

NOCC-A21 Electrician: Competence Package

Relevant Occupation/trade title: Electrician				SAQA ID: 91761	
Learning Area 10: Install, maintain and troubleshoot electrical transformers and associated controls				Total Hours:	72
Learning Project 1: Select and install low voltage (single phase) transformers				Total Hours:	8
Requisite learning areas/projects to be in place (Pre-requisite and co-requisite):		<ul style="list-style-type: none">Phase 1 completedLA8 LP3			
Learning project description: Apprentices learn to select and install low voltage (single phase) transformers.					
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	PM05-PS04	KM07-KT03	WM-None		
Planning/Preparation	<p><u>Provide access to (Given):</u> Scenario with a load (VA rating and voltage), multiple single phase transformers, electrical wiring diagram, materials and equipment as identified in last column;</p> <p><u>Apprentices must be able to do/perform the following (hard and soft) skills:</u></p> <ul style="list-style-type: none">Read and interpret the scenario givenPerform relevant calculationsSelect correct transformer based on calculationsRead and interpret electrical diagramPerform a risk assessment on the taskPlan positioning of transformerPlan wiring as per diagramIdentify the tools and materials requiredIdentify obstacles and necessary precautions in relation to taskPlan sequence of tasks	<p><u>Knowledge of:</u></p> <ul style="list-style-type: none">Theory of transformers (function and operation, safety)Transformer calculationsTypes and application of single phase power transformersCooling systems for transformersSpecific safety procedures related to transformersStatutory requirements as per work conductedLabelling of transformers	<p><u>Under supervision:</u></p> <ul style="list-style-type: none">Select, install and wire single phase transformers (in a variety of contexts)Have structured discussion on the selection of a transformer for specific scenarios	Lecture, presentations DVDs, audio-visual Demonstrations Practical applications	<p>Print materials, electronic files, software applications incl.:</p> <ul style="list-style-type: none">Training manuals for trainers and apprentices incl. multimedia softwareSet of presentation aids (videos, slides) for overhead or LED/LCD projectorsStatutory requirements:SANS 10142-Part1Municipal by-laws <p>Tools, equipment and materials incl.: Range of materials and tools to be covered (minimum):</p> <ul style="list-style-type: none">Electrical hand tools standard toolboxAssociated Powertools

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Implementation/ Execution Repair	<ul style="list-style-type: none"> • Transport materials and tools safely to site • Fit transformer as per diagram • Insert slotted trunking where applicable • Complete wiring of transformer • Fit lugs where applicable • Label transformer according to drawing • Test installation (power on) 				<ul style="list-style-type: none"> • Measuring instruments
Evaluation/ Documentation	<ul style="list-style-type: none"> • Clean work area after completion of task in accordance with work site procedures and housekeeping standards • Dispose of waste materials in accordance with safety standards and environmental requirements • Complete necessary documentation and submit to designated personnel. 				<p>Materials:</p> <ul style="list-style-type: none"> • Surface to mount transformer • Single phase transformers • Lugs • Cable ties • Conductors • Cables • Slotted trunking • Metering instruments (voltmeter, ammeter) • Labelling <p>PPE:</p> <ul style="list-style-type: none"> • Hard hat • Safety boots • Gloves • Safety glasses
Total	Hours: 8				
Specialisation additions					
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"> • Planning and calculations for task • Interpretation of electrical calculations and diagram • Identification of risks • Correct selection, positioning and operation of transformer • Transformer wired as per given diagram and labelled accordingly • Use of appropriate equipment and tools • Clean worksite after completion of task and equipment returned safely to store 					