

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 3: Select and install low voltage (three phase) transformers				Total Hours:	40
Requisite learning areas/projects to be in place (Pre-requisite and co-requisite):		<ul style="list-style-type: none"> Phase 1 completed LA 8 LP 3 LA 10 LP 1-2 			
Learning project description: Apprentices learn to select and install low voltage (three phase) transformers.					
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	PM05-PS04	KM07-KT03	WM-None		
Planning/Preparation	<p>Provide access to (Given): Scenario with a load (VA rating and voltage), multiple single and/three phase transformers, electrical wiring diagram, materials and equipment as identified in last column;</p> <p>Apprentices must be able to do/perform the following (hard and soft) skills:</p> <ul style="list-style-type: none"> Read and interpret the scenario given Perform relevant calculations Select correct single and or three phase transformer based on calculations Select correct configuration Identify transformer protection Read and interpret electrical diagram 	<p>Knowledge of:</p> <ul style="list-style-type: none"> Theory of three phase transformers (function and operation, safety) Transformer calculations Types and application of three phase power transformers Configurations of three phase transformers Transformer protection Cooling systems for three phase transformers Specific safety procedures related to 	<p>Under supervision:</p> <ul style="list-style-type: none"> Select, install and wire single and three phase transformers (in a variety of contexts) Have structured discussion on the selection of a three phase 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 software Set of presentation aids (videos, slides) for overhead or LED/LCD projectors Statutory requirements: SANS 10142-Part1 Municipal 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 toolbox

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	<ul style="list-style-type: none"> Perform a risk assessment on the task Plan positioning of transformer(s) Plan wiring as per diagram Identify the tools and materials required Identify obstacles and necessary precautions in relation to task Plan sequence of tasks 	<ul style="list-style-type: none"> three phase transformers Statutory requirements as per work conducted Labelling of three phase transformers 			<ul style="list-style-type: none"> Associated Powertools Measuring instruments <p>Materials:</p> <ul style="list-style-type: none"> Surface to mount transformer Single and three 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
Implementation/ Execution Repair	<ul style="list-style-type: none"> Transport materials and tools safely to site Fit transformer(s) as per diagram Insert slotted trunking where applicable Complete wiring of transformer(s) Fit lugs where applicable Label transformer(s) according to drawing Test installation (power on) 				
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. 				
Total	Hours: 40				
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 					

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- Interpretation of electrical calculations and diagram
- Identification of risks
- Correct selection, positioning and operation of transformer(s)
- Transformer(s) wired as per given diagram and labelled accordingly
- Transformers configured as required
- Transformer protection applied
- Use of appropriate equipment and tools
- Clean worksite after completion of task and equipment returned safely to store

Work in progress