



The Manufacturers Association

JOB QUALIFICATION STANDARD (JQS)

Occupation: TOOLMAKER

Work Process: Turning

Practical Hours: 1500 hrs.

Standard: Turning: Apply a working knowledge for setting up, operating, or tending to machines that turn, bore, thread, form, or face metal materials, such as wire, rod, or bar stock to meet required specifications.

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

Performance Indicator	Qualification Date/Initial
Demonstrate the ability to select lathe cutting tools, including drill bits, boring, parting, threading, facing, or turning tools, by using information from engineering drawings and job instructions to ensure that the tools selected are the correct ones needed to cut the workpiece material.	
Demonstrate the ability to identify and prepare lathe cutting tools by sharpening or replacing tools so that the cutting shape and angle is prepared for optimum cutting and personal safety, in accordance with manufacturer's specifications and company standards/procedures.	
Demonstrate the ability to locate and position workpiece in lathe to required operational clearances by setting up and securing workholding devices (chucks, face plates, centers, catch plates, steady rest, or tail stock) so that the workpiece is aligned, secured, and stable during machining in accordance with job specifications.	
Demonstrate the ability to set up lathe cutting tools to the required operational alignments using tool posts and tail stocks, to ensure that tools are in position and held securely during machining in accordance with job specifications.	
Demonstrate the ability to select speeds and feeds of lathe using speed and feed charts and in accordance with the size, type, and hardness of workpiece material, so that the lathe performs optimum cutting without damage to workpiece, cutting tools, or machine and ensures personal safety in accordance with job specifications.	
Demonstrate the ability to take a sizing cut to determine a reference workface and to check speeds and feeds to ensure that lathe is set up in accordance with engineering drawings and job specifications.	
Demonstrate the ability to establish a reference or starting point (datum) by zeroing out machine and ensuring that the datum is correctly located in accordance with job specifications.	
Demonstrate the ability to face a surface using a lathe and single-point tool bit and by measuring or checking with vernier, straight edge, or micrometer, so that the surface flatness and finished edge conforms to engineering drawings and job specifications.	



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Demonstrate the ability to turn an external diameter using a lathe and single-point tool and by measuring or checking with a vernier or micrometer, so that the turned diameter conforms to engineering drawings and job specifications.	
Demonstrate the ability to drill a hole using a lathe, center-drill, drills, and tailstock, so that the diameter and depth of the drilled hole conforms to engineering drawings and job specifications.	
Demonstrate the ability to bore an internal diameter using a lathe and boring bars mounted in a tool post, so that the close-toleranced internal diameters conform to engineering drawings and job specifications.	
Demonstrate the ability to ream a hole using a lathe, center-drill, drills, reamers, and tail-stock, and by measuring or checking with vernier, micrometer, and gauges so that the depth and diameter of the reamed hole conforms to job specifications.	
Demonstrate the ability to tap a hole using a lathe, taps, tapping head, and tailstock, so that the depth, diameter, and thread pitch of the tapped hole conforms to job specifications.	
Demonstrate the ability to turn an internal or external thread using a lathe and single-point tool bit and by measuring or checking with thread micrometers and thread plug gauge (go-no-go), so that the pitch, geometrical form, and dimensional tolerance of the turned thread conforms to job specifications and thread standards.	
Demonstrate the ability to produce a taper using a lathe, offset tail stock, taper-turning attachment, and compound rest, and by measuring or checking with protractors, micrometers, vernier height gauges, or templates, so that the size and angle of turned taper conforms to job specifications.	
Demonstrate the ability to knurl cylindrical surface patterns using a lathe and knurling tools, so that the diameter, form, depth, and finish of the knurled surface patterns conform to job specifications.	
Demonstrate the ability to groove and part-off using a lathe and grooving or parting tools, so that the width, length, depth, and square of cut-offs conform to 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 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 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	



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facilitate traceability of work-in-process and ensure that data is recorded accurately and clearly in accordance with 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.	
Apprentice Signature:	Completed: MM/DD/YY
Mentor Signature:	Completed: MM/DD/YY
Supervisor Signature:	Completed: MM/DD/YY
Comments:	