

**Specification of Competency Standards**  
**for the Manufacturing Technology Industry**  
**Unit of Competency**

Functional Area - Product Manufacturing

Title	Internal and external cylindrical grinding, centerless grinding and centre hole grinding
Code	106407L3
Range	This unit of competency is applicable to the production department of the corporation of tooling manufacturing industry. Practitioners should be capable to understand the knowledge of internal and external cylindrical grinding, centerless grinding and centre hole grinding, and carry out all kinds of production of internal and external cylindrical grinding, centerless grinding and centre hole grinding.
Level	3
Credit	6 (For Reference Only)
Competency	<p>Performance Requirements</p> <p>1. Understand internal and external cylindrical grinding, centerless grinding and centre hole grinding</p> <ul style="list-style-type: none"> <li>• Understand the relevant fixtures types, structures, size and applications of cylindrical grinder, including three jaw chuck, center, collets, four jaw chuck and magnetic chuck</li> <li>• Understand the types, configurations, and sizes of the tools gripping the long and small workpieces, including the lathe center of tail stock and the rest.</li> <li>• Understand the structure, transmission methods, foundation operation principles and safety codes of the internal and external cylindrical grinding machine</li> <li>• Understand the structure, usages and operation precautions of centerless grinder, including the relationship between the guide wheel angle and feed rate</li> <li>• Understand the precision control and machine maintenance methods of the centerless grinder</li> <li>• Understand the structure, usages and operation precautions of center hole grinder</li> <li>• Understand the processing parameters, including speed and feed rate, of internal and external cylindrical grinding, centerless grinding and centre hole grinding</li> <li>• Understand the characteristics of grinding wheel, and the presentation methods of specifications and meaning , including abrasive, graininess, degree of combination, hardness, structure, shape, and grinding wheel balance etc.</li> <li>• Understand the functions and applications of all kinds of cutting fluid and the handling methods of metal powder</li> <li>• Understand the formation principles and prevention methods of grinding internal stress</li> <li>• Understand the magnetic induction and demagnetization principle</li> </ul> <p>2. Carry out internal and external cylindrical grinding, centerless grinding and centre hole grinding</p> <ul style="list-style-type: none"> <li>• Correctly use the fixtures and grip all kinds of workpieces</li> <li>• According to the processing requirements, set up suitable grinding speed and depth, feed speed and workpiece rotation speed</li> <li>• Start and stop the cylindrical grinding machine, including starting and stopping the grinder, conversing the spindle speed, adjusting the horizontal and vertical feed rate, handling and adjusting horizontal and vertical movement distance stopper, adjusting working head correction center, adjusting the grinder angle of grinding cone, and control the grinding depth</li> <li>• With the engineering drawing, carry out the needed grinding wheel stone wash shaping</li> <li>• Carry out internal and external cylindrical grinding, including equant external cylindrical grinding, class external cylindrical grinding, equant internal cylindrical grinding, equant internal face cylindrical grinding and internal taper grinding etc</li> <li>• Carry out internal and external cylindrical grinding for small and long workpiece</li> </ul>

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	<ul style="list-style-type: none"> <li>• Operate all kinds of commonly used cylindrical grinding machines, such as centerless grinding and centre hole grinding</li> <li>• According to the product shape and precision requirements, select suitable cylindrical grinding machines for production</li> <li>• Set and optimise the processing parameters of internal and external cylindrical grinding, centerless grinding and centre hole grinding, and improve product manufacturing efficiency</li> <li>• According to the performance of cylindrical grinding machines, wear conditions and wear scar of grinding wheel, make judgments on abnormal situation and handle properly</li> <li>• Correct, adjust and maintain the cylindrical grinding machine, so as to maintain the precision and life of cylindrical grinding machine</li> </ul> <p>3. Professional handling of internal and external cylindrical grinding, centerless grinding and centre hole grinding</p> <ul style="list-style-type: none"> <li>• Follow the safety guidelines of internal and external cylindrical grinding, centerless grinding and centre hole grinding (e.g. grinding wheel operation, inspection and preventive maintenance) and relevant Code, in accordance with design drawings, specifications and production efficiency requirements, carry out internal and external cylindrical grinding, centerless grinding and centre hole grinding</li> </ul>
Assessment Criteria	<p>The integrated outcome requirements of this unit of competency are:</p> <ul style="list-style-type: none"> <li>• Capable to carry out internal and external cylindrical grinding for general workpieces, and small and long workpieces</li> <li>• Capable to operate all kinds of commonly used cylindrical grinding machines, including internal and external cylindrical grinding machines, centerless grinding machines and centre hole grinding machines etc.</li> <li>• Capable to handle unusual circumstances of all kinds of cylindrical grinding machines</li> </ul>
Remark	<p>Person who has the above knowledge and ability should also obtain the knowledge and ability of Surface grinding (106406L3) at the same time.</p>