

Unit ID: 572

Domain

**AIR CONDITIONING AND
REFRIGERATION**

Title:

**Fabricate tubing for air condition and
refrigeration systems**

Level: 1

Credits: 6

Purpose

This unit standard specifies the competencies required to fabricate tubing for air condition and refrigeration systems. It includes planning and preparing for work, selecting tubes, cutting and bending copper tube, flaring and swaging copper tube, tube forming as well as completing work and do housekeeping. This unit standard is intended for those who work as air conditioning and refrigeration artisan.

Special Notes

1. Entry information:

Prerequisite

- Unit 567 - *Apply health and safety routines in an air conditioning and refrigeration workplace* or demonstrated equivalent knowledge and skills.

2. Assessment evidence may be collected from a real workplace or a simulated real workplace or an appropriate simulated realistic environment in which air conditioning and refrigeration operations are carried out.

3. All inspection, operation and maintenance procedures associated with the use of tools and equipment shall comply with manufacturers' specifications and/or company's guidelines and instructions.

4. Glossary of terms:

- '*specifications*' refers to any, or all of the following: manufacturers' specifications and recommendations, workplace specific requirements

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

- Labour Act, No. 11, 2007
- Occupational Health and Safety Regulations No. 18, 1997 and all subsequent amendments.
- Occupational Health and Safety Regulations No. 101, 1992 (act 6,1992)

6. Performance of all elements in this unit standard must comply with industry standards.

7. This unit standard applies to single-phase and three-phase air conditioning and refrigeration systems.

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. All approved unit standards, qualifications and national assessment arrangements are available on the Namibia Training Authority website www.nta.com.na.

Elements and Performance Criteria

Element 1: Plan and prepare for work.

Performance Criteria

- 1.1 Work instructions, including job cards, specifications and operational details are obtained, confirmed and applied.
- 1.2 Workplace inspection, equipment defect identification, assessment of conditions and hazards and determination of work requirements is carried out.
- 1.3 Safety requirements are followed in accordance with safety plans and policies.
- 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 prior to commencement.
- 1.5 Material requirements are identified and obtained in accordance with job card and/or specifications.
- 1.6 Materials are safely handled and located ready for use in line with workplace procedures.
- 1.7 Technical and/or calibration requirements for tools and equipment are sourced and implemented in line with workplace procedures.
- 1.8 Environmental protection requirements are identified and applied in line with environmental plans and regulatory obligations.

Element 2: Select tube.

Performance Criteria

- 2.1 Procedures and information required for selecting tubes are identified and sourced in line with workplace procedures.
- 2.2 Suitable tube sizes are selected to match the type of installations in line with workplace procedures.
- 2.3 Fabrication methods are identified and suitable for different joints in line with workplace procedures.

Element 3: Cut and bend copper tube.

Range

Cutting and bending tools may include but are not limited to tube cutter and lever type benders ($\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, $\frac{3}{8}$, $\frac{5}{8}$) and spring benders.

Performance Criteria

- 3.1 Procedures and information required for cutting and bending copper tubes are identified and sourced in line with workplace procedures.
- 3.2 Copper tube is selected, cut and reamed in line with workplace procedure.
- 3.3 Copper tubes are bend using lever bender and spring bender in line with workplace procedures.

Element 4: Flare and swage copper tube.

Range

Tools may include but is not limited to flaring kit and swaging tool, tube cutter, file and ream.

Performance Criteria

- 4.1 Procedures and information required for flaring and swaging copper tube are identified and sourced in line with workplace procedures.
- 4.2 Copper tube is flared in line with workplace procedures.
- 4.3 Copper tube is swaged in line with workplace procedures.

Element 5: Form tube.

Range

Tube forming includes joining tubing using fittings, construct leak proof flares and construct swaged joints.

Performance Criteria

- 5.1 Procedures and information required for tube forming are identified and sourced in line with workplace procedures.
- 5.2 Tubes are joint using fittings and swaged joint in line with workplace procedures.

Element 6: Complete work and do housekeeping.

Range

Work completion details may include but are not limited to job card and sign-out form for equipment.

Performance Criteria

- 6.1 Work is completed and appropriate personnel notified in line with workplace procedures.
- 6.2 Work area is cleared of waste, cleaned, restored and secured in line with workplace procedures.
- 6.3 Reusable material is collected and stored in line with workplace procedures.
- 6.4 Equipment used is cleaned, checked, maintained and stored in line with workplace procedures.
- 6.5 Work completion details are finalised in line with workplace procedures.

Registration Data

Subfield:	Mechanical Engineering
Date first registered:	
Date this version registered:	
Anticipated review:	
Body responsible for review:	Namibia Training Authority