

Domain**PLUMBING****Title:****Perform basic sheet metal work and soft soldering****Level: 1****Credits: 14****Purpose**

This unit standard is intended for those who perform basic sheet metal work and soft soldering. People credited with this unit standard are able to plan and prepare for work, measure, mark out and cut sheet metal, shape sheet metal, form and make joints, perform soft soldering operations, conduct post soldering visual inspection and clean-up work area.

This unit standard is intended for those who work as plumbers.

Special Notes**1. Entry information:****Prerequisite**

- 434 - Apply Occupational Health and Safety in Working Environment.
- 440 – Plan and organise as part of plumbing operation or demonstrated equivalent knowledge and skills.

2. To demonstrate competence, at a minimum, evidence is required of measuring, marking out and fabricating two different products used in plumbing operations.

3. Assessment evidence may be collected from a real workplace or simulated real workplace or an appropriate simulated realistic environment in which plumbing operations are carried out.

4. Tools and equipment may include but are not limited to bending machine, rolling machine, jenny and sawing machine, tin snips, divider, scribe, centre punch, pop rivet gun, vice, grooving tool, steel tape, large steel combination square, hammer, twist drill, counter sink bit, wheel brace, electric drill, drill press, rivet set and snap, tin mans rivet, pop rivet, guillotine, file, sliding bevels, protractors and stakes.

5. Materials may include but are not limited to sheet metal, flat sheet copper, rivets, silicon and other sealants.

6. Performance of all elements in this unit standard must comply with all relevant workplace requirements and/or manufacturers' specifications.

7. Regulations and legislation relevant to this unit standard include the following:

- Labour Act No. 11 of 2007
- Regulations relating to the health & Safety of employees at work under Schedule 1 (2) of the Labour Act No.11 of 2007 and all subsequent amendments
- Local Authorities Act No. 23 of 1992
- Environmental Management Act No. 7 of 2007

Quality Assurance Requirements

This unit standard and others within this subfield may be awarded by institutions which meet the accreditation requirements set by the Namibia Qualifications Authority and the Namibia Training Authority and which comply with the national assessment and moderation requirements. Details of specific accreditation requirements and the national assessment arrangements are available from the Namibia Qualifications Authority and the Namibia Training Authority on www.nta.com.na.

Elements and Performance Criteria

Element 1: Plan and prepare for work

Range

Planning and preparation may include but is not limited to workplace inspection, equipment defect identification, assessment of conditions and hazards and determination of work requirements.

Performance Criteria

- 1.1 Work instructions, including plans, specifications, quality requirements and operational details are obtained, confirmed and applied in line with workplace procedures.
- 1.2 Safety requirements are followed in line with workplace procedures.
- 1.3 Sign and barricade requirements are identified and implemented in line with workplace procedures.
- 1.4 Tools and equipment selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults rectified or reported to a supervisors prior to commencement.
- 1.5 Material quantity requirements are calculated in accordance with plans and/or specifications.
- 1.6 Materials appropriate to the work application are identified, obtained, prepared, safely handled and located, ready for use in line with workplace procedures.
- 1.7 Environmental protection requirements are identified and applied in accordance with environmental plans and regulatory obligations.

Element 2: Measure, mark out and cut sheet metal

Performance criteria

- 1.1 Materials are identified and selected in line with job requirements.

- 1.2 Positions are marked and angles read with sliding bevels and protractors in line with job requirements.
- 1.3 Correct thickness of sheet metal is selected in line with job requirements.
- 1.4 Angles are cut in line with job requirements.
- 1.5 Measurement are in line with job requirements

Element 3: Shape sheet metal

Performance criteria

- 3.1 Tools and equipment are selected in line with job requirements.
- 3.2 Safety precautions are followed in line with workplace procedures.
- 3.3 Sheet metal is bent, folded and rolled according to job requirements.
- 3.4 Correct and safe use maintenance and storage of tools and equipment is demonstrated in line with workplace procedures and manufacturers' specifications.

Element 4: Form and make joints

Range

Tools and equipment include riveting, grooving, drilling and bending tools to make joints in sheet metal.

Performance Criteria

- 4.1 Tools and equipment to be used for the task are selected in line with job requirements.
- 4.2 Safety precautions are followed in line with workplace procedures.
- 4.3 Joints are identified, selected, formed and made in line with job requirements.
- 4.4 Joints are cleaned and visually inspected ensuring materials are correctly aligned, pined and sealed in line with job requirements.
- 4.5 The correct and safe use, maintenance and storage of tools and equipment are demonstrated in line with workplace procedures and manufacturers' specifications.

Element 5: Perform soft soldering operations

Performance criteria

- 5.1 Soft soldering tools, equipment and materials are assembled and set up according to specifications and workplace procedures.

- 5.2 Safety precautions are observed during the soft soldering process in line with safety and workplace procedures.
- 5.3 Equipment is tested before commencement of soft soldering in line with workplace procedures.
- 5.4 Soft soldering procedures are conducted to specifications.
- 5.5 Joints are cleaned using appropriate tools and techniques in line with workplace procedures.
- 5.6 Safety requirements on use and handling of soldering tools, equipment and the materials including the use of PPE (Personal Protective Equipment) are observed.

Element 6: Conduct post soldering visual inspection

Performance criteria

- 6.1 Visual inspection of soft soldering is conducted in line with workplace procedures.
- 6.2 Joints are inspected for penetration, porosity, accuracy of measurements and quality in line with workplace procedures.
- 6.3 Faults are identified and corrected in line with workplace procedures.

Element 7: Clean-up work area

Performance criteria

- 7.1 Work is completed and appropriate personnel notified in line with workplace procedures.
- 7.2 Work area is cleared of waste, cleaned, restored and secured in line with workplace procedures.
- 7.3 Plant, tools and equipment are cleaned, checked, maintained and restored in line with workplace procedures.

Registration Data

Subfield:	Civil and Building Services Engineering
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