



**The Manufacturers Association**

**JOB QUALIFICATION STANDARD (JQS)**

Occupation: TOOLMAKER

Work Process: Drilling

Practical Hours: 200 hrs.

**Standard:** Drilling: Apply a working knowledge for setting up, operating, or tending to machines that drill, bore, ream, or countersink work pieces to specifications.

**Performance Objective:** Demonstrate the ability to safely setup and operate machine tools to perform routine drilling operations.

Performance Indicator	Qualification Date/Initial
Demonstrate the ability to select drill tooling including drill bits, center-drill, reamers, taps, counter-bores, counter- sinks, and spot-faces by using information in engineering drawings and job specifications to ensure that tooling is the correct size, shape, type, and grade for the application.	
Demonstrate the ability to identify and prepare cutting tools for drills by sharpening or replacing tools so that the cutting shape and angle is prepared for optimum cutting and personal safety in accordance with job or manufacturer's specifications and company standards.	
Demonstrate the ability to locate and position the workpiece in the drill to the required operational clearances by setting up and securing workpiece with workholding devices, including drilling vises, clamps, jigs, angle plates, and chucks, so that the workpiece is aligned, secured, and stable during drilling in accordance with job specifications.	
Demonstrate the ability to set up tooling in the drills to the required operational alignments using holding devices, including drill chucks, taper sleeves, and tapping heads, to ensure that tooling is in position and held securely during drilling in accordance with job specifications.	
Demonstrate the ability to select speeds and feeds for the drill using speed and feed charts and in accordance with the size, type, and hardness of workpiece material so that the drill performs optimum cutting without damage to workpiece, cutting tools, or machines, and ensures personal safety.	
Demonstrate the ability to perform a center-drill a layout punch mark using a drill press/machine, chuck, center-drill, and cutting fluid, so that the punch mark is drilled in accordance with engineering drawings and job specifications.	
Demonstrate the ability to drill a hole using a drilling machine, drill bits, and cutting fluids so that the size and depth of drilled hole conforms to engineering drawings and job specifications.	
Demonstrate the ability to chamfer a hole using a drilling machine, countersinks, and cutting fluids to break sharp edges, so that the chamfered hole conforms to engineering drawings and job specifications.	
Demonstrate the ability to ream a hole using a drilling machine, reamers, and cutting fluids so that the diameter of the reamed hole conforms to engineering drawing or job specifications.	



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Demonstrate the ability to machine-thread a hole using a drilling machine, tapping heads, taps, and cutting fluids so that the depth, size, and pitch of the threaded depth of the hole to conform with engineering drawings and job specifications.	
Demonstrate the ability to spot-face a hole using a drilling machine, spot-facing tools, and cutting fluids so that the depth and diameter of the spot-faced hole conforms to engineering drawings or job specifications.	
Demonstrate the ability to counter-bore a hole using a drilling machine, counter-boring tools, and cutting fluids so that the depth and diameter of the counter-bored hole conforms to engineering drawings and job specifications.	
Demonstrate the ability to counter-sink a hole using a drilling machine, countersinks, and cutting fluids so that the depth and diameter of the counter-sunk hole conforms to engineering drawings and job specifications.	
Demonstrate the ability to maintain material identification by marking or stamping the workpiece and completing shop documentation to facilitate traceability of the final product or work-in-process and maintain inventory control in accordance with company standards.	
Demonstrate the ability to deburr the workpiece using files, scrapers, emery cloth, sanders and hand or pedestal grinders to remove excess material and ensure safe handling in accordance with engineering drawings, job specifications.	
Demonstrate the ability to perform final inspection using precision measuring instruments and checking devices including inside and outside micrometers, vernier height gauges or indicators, gauge blocks, and pin gauges to ensure that the tolerances and dimensions of the workpiece to conform to the engineering drawings and job specifications.	
Demonstrate the ability to complete work documentation including tracking sheets, sign-off sheets, inspection reports, or procedure sheets to record the finalization of jobs and to facilitate traceability of work-in-process and ensure that data is recorded accurately and clearly in accordance with engineering drawings and job specifications.	
Demonstrate the ability to practice good housekeeping in the workplace by cleaning up spills or leaks, keeping work area clean and clear of obstructions, and storing tools or equipment so that the potential for accident or injury is prevented and tools or equipment are in place and available in compliance with safety regulations.	

<b>Apprentice Signature:</b>	<b>Completed:</b> MM/DD/YY
<b>Mentor Signature:</b>	<b>Completed:</b> MM/DD/YY
<b>Supervisor Signature:</b>	<b>Completed:</b> MM/DD/YY
<b>Comments:</b>	