measure
- read technical drawings
- repair or replace electrical wiring, circuits, fixtures, or equipment
- replace electronic components
- set up specialized rigging
- solder electrical or electronic connections or components
- test electrical/electronic wiring, equipment, systems or fixtures
- test electronic or electrical circuit connections
- use acetylene welding/cutting torch
- use basic carpentry techniques
- use chain saws
- use electrical or electronic test devices or equipment
- use hand or power tools
- use measuring devices in construction or extraction work
- use soldering equipment
- use voltmeter, ammeter, or ohmmeter

Technology - Examples

Spreadsheet software

- Recordkeeping software

Word processing software

- Report generation software

Tools - Examples

- Pliers
- Crescent wrenches
- Air compressors
- Ammeters
- AWMs
- Backhoes
- Cable tie guns



- 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
- 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
- Cutting torches
- Insulated bolt cutters
- Horizontal boring tools
- Bear claw wire threaders
- Cable reels
- Cable splicing knives
- Inductance testers
- Resistance bridges
- Capacitance testers
- Bucket trucks
- Continuity testers
- Circuit test meters
- Current clamps
- Pneumatic compacting equipment
- Hydraulic conduit benders
- Conduit deburring tools
- Desktop computers
- Diagonal cut pliers
- Dump trucks
- Side cutting pliers
- Fish tape pullers
- Fuse pullers
- Gas leak detection devices
- Generators
- Ground fault circuit interrupter GFCI testers
- Hammers
- Handtrucks
- Heat guns
- Hex key sets
- Hoist trucks
- Circle cutters
- Electric impact drivers



- 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
- 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

Socket cutters

Electric impact drivers

- Transfer impedance meters
- Cable labeling machines
- Ladders
- Levels
- Extension lamp extractors
- Insulated pliers
- Conduit locknut and reaming pliers
- Long nose pliers
- Lighted magnet pickups
- Electric manlifts
- Meggers
- Magnetic locators
- Digital multimeters
- Nibbler cutting tools
- Notebook computers
- Insulated nutdrivers
- Double-end can socket wrenches
- Ohmmeters
- Personal computers
- Phase rotation meters
- Picks
- Polyvinyl chloride PVC cutters
- Plumb bobs
- Airhammers
- Post drivers
- Cordless drills
- Cable gripping gloves
- Punchdown tools
- Tapered reamers
- Respirators
- External snap ring pliers
- Hacksaws



- 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
- End mills
- Needlenose pliers
- Nibblers
- Nut splitters
- Lubrication guns
- Personal computers
- Pipe cutters
- Pipe wrenches
- Planing machines
- Plasma welders
- Plumb bobs
- Pneumatic needle scalars
- Core drills
- Power grinders
- Belt sanders
- Cutoff saws
- Welding gloves
- Scaffolding
- Cabinet tip screwdrivers
- Shears
- Insulated socket sets
- Soldering irons
- Insulated wrenches
- Wire wrap guns
- Punches
- Strap wrenches
- Automatic wire strippers
- Compaction tampers
- Tape measures
- Infrared scanners
- Dies
- Taps
- Tongue and groove pliers
- Excavators
- Air spades
- Two way radios
- Electricians' knives
- Non-contact voltage sensors
- Welders
- Welding hoods
- Bulldozers
- Electricians' snips
- Crimping tools
- Cable cutters
- Drill presses

- Bevel protractors
- Crowbars
- Bearing pullers
- Center punches
- Putty knives
- Pyrometers
- Scrapers
- Reamers
- Respirators
- Retaining ring pliers
- Rivet guns
- Shrink rules
- Scaffolding
- Spiral screw extractors
- Scribes
- Honing stones
- Scissors
- Material-hoisting slings
- Socket sets
- Soldering guns
- Spanner wrenches
- Chain wrenches
- Stroboscopes
- Combination squares
- Straightedges
- Strap wrenches
- Tachometers
- Tap extractors
- Measuring tapes
- Dies
- Alignment telescopes
- Layout templates

- Tension indicators
- Snap gauges
- Thread gauges
- Pipe threading machines
- Tin snips
- Torque multipliers
- Tungsten inert gas TIG welding equipment
- Ultrasonic thickness detectors
- Utility knives
- Vibration indicators
- Arc welders
- Welding shields
- Spot welding equipment
- Wire brushes
- Cable cutters
- Hydraulic cranes
- Arbor presses

Labor Market Comparison

Maine Department of Labor.

Description	Millwrights	Helpers--Electricians	Difference
Median Wage	\$ 41,280	\$ 31,250	\$(10,030)
10th Percentile Wage	\$ 30,940	\$ 24,000	\$(6,940)
25th Percentile Wage	N/A	N/A	N/A
75th Percentile Wage	\$ 49,110	\$ 35,550	\$(13,560)
90th Percentile Wage	\$ 54,780	\$ 38,740	\$(16,040)
Mean Wage	\$ 41,500	\$ 31,020	\$(10,480)
Total Employment - 2522	830	560	-270
Employment Base - 2006	883	564	-319
Projected Employment - 2531	774	592	-182
Projected Job Growth - 2006-2531	-12.3 %	5.0 %	17.3 %
Projected Annual Openings - 2006-2531	11	17	6
Special			

Special Occupations:

National Job Posting Trends

Trend for Millwrights and Helpers--Electricians



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

Programs

Related Programs

Electrician

Electrician. A program that prepares individuals to apply technical knowledge and skills to install, operate, maintain, and repair electric apparatus and systems such as residential, commercial, and industrial electric-power wiring; and DC and AC motors, controls, and electrical distribution panels. Includes instruction in the principles of electronics and electrical systems, wiring, power transmission, safety, industrial and household appliances, job estimation, electrical testing and inspection, and applicable codes and standards.

Institution	Address	City	URL
Eastern Maine Community College	354 Hogan Rd	Bangor	www.emcc.edu
Washington County Community College	One College Drive	Calais	www.wccc.me.edu
Kennebec Valley Community College	92 Western Ave	Fairfield	www.kvcc.me.edu
Kennebec Valley Community College	92 Western Ave	Fairfield	www.kvcc.me.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
Southern Maine Community College	2 Fort Road	South Portland	www.smccME.edu

Maine Statewide Promotion Opportunities for Millwrights

O* NET Code	Title	Grand TORQ	Job Zone	Employment	Median Wage	Difference	Growth	Annual Job Openings	Special
49-9044.00	Millwrights	100	3	830	\$41,280.00	\$0.00	-12%	11	
51-4192.00	Lay-Out Workers, Metal and Plastic	83	2	180	\$43,870.00	\$2,590.00	-24%	3	
51-4111.00	Tool and Die Makers	82	3	160	\$51,670.00	\$10,390.00	-11%	2	
51-4041.00	Machinists	81	3	1,860	\$41,560.00	\$280.00	4%	35	★
49-2094.00	Electrical and Electronics Repairers, Commercial and Industrial Equipment	78	3	440	\$49,450.00	\$8,170.00	-19%	15	
47-2111.00	Electricians	77	3	2,910	\$43,650.00	\$2,370.00	1%	89	★
49-2095.00	Electrical and Electronics Repairers, Powerhouse, Substation, and Relay	77	5	20	\$60,790.00	\$19,510.00	5%	1	
49-9012.00	Control and Valve Installers and Repairers, Except Mechanical Door	77	3	170	\$47,860.00	\$6,580.00	-9%	3	
49-9051.00	Electrical Power-Line Installers and Repairers	76	3	280	\$47,750.00	\$6,470.00	9%	12	★
49-3011.00	Aircraft Mechanics and Service Technicians	75	3	210	\$44,280.00	\$3,000.00	-2%	2	
47-2152.01	Pipe Fitters and Steamfitters	74	3	2,110	\$42,430.00	\$1,150.00	2%	67	★
47-2152.02	Plumbers	73	3	2,110	\$42,430.00	\$1,150.00	2%	67	★
51-4012.00	Numerical Tool and Process Control Programmers	73	3	60	\$43,530.00	\$2,250.00	21%	2	

53-6051.07	Transportation Vehicle, Equipment and Systems Inspectors, Except Aviation	73	3	60	\$42,890.00	\$1,610.00	5%	2
53-7021.00	Crane and Tower Operators	73	3	240	\$41,940.00	\$660.00	-2%	4

Special Occupations:

Top Industries for Helpers--Electricians

Industry	NAICS	% of Industry	Employment	Projected Employment	% Change
Electrical contractors	238210	87.60%	92,278	97,774	5.96%
Self-employed workers, primary job	000601	2.83%	2,981	3,209	7.65%
Employment services	561300	1.71%	1,804	2,307	27.89%
Nonresidential building construction	236200	1.50%	1,581	1,790	13.22%
Plumbing, heating, and air-conditioning contractors	238220	1.44%	1,515	1,729	14.11%
Local government, excluding education and hospitals	939300	0.54%	570	647	13.52%
Electric power generation, transmission and distribution	221100	0.38%	401	373	-7.06%
Residential building construction	236100	0.36%	383	436	13.79%
Power and communication line and related structures construction	237130	0.29%	304	324	6.30%
Unpaid family workers, primary job	000701	0.24%	254	203	-20.06%
Offices of real estate agents and brokers	531200	0.20%	215	265	23.08%
Colleges, universities, and professional schools, public and private	611300	0.17%	177	200	13.05%
Other building equipment contractors	238290	0.13%	139	152	9.52%
Management of companies and enterprises	551100	0.12%	124	145	16.49%
General medical and surgical hospitals, public and private	622100	0.10%	108	121	11.87%

Top Industries for Millwrights

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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%

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)