



The Manufacturers Association

JOB QUALIFICATION STANDARD (JQS)

Occupation: Electrical Technician

Work Process: Technical Knowledge

Practical Hours: 3200 hrs.

DOL Standard: Shop Practices: Apply a working knowledge of the expectations for an apprentice and the general shop practices required by the apprentice.

Performance Objective: Demonstrate the ability to display integrity by applying the apprentice’s work expectations as defined by the apprenticeship program.

Performance Indicator	Qualification Date/Initial
Demonstrate the ability to respect for company’s time and property.	
Demonstrate the ability to accept responsibility for one’s decision and actions.	
Demonstrate the ability to know the jobs assigned to you.	
Demonstrate a working knowledge of the company policy manual.	
Demonstrate an ability to show up on time every day with a desire to work hard and add value to the company.	
Demonstrate the ability to follow instructions laid out by your supervisor.	
Demonstrate a dedication to the trade and to the quality and professional standards set forth by the company.	
Demonstrate how to performing a preventive maintenance procedure for a given machine to extend machine life and minimize downtime in accordance with company-approved maintenance specifications and overall program goals.	

Performance Objective: Demonstrate the ability to display initiative by showing a willingness to work and seek out new work challenges.

Performance Indicator	Qualification Date/Initial
Demonstrate the ability to take initiatives in seeking out new responsibilities and work challenges, increasing the variety of scope of one’s job.	
Demonstrate the ability to pursue work with energy, drive and determination to accomplish one’s tasks.	
Demonstrate the ability to establish and maintain personally challenging, but realistic work goals.	



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Demonstrate the ability to strive to exceed standards and expectations.	
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Performance Objective: Demonstrate the ability to display dependability and reliability by showing responsible behaviors at work.

Performance Indicator	Qualification Date/Initial
Demonstrate the ability to behave consistently, predictably and reliably.	
Demonstrate the ability to fulfill obligations, complete assignments and meet deadlines.	
Demonstrate the ability to follow written and verbal directions.	
Demonstrate the ability to comply with organizational rules, policies and procedures.	
Demonstrate the ability to comply with regular and punctual attendance.	

Performance Objective: Demonstrate the ability to display adaptability by showing the capability to adapt to new, different or changing requirements.

Performance Indicator	Qualification Date/Initial
Demonstrate the ability to be open to learning and considering new ways of doing things.	
Demonstrate the ability to actively seek out and carefully consider the merits of new approaches to work.	
Demonstrate the ability to embrace new approaches when appropriate and discard approaches that are no longer working.	
Demonstrate the ability to effectively change plans, goals, actions or priorities to deal with changing situations.	

Performance Objective: Demonstrate the ability to display business fundamentals in serving and protecting the organization and industry.

Performance Indicator	Qualification Date/Initial
Demonstrate the ability to understand one's role in the functioning of the company and the potential impact of one's performance can have on the success of the organization.	
Demonstrate the ability to recognize the importance of maintaining privacy and confidentiality of company information, as well as that of customers and co-workers, and comply with intellectual property laws.	



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Performance Objective: Demonstrate the ability to plan and prioritize work to manage time effectively and accomplish assigned tasks.

Performance Indicator	Qualification Date/Initial
Demonstrate the ability to plan and schedule tasks so that work is completed on time.	
Demonstrate the ability to prioritize various competing tasks.	
Demonstrate the ability to effectively allocate time and resources efficiently.	
Demonstrate the ability to take the necessary actions when project go off track.	

Performance Objective: Demonstrate the ability to actively look for ways to identify market demands and meet client needs.

Performance Indicator	Qualification Date/Initial
Demonstrate the ability to understand and anticipate customer need.	
Demonstrate the ability to provide personalized service with prompt and efficient responses to meet the requirements, requests and concern of clients.	
Demonstrate the ability to be pleasant, courteous and professional when dealing with internal and external clients.	
Demonstrate the ability to evaluate client satisfaction.	

Performance Objective: Demonstrate the ability to display teamwork by working and communicating effectively with others in a respectful manner.

Performance Indicator	Qualification Date/Initial
Demonstrate the ability to establish a high degree of trust and credibility with others.	
Demonstrate the ability to interact professionally and respectfully with supervisors and co-workers.	
Demonstrate the ability to develop constructive working relationships and maintain them over time.	
Demonstrate the ability to use appropriate strategies and solutions for dealing with conflicts and differences to maintain a smooth workflow.	



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JOB QUALIFICATION STANDARD (JQS)

DOL Standard: Technical Mathematics: Apply a working knowledge of calculating and solving mathematical problems when interpreting specifications and performing tasks within the manufacturing environment.

Performance Objective: Demonstrate the ability to use basic mathematics to solve problems.

Performance Indicator	Qualification Date/Initial
Demonstrate the ability to add, subtract, multiply and divide whole numbers, fractions, decimals and percentages.	
Demonstrate the ability to convert decimals to fractions and convert fractions to percentages.	
Demonstrate the ability to calculate averages, ratios, proportions and rates.	
Demonstrate the ability to take measurement of time, temperature, distance, length, width, height and weight and convert one measurement to another.	
Demonstrate the ability to translate practical problems into useful mathematical expressions.	

DOL Standard: Prints and Drawings: Apply a working knowledge of foundational drawing and print reading skills when interpreting specifications and performing tasks within the manufacturing environment.

Performance Objective: Demonstrate the ability to interpret information found on a blueprint and call out critical information regarding the drawing or electrical print.

Performance Indicator	Qualification Date/Initial
Demonstrate the ability to identify symbols, notations, and lines to industry standards.	
Demonstrate the ability to determine the logical sequence displayed in a schematic or engineering drawing.	
Demonstrate the ability to determine the components and parts displayed in a schematic or engineering drawing.	
Demonstrate the ability to identify the location of equipment displayed in a schematic or engineering drawing.	
Demonstrate the ability to identify the full set of documentation that is required for the proper interpretation of a schematic or engineering drawing.	
Demonstrate the ability to identify the revision level and process displayed in a schematic or engineering drawing.	



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Performance Objective: Demonstrate the ability to apply math concepts to solve calculations in order to perform electrical tasks.

Performance Indicator	Qualification Date/Initial
Demonstrate how to convert fractions to decimals form.	
Demonstrate how to convert dimensions to metric equivalent.	
Demonstrate how to calculate a missing angle from a triangle.	
Demonstrate how to solve missing measurements in right angles.	
Demonstrate how to calculate the area of a circle.	
Demonstrate how to solve for the unknown hypotenuse of a right triangle using the Pythagorean Theorem.	

DOL Standard: Measuring and Improving Work: Apply common systems for designing and measuring work processes and the commitment to continuous improvement through empowerment and management by people and data.

Performance Objective: Demonstrate the ability to conduct the process of collecting and comparing data trends using the company's quality Statistical Process Control (SPC) software platform.

Performance Indicator	Qualification Date/Initial
Demonstrate the ability to perform statistical calculations to determine the mean, median, and mode for a set of data.	
Demonstrate the ability to record points on a control chart.	
Demonstrate the ability to identify a process that is in or out of control, using Pareto analysis or Ishikawa diagrams to help ensure operational efficiency.	
Demonstrate the ability to work towards the mean during process.	
Demonstrate the ability to identify a production problem, propose a remedy, having been given the authorization to implement the process improvement and carry it out.	



The Manufacturers Association

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DOL Standard: Electrical Systems: Apply a working knowledge of electrical systems when performing tasks within the manufacturing environment.

Performance Objective: Demonstrate the ability to safely perform common electrical tasks when maintaining equipment in the workplace.

Performance Indicator	Qualification Date/Initial
Demonstrate the ability to adhere to NEC safety regulations.	
Demonstrate the ability to apply fastener concepts, including force, torque, dynamic and static torques, press fits and assembly tolerances.	
Demonstrate the ability to select and use screw and nut drivers, including straight, Phillips and hex types.	
Demonstrate the ability to properly select, use inspect and maintain hand tools, such as wrenches, screwdrivers, pliers, drills, saws, files, tube benders, tap and die sets, wire crimpers, cutters, strippers and reamers ensuring the tools are the correct ones for the application.	
Demonstrate the ability to properly select, use inspect and maintain portable and stationary power tools, such as saws, drill presses, grinders, high pressure tools, pipe threaders, portable generators and vacuum pumps ensuring the tools are the correct ones for the application.	
Demonstrate the ability to tighten parts using the correct bolt pattern sequence.	
Demonstrate the ability to tag tools that are in need of further repair or maintenance.	
Demonstrate the ability to maintain calibration, configuration or test equipment in accordance with required procedures.	
Demonstrate the ability to install mounting hardware determining location for installation; identifying required system; selecting mounting hardware such as channels, supports, stands, clamps, brackets, u-bolts, adapters, and enclosures; using hand, power, or stationary tools; modifying, fabricating or fastening mounting hardware so that hardware is installed in accordance with manufacturer's specifications.	
Demonstrate the ability to adhere to safety procedures for tightening, disconnecting or connecting electrical conductors and components.	
Demonstrate the ability to adhere to hazard avoidance in contact with live electrical systems.	
Demonstrate the ability to adhere to guidelines on the safe approach distances while working on electrical systems.	
Demonstrate the ability to read and interpret electrical motor control and programmable controller system schematics, including identifying schematic symbols, signal flow and operation of the components and system.	
Demonstrate the ability to interpret control schematics given a ladder logic diagram.	
Demonstrate the ability to interpret power diagrams associated with PLC and all related input/output devices.	



The Manufacturers Association

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Demonstrate the ability to adjust and test the trip point of a limit switch, float switch and pressure switch.	
Demonstrate the ability to adjust and test the trip point of a capacitive sensor, inductive sensor, photoelectric sensor, hall effect sensor, fiber optic sensor, magnetic reed sensor, light curtain switches.	
Demonstrate the ability to use a multimeter to measure voltage and current to an electrical circuit.	
Demonstrate the ability to use a multimeter to measure resistance in an electrical circuit.	
Demonstrate the ability to use a multimeter to perform a continuity check in an electrical circuit.	
Demonstrate the ability to calculate power in an electrical circuit given current and voltage.	
Demonstrate the ability to size fuses and circuit breakers in accordance with NEC requirements for a given power draw in an electrical circuit with consideration to ampacity of wiring in that circuit.	
Demonstrate the ability to install fuses and circuit breakers into circuits.	
Demonstrate the ability to inspect circuit breakers to determine if they have been tripped.	
Demonstrate the ability to reset a circuit breaker.	
Demonstrate the ability to install and connect a DC electric motor to a manual switch given a power schematic.	
Demonstrate the ability to use a multimeter and mega-ohmmeter to test a DC motor.	
Demonstrate the ability to interpret a DC motor name plate.	
Demonstrate the ability to install and connect an AC single-phase electric motor to a manual switch given a power schematic.	
Demonstrate the ability to install and connect an AC three-phase electric motor to a manual switch given a power schematic.	
Demonstrate the ability to use a multimeter and mega-ohmmeter to test an AC motor.	
Demonstrate the ability to interpret an AC motor name plate.	
Demonstrate the ability to select an AC motor overload.	
Demonstrate the ability to install electrical relay control components in a control system to include control transformers, pushbutton switches, selector switches, control relays, magnetic motor starters, overloads, indicator lamps, electronic sensors, drum switches, solenoid operated fluid power valves, capacitors, resistors and disconnect switches.	
Demonstrate the ability to install and connect NEMA/ IEC relay control components in a control circuit given a wiring diagram or schematic.	
Demonstrate the ability to install wiring between components in a control cabinet using raceways.	
Demonstrate the ability to install wiring between components located in different enclosures via conduit.	



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Demonstrate the ability to replace failed relay contacts and coils.	
Demonstrate the ability to install and test electro-fluid power components and circuits (solenoid-operated hydraulic and pneumatic valves).	
Demonstrate the ability to distinguish between the types of machine grounds.	
Demonstrate the ability to test a machine ground to verify its correct operation.	
Demonstrate the ability to repair a machine ground.	
Demonstrate the ability to use a multimeter to take electrical circuit readings during in-circuit testing.	
Demonstrate the ability to use systematic methodologies to troubleshoot electrical relay control circuits with AC and DC motors to solve operation errors.	
Demonstrate the ability to troubleshoot solenoid fluid power valve relay and control circuits.	
Demonstrate the ability to perform a continuity test on electrical control wiring connected through terminals.	
Demonstrate the ability to size wiring for a control circuit given voltage and current requirements and NEC code.	
Demonstrate the ability to interpret standard wire color coding.	
Demonstrate the ability to strip a wire.	
Demonstrate the ability to attach wire to terminals.	
Demonstrate the ability to perform a continuity test on wiring connected via soldering.	
Demonstrate the ability to prepare a wire for soldering.	
Demonstrate the ability to solder a wire to terminals.	
Demonstrate the ability to test and inspect a solder joint for integrity.	
Demonstrate the ability to test a transformer.	
Demonstrate the ability to disconnect and reconnect primary and secondary transformers.	
Demonstrate the ability to replace primary and secondary transformers.	

Apprentice Signature:	Completed: MM/DD/YY
Mentor Signature:	Completed: MM/DD/YY
Supervisor Signature:	Completed: MM/DD/YY
Comments:	