**Solar Electric Technician (Level 2)**

**Module 3: Measurement of electrical and solar parameter**

**E1: Assignment - Preparation of the tools, equipment and their parameter settings**

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| **E1: ASSIGNMENT MEMO** | |
| **Date** |  |
| **To** | Participants |
| **From** | Trainers |
| **Subject** | Preparation of the tools and equipment and its parameter setting for few tools. |
| **What** | 1. *Identify the tools name.* 2. Setting parameters for tools. |
| **Why** | The objective of the assignment is to identify, understand the use of tools, as well as to practice the arrangement and setting of these tools effectively. |
| **How** | 1. Identify **the tool names.**  * Individual Work: Each participant will study the provided tools or question sheet individually and write down the tools name. * **Discussion:** After completing the individual study, participants will answer a series of questions and discuss their findings with class  1. Parameter setting for few tools  * Follow the instructions and set the provided tools. * Ask trainer if needed. |
| **Time** | 30’ |

**Task 1: Identify the following tool names.**

|  |  |  |
| --- | --- | --- |
| **SN** | **Image of tools and equipment** | **Name of tools and equipment** |
|  | Battery Keeps Dying - Page 2 |  |
|  | Etekcity Digital Multimeter Amp Volt Clamp Meter Voltage Tester with ... |  |
|  | Stalwart 18 Piece Screwdriver Set with Wall Mount and Magnetic Tips ... |  |
|  | Adjustable Wrenches – SAMDEX |  |
|  | Norbar 1/2-inch Torque Wrench Adjustable Automotive Ratchet: Amazon.co ... |  |
|  | A Short Guide to Common Wrench Types |  |
|  | Craftsman 4-PC PLIERS SET (name all types) |  |
|  | DOWELL Wire Stripping Tool Wire Stripper Crimper Cutter Multifunction 8 ... |  |
|  | CrimPro Crimper with Insulated Terminal Die 22-8 AWG - Pro'sKit CP-372FD27 |  |
|  | Jonard Tools JIC-63050 High-Leverage Cable Cutter JIC-63050 B&H |  |
|  | Zombie Crisis - Weapons - Hammer |  |
|  | Hex Allen Key Set, allen key set, एलन की in Coimbatore , Engineering ... |  |
|  | New Bosch Hammer Drill (Corded), HD18-2 |  |
|  | Top 10 Best Hiking Compass Reviews 2018-2019 on Flipboard by Xayuk |  |
|  | inch metric blade tape 3.5m5/19m7.5m10m from China |  |
|  | Digital pyranometer - SPM 72 - MULTIMETRIX - portable |  |
|  | Johnson 24 in. Aluminum Box Beam Level-9824-HH - The Home Depot |  |

**Task 2: Read and follow instruction for parameter settings of following tools and equipment.**

1. **Multimeter**

* Select measurement type: Use the rotary dial to choose between voltage (V), current (A), or resistance (Ω).
* Connect probes: Insert the black probe into the COM port and the red probe into the appropriate port (mAVΩ for voltage and resistance, 10A for high current).
* Set range: If not using an auto-ranging multimeter, select a range that exceeds the expected measurement (e.g., for a 9V battery, set to 20V).
* Read measurement: Observe the display for the measurement result, ensuring to adjust the range if necessary to avoid overload readings.

1. **Clamp meter**

* Power on: Ensure the clamp meter is turned on.
* Select measurement type: Choose AC or DC current measurement using the dial.
* Clamp around conductor: Open the clamp and position it around a single conductor without touching other wires.
* Read measurement: The display will show the current flowing through the conductor.

1. **Spirit level**

* Place on surface: Position the spirit level on the surface you wish to check.
* Check bubble position: Observe the bubble in the vial; it should be centred between the marked lines for level surfaces.
* Adjust as necessary: If not level, adjust the surface until the bubble is centred.

1. **Drill machine**

* Select drill bit: Choose an appropriate drill bit for your material and secure it in the chuck.
* Set speed and torque: Adjust speed settings based on material type (low speed for hard materials, high speed for soft).
* Mark drill point: Use a centre punch to mark where you will drill.
* Drill perpendicularly: Hold the drill steady and apply consistent pressure while drilling.

1. **Torque wrench**

* Set desired torque: Rotate the handle or dial to set the desired torque value.
* Attach socket: Ensure that the correct socket is attached securely.
* Apply torque: When tightening a bolt, apply force until you hear a click, indicating that the set torque has been reached.

1. **Wire stripper**

* Select wire gauge slot: Choose the appropriate gauge slot for your wire size.
* Insert wire: Place the wire into the selected slot up to its insulation.
* Strip insulation: Squeeze handles together to cut through insulation without damaging wire strands, then pull away from wire.

1. **Compass**

* Hold level: Keep the compass flat and level in your hand.
* Rotate until north aligns: Turn your body until the needle points to North, indicated by "N" on the compass face.
* Take bearing reading: Read bearings relative to North as needed.

1. **Wire stripper and crimper**

* Strip wire insulation: Use wire stripper as described above.
* Select crimping die size: Choose an appropriate die based on connector size.
* Insert connector and wire: Place stripped wire into connector and insert into crimper.
* Crimp connector securely: Squeeze handles firmly until connection is secure.

1. **Pyranometer**

* Position correctly: Place pyranometer horizontally under direct sunlight.
* Connect to data logger (if applicable): Ensure proper connections are made for data recording.
* Calibrate as necessary: Follow manufacturer instructions for calibration before use.
* Read solar radiation levels: Observe readings displayed on connected equipment or directly on device.