

NOCC-A21 Electrician: Competence Package

<b>Relevant Occupation/trade title:</b> Electrician				<b>SAQA ID:</b> 91761	
<b>Learning Area 7: Install wire, test and maintain electrical motors and associated control systems - Basic</b>				<b>Total Hours:</b>	<b>56</b>
<b>Learning Project 3: Install and wire single phase alternating current (AC) motors</b>				<b>Total Hours:</b>	<b>8</b>
<b>Requisite learning areas/projects to be in place (Pre-requisite and co-requisite):</b>		<ul style="list-style-type: none"> <li>• <b>LA 6</b></li> </ul>			
<b>Learning project description: Install and wire single phase alternating current motors</b>					
Activity phase	Practical Skills Modules Content	Underpinning Knowledge Module Content	Work Experience Module Content	Didactical-methodological advice	Learning materials/Tools and Equipment
<b>Reference to QCTO Curriculum</b>	PM-01 (PS01, 02,03,04) PM-02 (PS01, 02,03) PM-03 (PS01, 02,03) PM-04 (PS01, 02,03) PM-05 (PS01- 06) PM-06 (PS01, 02)	KM-06-KT01	WM-01 (WE01, 02,03) WM-02 (WE01, 02,03) WM-03 (WE01, 02,03) WM-04 (WE01, 02,03)		
<b>Planning/Preparation</b>	<p><b><u>Provide access to (Given):</u></b></p> <ul style="list-style-type: none"> <li>• Single phase motors</li> <li>• Rotary switch (forward/reverse)</li> <li>• Contactors (forward/reverse)</li> <li>• Starter/training panel</li> </ul> <p>Job cards, material and equipment as per last column;</p> <p><b><u>Apprentices must be able to do/perform the following (hard and soft) skills:</u></b></p> <ul style="list-style-type: none"> <li>• Select and wear PPE</li> <li>• Read and interpret task instructions</li> <li>• Conduct risk assessment</li> <li>• Select the correct tools and equipment</li> <li>• Transport tools and equipment to workstation safely</li> </ul>	<p><b><u>Knowledge of:</u></b></p> <ul style="list-style-type: none"> <li>• Discharging capacitors safely</li> <li>• Reading and interpreting power circuit diagrams</li> <li>• The operating/working principles of single phase motors.</li> <li>• <b>Range:</b> includes but not limited to capacitor start, capacitor start capacitor run, permanent capacitor motors, resistance start capacitor run (split phase motor)</li> <li>• Main components of single phase motor. <b>Range:</b> Capacitor, centrifugal switch, starting windings, running windings</li> <li>• Changing the direction of rotation of single phase motor using a rotary switch and contactors</li> </ul>	<p><b><u>Under supervision:</u></b></p> <ul style="list-style-type: none"> <li>• Install and wire single phase starter(s)</li> <li>• Install single phase cable from the supply to a starter</li> <li>• Perform single phase motor test(s)</li> <li>• Connect single phase motor to a starter</li> <li>• Commission single phase system(s)</li> </ul>	Lecture, presentations DVDs, audio-visual Group/individual work Internet Motor Trainer	<p><b>Print materials, electronic files, software applications incl.:</b></p> <ul style="list-style-type: none"> <li>• Training manuals for trainers and apprentices incl. multimedia software</li> <li>• Set of presentation aids (videos, slides) for overhead or LED/LCD projectors</li> </ul> <p><b>Tools, equipment and materials incl.:</b> Range of materials and tools to be covered (minimum):</p> <ul style="list-style-type: none"> <li>• Electricians toolbox</li> </ul> <p><b>Materials:</b></p>

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<b>Implementation/ Execution</b>	<ul style="list-style-type: none"> <li>• Wire starter</li> <li>• Perform motor test on a single phase motor</li> <li>• Connect starter to motor</li> <li>• Commission the system</li> </ul>	<ul style="list-style-type: none"> <li>• Motor test to be performed on single phase motors. <b>Range:</b> continuity test, insulation resistance between components, insulation resistance between conductors and earth, mechanical examination.</li> <li>• Advantages and disadvantages of single phase motors</li> </ul>			<ul style="list-style-type: none"> <li>• Cable</li> <li>• Cable Glands</li> <li>• Cable tray</li> <li>• Cable ties</li> <li>• wall plugs</li> <li>• Lugs</li> <li>• Ferrules</li> </ul> <p><b>Tools</b></p> <ul style="list-style-type: none"> <li>• Multi-meter</li> <li>• Insulation resistance tester</li> <li>• Drilling machine</li> <li>• Drill bits</li> <li>• Crimping tool</li> <li>• Cable strapping tool</li> </ul>
<b>Evaluation/ Documentation</b>	<ul style="list-style-type: none"> <li>• Evaluate the correctness of the completed task according to drawings and/or instructions</li> <li>• Report work progress to appropriate personnel</li> <li>• Inspect and clean tools</li> <li>• Store and secure tools and materials</li> <li>• Complete applicable work documentation</li> <li>• Perform housekeeping</li> </ul>				
<b>Total</b>	Hours: 8				
<b>Specialisation additions</b>	Equipment that requires authorisation				
<b>Assessment guidance</b>					
<ul style="list-style-type: none"> <li>• <b>Self assessment</b></li> <li>• <b>Group assessment</b></li> <li>• <b>Theory test</b></li> </ul> <p><b>Criteria for assessment:</b></p> <ul style="list-style-type: none"> <li>• Correct PPE is worn</li> <li>• Task is completed as per job card</li> <li>• Correct cable size used</li> <li>• Overloads are at the correct setting</li> <li>• Over-current devices selected are at the correct rating</li> <li>• Safety procedures are followed</li> <li>• Risk assessment undertaken</li> <li>• Motor test report completed</li> <li>• Housekeeping performed</li> </ul>					