

NOCC-A21 Electrician: Competence Package

Relevant Occupation/trade title: Electrician				SAQA ID: 91761	
Learning Area 9: Design, install, wire, maintain and troubleshoot electrical motors and associated control systems - Advanced				Total Hours:	176
Learning Project 2: Install and wire direct current (DC) motors				Total Hours:	8
Requisite learning areas/projects to be in place (Pre-requisite and co-requisite):		<ul style="list-style-type: none"> • Completion of phase 1 • LA8 - LP1 			
Learning project description: Apprentices learn to install and wire direct current (DC) motors					
Activity phase	Practical Skills Modules Content	Underpinning Knowledge Module Content	Work Experience Module Content (Exposure to be given)	Didactical-methodological advice	Learning materials/Tools and Equipment
Reference to QCTO Curriculum	PM-01 (PS01,02,03,04) PM-02 (PS01,03) PM-03 (PS01,02,03) PM-04 (PS01,02,03) PM-05 (PS01 - 06) PM-06 (PS01,02) PM-07 (PS01,02,03)	KM-06-KT02 KM-07 (KT01,02,03,04,05) KM-08 (KT01)	WM-01(WE01,02,03) WM-02(WE01,02,03) WM-03(WE01,02,03) WM-04(WE01,02,03)		
Planning/Preparation	<p>Provide access to (Given):</p> <ul style="list-style-type: none"> • direct current motors • Contactors • Rotary switch • Starter • Training panel <p>Apprentices must be able to do/perform the following (hard and soft) skills:</p> <ul style="list-style-type: none"> • Select and wear PPE • Read and interpret task instructions • Conduct risk assessment • Select the correct tools and equipment • Transport tools and equipment 	<p>Knowledge of:</p> <ul style="list-style-type: none"> • The operating/working principles of DC motors. Range: includes but not limited to series motor, shunt motor and compound motor • Components of DC motor. Range: stator, rotor, brush gear, frame, fan, shaft key. • Wiring diagrams of DC motors • Changing the direction of rotation of a DC motor using a rotary switch and contactors • Motor test to be performed on DC motors. Range: continuity test, insulation resistance between components, insulation 	<p>Under supervision:</p> <ul style="list-style-type: none"> • Install and wire DC motor starter • Install cable from the supply to the DC motor starter • Perform DC motor test • Connect DC motor to the starter • Commission the DC system 	Lecture, presentations DVDs, audio-visual Group/individual work Motor Trainer Internet	<p>Print materials, electronic files, software applications incl.:</p> <ul style="list-style-type: none"> • Training manuals for trainers and apprentices incl. multimedia software • Set of presentation aids (videos, slides) for overhead or LED/LCD projectors <p>Tools, equipment and materials incl.:</p> <p>Range of materials and tools to be covered (minimum):</p> <p>Electrician's toolbox</p> <p>Materials:</p>

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	to workstation safely	resistance between conductors and mechanical examination.			<ul style="list-style-type: none"> • Cable • Cable Glands • Cable tray • Cable ties • Wall plugs • Lugs • Ferrules
Implementation/ Execution Repair	<ul style="list-style-type: none"> • Wire DC starter • Perform DC motor test • Connects supply to DC motor • Commissions the system 	<ul style="list-style-type: none"> • Advantages and disadvantages of DC motors • Reading and interpreting circuit drawings 			
Evaluation/ Documentation	<ul style="list-style-type: none"> • Evaluates the correctness of the completed task according to drawings and/or instructions • Report work progress to appropriate personnel • Inspect and clean tools • Store and secure tools and materials • Complete applicable work documentation • Perform housekeeping 				Tools <ul style="list-style-type: none"> • Multi-meter • Insulation resistance tester • Drilling machine • Drill bits • Crimping tool • Cable strapping tool
Total	Hours: 8				
Specialisation additions	Equipment that requires authorisation				
Assessment guidance					
<ul style="list-style-type: none"> • Self assessment • Group assessment • Theory test <p>Criteria for assessment:</p> <ul style="list-style-type: none"> • Correct PPE is worn • Task is completed as per job card • Correct cable size used • Overloads are at the correct setting • Over-current devices selected are at the correct rating • Safety procedures are followed • Risk assessment undertaken • Motor test report is completed • Site is cleaned 					