

NOCC-A21 Electrician: Competence Package

Relevant Occupation/trade title: Electrician			SAQA ID: 91761		
Learning Area 3: Use and care for basic portable measuring and testing equipment			Total Hours:		56
Learning Project 3: Test three-phase low voltage basic AC circuits (Welding plugs, Three phase AC Motors)			Total Hours:		8
Requisite learning areas/projects to be in place (Pre-requisite and co-requisite):		<ul style="list-style-type: none">LA 1 (LP 2, 3, 5, 7, 9, 10)LA3 (LP 1, LP2)			
Learning project description: Test the required three-phase low voltage AC circuit to locate a fault by using portable electrical measuring and testing equipment					
Activity phase	Practical Skills Modules Content	Underpinning Knowledge Module Content	Work Experience Module Content	Didactical-methodological advice	Learning materials/Tools and Equipment
Reference to QCTO Curriculum	PM-01-PS03	KM02-KT02	WM-None		
Planning/Preparation	<p><u>Provide access to (Given):</u> Electrical testing- and measuring instruments and a variety of three phase low voltage AC circuits as per last column</p> <p><u>Apprentices must be able to do/perform the following (hard and soft) skills:</u></p> <p>Prepare to test three phase low voltage basic AC circuits</p> <ul style="list-style-type: none">Follow risk control measures and procedures for carrying out the workCorrectly use appropriate personal protective equipment (PPE)Ensure that the circuit	<p><u>Knowledge of:</u></p> <ul style="list-style-type: none">Common faults (e.g. open circuit, close circuit, continuity, voltage supply)Basic techniques of fault findingElectrical tests to be carried out on three phase low voltage AC circuit, including phase rotation.Statutory requirements in relation to testing instrumentsPPE in the use of testing and measuring equipmentStandard operating procedures for testing instrumentsOHSA, Mining Act, Municipal	<p><u>Under supervision:</u></p> <ul style="list-style-type: none">Select appropriate PPEBe actively involved where three-phase low voltage AC circuits are testedPerform risk assessment prior to testing three-phase low voltage AC circuitsEnsure that test instruments are in working conditionCorrectly store test instruments on completionEngage in regular housekeeping activities, tool and equipment	<ul style="list-style-type: none">Research /Desk studyCase studies /scenariosTechnical discussionsLecture/ instructionsPresentationsTextbook work	<p>Print materials, electronic files, software applications incl.:</p> <ul style="list-style-type: none">OHS ActText booksManufacturer catalogues and manualsTraining manuals for trainers and apprentices incl. multimedia softwareSet of presentation aids (videos, slides) for overhead or LED/LCD projectors

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	<p>/installation is isolated and locked out</p> <ul style="list-style-type: none"> Determine the need to test or measure under power on conditions in exact accordance with OHSA Conduct measurements/ testing (under power on – with supervision/power off conditions) according to given instructions and safety procedures Conduct testing/ measurement without damage to testing/ measurement instruments, circuits, the surrounding environment or services Use established methods to measure, calculate and interpret values as they apply to AC electrical circuits and identify circuit problems Deal safely with unexpected situations with the approval of appropriate personnel 	<p>By-laws</p> <ul style="list-style-type: none"> Test procedures on low voltage three phase AC circuit Reading of measurements and correct interpretation Lock out procedures On low voltage three-phase low voltage AC circuit Reporting requirements and work documents related to the testing of three phase AC circuits Housekeeping procedures 	<p>maintenance</p> <ul style="list-style-type: none"> Provide work documentation, verbal and written reports as required by the company 		<p>Hand- & power tools and PPE incl.:</p> <ul style="list-style-type: none"> Standard electrician's toolbox Standard PPE <p>Measuring and testing instruments incl.:</p> <ul style="list-style-type: none"> Multi-meter Insulation resistance tester Clamp on ammeter (Tong tester) Line tester, Phase rotation tester <p>Training workshop and laboratory equipment incl.:</p> <ul style="list-style-type: none"> Heavy workbench with stool, power supply and assembly vice Bench mountable interchangeable training panel frame Basic panel systems for practicing measuring and testing of fixed installations and electrical appliances with built in fault simulator exercises Modular experimental box system with
Implementation/ Execution	<p>Test three phase low voltage AC circuits and identify problems</p> <ul style="list-style-type: none"> Follow risk control measures and procedures for carrying out the work Correctly use appropriate personal protective equipment (PPE) Ensure that the circuit 				

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Evaluation/ Documentation	<p>Complete testing and document activities</p> <ul style="list-style-type: none"> • Clean up work place • Record tests results accurately • Complete and process relevant work documentation 				

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	<ul style="list-style-type: none"> Report malfunctions or deficiencies in the operation of low voltage three phase AC circuits to appropriate personnel Inspect and clean testing/ measuring instruments Record and report any defects and malfunctions of test instruments to appropriate personnel Care and store tools and equipment. 				
Total	Hours 8				
Specialisation additions	Equipment that requires authorisation				
Assessment guidance					
<ul style="list-style-type: none"> Self assessment Observation Checking documentation and conclusion Theory test <p>Criteria for assessment:</p> <ul style="list-style-type: none"> Interpreting job instructions correctly and determining sequence of operation Selecting portable measuring and testing equipment correctly according to the task Checking portable electrical measuring instruments for correct operation and functionality Identifying and marking unsafe and faulty measuring equipment for repair Setting up portable measuring instruments correctly for application Reading portable measuring instruments correctly and recording readings on the appropriate documentation Using electrical measuring instruments in accordance with their specifications Placing and storing electrical measuring instruments in accordance with specifications 					