

Relevant Occupation/trade title: Electrician			SAQA ID: 91761		
Learning Area 2: Identify, care and use of basic, trade-specific hand- & power tools and equipment			Total Hours:		192
Learning Project 6: Use hand and power tools to prepare distribution and control boards for installation			Total Hours:		16
Requisite learning areas/projects to be in place (Pre-requisite and co-requisite):		<ul style="list-style-type: none"><li>LA 1 (LP1, 2, 3, 7, 9, 12)</li><li>LA 2 (LP 2)</li></ul>			
Learning project description: Use hand and power tools to prepare distribution and control boards incl. face panels (Steel & PVC) for installation (USE) e.g. manufacturing of distribution board, face plate (DB Cover - meters). Activities including: drilling, punching, cutting, tapping and filing					
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	PM01-PS01 PM-01-PS02	KM-02-KT01	WM: None		
Planning/ Preparation	<p><b><u>Provide access to (Given):</u></b> Distribution and control boards incl. face panels, drawings and instructions, applicable hand, power tools and materials</p> <p><b><u>Apprentices must be able to do/perform the following (hard and soft) skills:</u></b></p> <p><b>Prepare for distribution and control board assembly and customisation</b></p> <ul style="list-style-type: none"><li>Read drawings and/or instructions of work task</li><li>Perform risk assessment on the task</li><li>Determine safe working procedure and tool operation</li></ul>	<p><b><u>Knowledge of:</u></b></p> <ul style="list-style-type: none"><li>Different types of hand and power tools and their uses applicable to the task</li><li>Materials and their properties applicable to the task</li><li>Safety precautions regarding the use of applicable hand and power tools</li><li>Methods of risk assessment on the use of applicable hand and power tools</li><li>Work procedures and work documents related to the use of applicable hand and power tools</li><li>Types, sizes and materials of</li></ul>	<p><b><u>Under supervision:</u></b></p> <ul style="list-style-type: none"><li>Be actively involved in work processes where apprentices install distribution and control boards</li><li>Perform risk assessment on the use of hand- and power tools</li><li>Assemble and customise different types of distribution boards for installation</li></ul>	<ul style="list-style-type: none"><li>Research /Desk study</li><li>Case studies /scenarios</li><li>Technical discussions</li><li>Lecture/ instructions</li><li>Presentations</li><li>Textbook work</li><li>Group work</li></ul>	<p><b>Print materials, electronic files, software applications incl.:</b></p> <ul style="list-style-type: none"><li>OHS Act</li><li>Text books</li><li>Training manuals for trainers and apprentices incl. multimedia software</li><li>Worksheets for preparation of DB/control board projects</li><li>Set of presentation aids (videos, slides) for overhead or LED/LCD projectors</li></ul>

	<ul style="list-style-type: none"> <li>Identify and plan the correct hand and/or power tools and materials to be used</li> <li>Inspect tools for damages and report any faults to appropriate personnel</li> <li>Select equipment needed to hold or support tool application</li> <li>Select and wear personal protective equipment (PPE)</li> </ul>	<ul style="list-style-type: none"> <li>distribution and control boards</li> <li>Mechanical assembly systems and mounting fixtures for distribution and control boards</li> <li>Measuring and marking out techniques</li> </ul>			<p><b>Stationary machinery, incl.:</b></p> <ul style="list-style-type: none"> <li>Pedestal/table grinding machine</li> <li>Pedestal drilling machine</li> </ul> <p><b>Hand- &amp; power tools and PPE incl.:</b></p> <ul style="list-style-type: none"> <li>Electrician's tool box with standard tool set</li> <li>Workbench/workshop store tool set including: <ul style="list-style-type: none"> <li>Hacksaw, jig saw</li> <li>Drilling machine and drill bit and tap set</li> <li>Assorted files</li> <li>Chassis punch</li> <li>Hole saw</li> <li>Scriber</li> <li>Centre punch</li> <li>Ballpeen Hammer</li> </ul> </li> </ul> <p><b>Measuring and testing instruments incl.:</b></p> <ul style="list-style-type: none"> <li>Steel ruler</li> <li>Measuring tape</li> <li>Engineering square</li> </ul> <p><b>Training workshop and laboratory equipment incl.:</b></p> <ul style="list-style-type: none"> <li>Workbenches for practical exercises</li> </ul>
<b>Implementation Execution</b>	<p><b>Assemble and customise DB/control boards for installation</b></p> <ul style="list-style-type: none"> <li>Correctly use appropriate personal protective equipment (PPE)</li> <li>Acquire the materials and tools required to complete the work task</li> <li>Locate and hold in place material needed for hand- and power tool application</li> <li>Safely locate hand- and power tools when not in immediate use</li> <li>Measure and mark areas for hand and power tool application</li> <li>Cut sections in face plate, door or enclosure sides for the mounting of instruments, control gear and accessories</li> <li>Cut holes/sections into the distribution board side panels for inlets/outlets</li> <li>Prepare (cutting, drilling,</li> </ul>				

	<p>threading) mechanical assembly system components to be fitted into the board enclosure onto mounting plates or board frames</p> <ul style="list-style-type: none"> <li>• Install assembly system components in respective board enclosure mounting frame/plate sections</li> <li>• Install completed board frames, mounting and face plate(s), door and any enclosure locking mechanisms</li> <li>• Continuously inspect work progress and compliance with given measurements/ tolerances in accordance with technical drawings and instructions</li> </ul>				<ul style="list-style-type: none"> <li>• Table/ pedestal marking/ inspection table</li> <li>• Distribution boards or simulations</li> </ul>
<b>Evaluation/ Documentation / Housekeeping</b>	<p><b>Evaluate the work result and conduct housekeeping activities</b></p> <ul style="list-style-type: none"> <li>• Evaluate the correctness of completed task according to drawings and/or instructions</li> <li>• Clean up work area</li> <li>• Inspect and clean hand- and power tools</li> <li>• Store and secure tools, DB/ control board and materials</li> <li>• Complete applicable work documentation</li> </ul>				
<b>Total</b>	Hours: 16				
<b>Specialisation additions</b>					

#### Assessment guidance

- **Self assessment**
- **Group assessment**
- **Theory test**

#### Criteria for assessment:

- Completing task in accordance with drawings and / or instructions
- Using of correct PPE
- Safe using of hand and power tools
- Identifying and selecting correct tools in accordance with requirements
- Inspecting tools and identifying and reporting unsafe or defective equipment in accordance to worksite procedures
- Caring and storing of equipment in accordance with manufacturers recommendations and worksite procedures

Work in progress